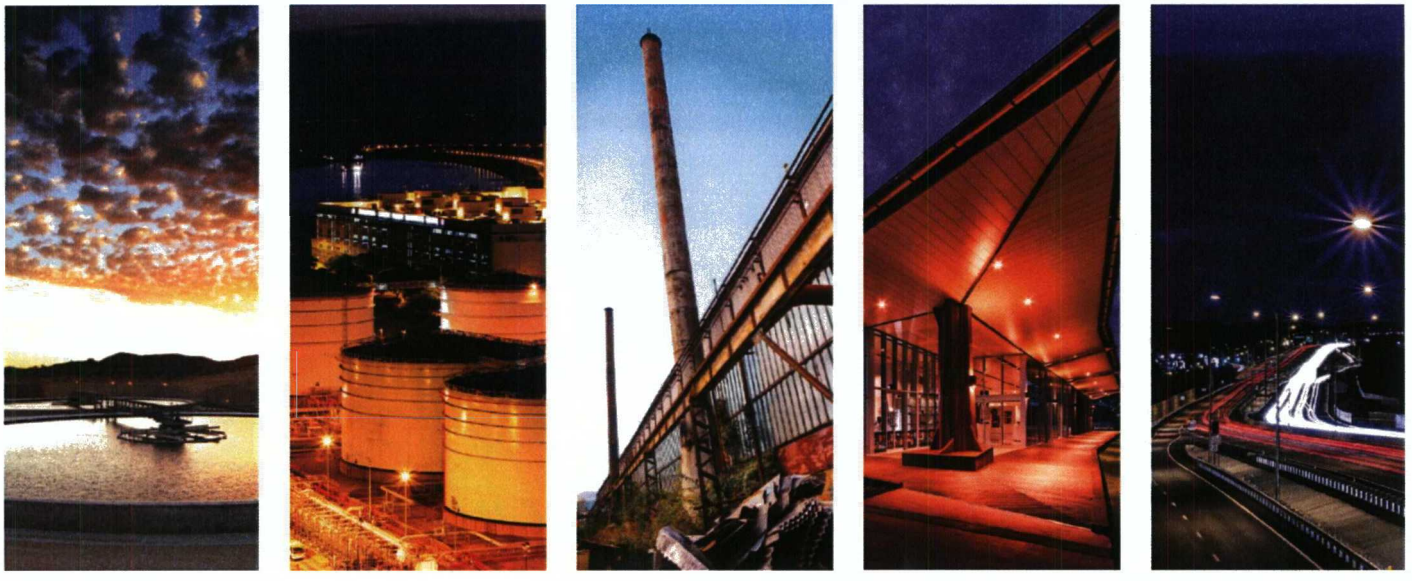
US EPA RECORDS CENTER REGION 5
550693



2015 Groundwater Investigation

Rasmussen Superfund Site
Livingston County, Michigan

Rasmussen Superfund Site

GHD | 651 Colby Drive Waterloo Ontario N2V 1C2
032504 35 | Report No 6 | July 13 2016

July 13, 2016

Reference No. 032504

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

Dear Mr. Caine:

Re: 2015 Groundwater Investigation
Rasmussen Superfund Site (Site), Livingston County, Michigan

Enclosed please find a copy of the 2015 Groundwater Investigation report, which GHD prepared on behalf of the Rasmussen Site Remediation Group (RSRG).

If you have any questions, please do not hesitate to contact our office.

Yours truly,

GHD

Alan Deal

AJD/cb/47

Encl.

cc: Keith Krawczyk, MDEQ
Bart Bartholomy, GHD
Karyllan Dodson Mack, BASF
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REGISTERED COMPANY FOR ISO 9001 ENGINEERING DESIGN

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1. Introduction

The United States Environmental Protection Agency (USEPA) completed the third Five-Year Review (5YR) of the Rasmussen Site in 2010. In a letter dated May 27, 2010 USEPA requested the Rasmussen Site Remediation Group (RSRG) "fully characterize and delineate" contamination at the Rasmussen Site based on the results of its third 5YR. On July 11, 2011 the RSRG met with representatives from USEPA and Michigan Department of Environmental Quality (MDEQ) and discussed the 5YR. It was agreed that GHD would submit a groundwater investigation work plan for approval that would include installing boreholes and collecting vertical aquifer samples (VAS) to address data gaps in the existing groundwater quality monitoring network. The specific data gaps to be addressed were north (downgradient) of existing monitoring well 81-8, to the north of Spicer Road, and northwest (downgradient) of existing monitoring well 81-4, west of the western Site boundary. The RSRG submitted the "Groundwater Investigation Work Plan" (Work Plan) (CRA, October 2011) to USEPA in 2011.

The RSRG approached the property owner north of Spicer Road and requested access to the property for the purpose of installing monitoring wells. The property owner refused. Similarly, the property owner south of Spicer Road also refused permission to install monitoring wells on his land. The Livingston County Road Commission initially refused permission to install permanent wells in the right-of-way. However, after a change in personnel in mid-2014, the Road Commission granted access to the Spicer Road right-of-way. In September 2014, USEPA met with the new Livingston County Road Commission staffer, who then granted access for the installation of permanent monitoring wells provided they are located 32 feet (ft) from the center line of Spicer Road and that they are installed as flush mount wells. RSRG agreed and a permit to conduct work in the right-of-way was issued. The permit was valid from April 1, 2015 to June 30, 2015.

In 2014 the owner (Walter Spiegelberg) of the property immediately west of the Site granted access to the RSRG for the purpose of installing a VAS borehole and a permanent monitoring well. He requested the well be installed adjacent to the property line.

The VAS were completed in April and May 2015. GHD submitted the draft "2015 Groundwater Investigation" report on June 2, 2015, which included the results of the VAS and recommendations with respect to installing new monitoring wells based on the VAS results. USEPA and MDEQ provided comments on the report on June 9, 2015 and indicated that the installation of five new monitoring wells could proceed as recommended in the draft report but that additional delineation of the southwest vinyl chloride plume near VAS-31 was warranted.

GHD installed, developed and sampled the five new monitoring wells in June 2015 and included the wells in subsequent rounds of the routine Groundwater Remediation Monitoring Program.

This report includes changes based on specific USEPA and MDEQ comments to the June 2, 2015 draft report, the results of the samples collected from the new monitoring wells and recommendations for future monitoring.

Section 2.0 describes the investigative activities completed during the 2015 Groundwater Investigation, including the methods that GHD used to collect groundwater samples from the VAS

boreholes. Results of the VAS and the most recent groundwater samples from the five new monitoring wells are discussed in Section 3. Section 4 summarizes GHD's recommendation for future work. This report incorporates changes based on specific USEPA and MDEQ comments to the June 2, 2015 draft report. A copy of the USEPA and MDEQ comments, and responses on behalf of the RSRG, are included in Appendix A.

2. Investigative Activities

The locations of the VAS boreholes and monitoring wells installed for the 2015 Groundwater Investigation are shown on Figure 2.1. Stearns Drilling Company (Stearns) of Dutton, Michigan, provided drilling services. The VAS boreholes were installed between April 21 and May 7, 2015. Stearns the five new monitoring wells were installed and developed June 15 to 19, 2015. The five new wells were sampled on June 23, 2015. Stratigraphic and instrument logs for the VAS boreholes and the new monitoring are provided in Appendix B.

The VAS boreholes were completed using a hollow stem auger drilling rig and a temporary monitoring well. Groundwater sampling was completed using the following protocol:

1. The drill rig advanced the borehole using the hollow stem auger drilling method.
2. Upon reaching the water table groundwater samples were collected at 5-ft intervals.
3. A pre-cleaned, temporary monitoring well consisting of a 2-inch diameter PVC riser pipe and a 2-inch diameter, 5-ft long No. 10 slot size stainless steel was assembled.
4. The temporary monitoring well was installed inside the bottom auger at the target depth and then the augers were retracted to expose the well screen to the formation.
5. The depth to groundwater was then measured using an electronic water level meter.
6. Groundwater was purged from the temporary monitoring well using a variable frequency electric submersible pump. The pump was installed to at the top of the water column and then lowered to within approximately 2 ft of the bottom of the well as purging progressed.
7. Temperature, pH, conductivity, oxidation/reduction potential and turbidity were measured at approximately 5-minute intervals.
8. Purging continued until the temperature, conductivity, oxidation/reduction potential measurements stabilized or the well went dry.
9. The pumping rate was then reduced and groundwater samples were collected directly from the discharge line in laboratory-supplied, analyte-specific sample containers and preserved according to laboratory requirements.
10. Field duplicate samples were collected at a frequency of one for every ten investigative samples. A trip blank accompanied each shipment of samples to the laboratory.
11. The temporary monitoring well was then removed from the borehole and cleaned with a hot water pressure washer between samples.
12. The borehole was advanced another 5 ft and steps 3 through 11 were repeated.

13. Upon reaching the total depth of the borehole the downhole equipment was removed from the borehole and the borehole was backfilled with a mixture of cuttings and bentonite chips.

Table 2.1 provides the stabilization parameters measured during sample collection and other sample information. Appendix B provides the stabilization parameters measured during purging.

GHD then placed the groundwater samples on ice in a cooler and transported the samples to TestAmerica in Brighton, MI. Groundwater samples were analyzed for volatile organic compounds (VOCs) using EPA SW-846 Method 8260B by TestAmerica Laboratories Inc., North Canton, Ohio. Laboratory reports and data validation memoranda for the VAS groundwater samples are included in Appendix D.

GHD surveyed the horizontal and vertical locations of the VAS boreholes and the monitoring wells after completion.

3. Investigation Results

3.1 Introduction

The purpose of the new VAS boreholes and monitoring wells is to delineate the possible presence of vinyl chloride in the groundwater near monitoring well 81-8 (the Northern Vinyl Chloride Plume) and downgradient (northwest) of existing monitoring well 81-4 (the Southern Vinyl Chloride Plume), on the property west of the Site. Additional groundwater elevation data from the new monitoring wells will also improve the interpretation of local groundwater flow patterns, particularly north of the Site. GHD has prepared a series of plume maps and geologic cross-sections on Figures 3.1 through 3.7 showing the distribution of Compounds of Concern (COCs) in the subsurface near the Northern Vinyl Chloride Plume and the Southern Vinyl Chloride Plume. The following provides details of the results of the investigative activities undertaken with respect to the new monitoring wells.

3.2 Northern Vinyl Chloride Plume

Figure 3.1 shows the extent of the northern plumes, local groundwater flow directions based on June 2016 groundwater elevation data, and cross-section locations near the Northern Vinyl Chloride Plume. Figure 3.2 also shows monitoring well RA-MW-36, located approximately 200 ft north of monitoring well 81-8.

Prior to the initiation of ozone sparging at the Site in 2000, vinyl chloride was present in groundwater samples collected from monitoring well 81-8 at concentrations that ranged from 3.8 micrograms per liter (μg/L) to 5 μg/L. The Part 201 December 2013 Generic Residential Drinking Water Cleanup Criteria (RDWCC) for vinyl chloride is 2 μg/L. Monitoring well 81-8 is located adjacent to ozone sparge well SW-1. Since 2000, vinyl chloride has not been detected in groundwater samples collected from 81-8 when SW-1 is operating.

Figure 3.3 (Cross-Section A-A') shows the monitoring wells and VAS boreholes installed north and south of 81-8 and maximum historic vinyl chloride concentrations. In 1999, the northern extent of the vinyl chloride in the vicinity of 81-8 was delineated by VAS-5. Figure 3.3 (Cross-Section A-A')

shows that vinyl chloride was not detected in any groundwater samples collected from VAS-5. Groundwater samples were collected from the entire saturated thickness of the Upper Aquifer, including the same elevation as the 81-8 well screen.

Prior to 2015, there were no functioning monitoring wells located north of 81-8. The RSRG installed borehole VAS-33 north of 81-8 at the location shown on Figure 3.1 to address this data gap. Above approximately 860 ft above mean sea level (AMSL) the static depth to water during sampling ranged from approximately 42 to 47 ft below top of riser (btor) and remained relatively constant during purging. These characteristics are representative of the relatively permeable sands of the Upper Aquifer. Below approximately 860 ft AMSL the static depth to water during collection of the VAS ranged from approximately 52 to 69 ft btor and typically decreased during purging. This is representative of the Lower Confining Silt/Clay. No COCs were detected in any of the VAS from borehole VAS-33.

VAS-32 results delineate the extent of vinyl chloride west of 81-8 and VAS-34 and VAS-35 delineate the extent north east of 81-8. Figure 3.6 (Cross-Section D-D') shows the monitoring wells and VAS boreholes installed north and west of 81-8 and maximum historic vinyl chloride concentrations at each location. No COCs were detected in any of the VAS from boreholes VAS-32 through VAS-35.

The RSRG installed four new monitoring wells at the locations of VAS-32 through VAS-35 with well screens installed at the same elevation as the 81-8 well screen, 867 to 872 ft AMSL. GHD included the four new monitoring wells in the second quarter (Q2) 2015 round of the Groundwater Remediation Monitoring Program. Vinyl chloride was detected in the Q2 2015 groundwater sample collected from CRA-RA-35 at a concentration of 2.1 μg/L which slightly exceeded the RDWCC of 2 μg/L for vinyl chloride. GHD collected a confirmatory sample and corresponding duplicate sample from CRA-RA-35 on July 20, 2015. For these confirmatory samples, the concentration of vinyl chloride was 1.9/1.8 μg/L, slightly less than the RDWCC. The following are the concentrations of vinyl chloride in the samples collected from CRA-RA-35:

Date	Vinyl Chloride Concentration (μg/L)
6/23/2015	2.1
7/20/2015	1.9/1.8$^{(D)}$
9/2/2015	1.7/1.8$^{(D)}$
11/25/2015	1.8/1.7$^{(D)}$
3/8/2016	1.9/1.8$^{(D)}$
6/6/2016	1.3/1.3$^{(D)}$

$^{(D)}$ – duplicate sample

Table 3.2 provides a summary of groundwater quality data collected from the new monitoring wells as of June 2016. No VOCs were detected in the June 2015 through June 2016 groundwater samples collected from the other three new northern monitoring wells.

GHD included the new monitoring wells in the current quarterly groundwater elevation-monitoring program in order to provide data that will verify the local groundwater flow regime in the immediate vicinity of 81-8. Figure 3.1 and Figure 3.2 provide the June 2015 groundwater elevation data. The

groundwater flow direction in the immediate vicinity of 81-8 had been uncertain because it is the northern most well in the monitoring well network. The four new wells provide groundwater elevation data that the overall trend in groundwater flow is northwest along a groundwater low northwest of TEMP-PZ-2. The four new wells and existing wells CRA-RA-29 and 81-8 all have groundwater elevations that are slightly higher than TEMP-PZ-2. This suggests a component of flow to the southwest near 81-8, but the horizontal hydraulic gradient is not strong. This groundwater flow pattern is consistent with subsequent monitoring through June 2016.

3.3 Southern Vinyl Chloride Plume

USEPA requested that the RSRG install a new monitoring well downgradient (northwest) of monitoring well 81-4. Figure 3.2 shows the location of borehole VAS-31, north of 81-4 and VAS-29. The location of VAS-31 was subject to permission from the landowner who insisted the borehole and subsequent monitoring well be located adjacent to the fence so as not to inhibit vehicle traffic in the area. GHD submitted the draft 2015 Groundwater Investigation Report to USEPA and MDEQ on June 2, 2015. It included VAS results and recommendations with respect to the location and depth of the wells to be installed at the VAS locations. USEPA approved the location and depth of the new wells in an email dated June 11, 2015. MDEQ comments were discussed on a subsequent conference call among GHD, Honigman, USEPA, and MDEQ. In 2004, CRA installed VAS-29 northwest of 81-4. Vinyl chloride concentrations in groundwater samples collected from VAS-29 ranged from 2 to 3 µg/L throughout the entire thickness of the Upper Aquifer. Table 3.1 provides the VOCs detected in the groundwater samples collected from VAS-31. Figure 3.7 (Cross Section E-E) shows VAS-31 and nearby monitoring wells and VAS boreholes in cross section. The first VAS collected from VAS-31, at the top of the water table, did not contain any VOCs. The next three sample intervals contained vinyl chloride at 2.5 to 3.6 µg/L, respectively, which is greater than the RDWCC of 2 µg/L. Benzene was also detected in these three sample intervals but at concentrations less than its Part 201 RDWCC of 5 µg/L. The remaining VAS from VAS-31 did not contain any VOCs and borehole VAS-31 was terminated in the Lower Confining Silt/Clay.

GHD oversaw installation of new monitoring well CRA-RA-33 near the location of VAS-31. The monitoring well screen was installed from 872 to 877 ft AMSL, which corresponds to the elevation of the VAS with the highest COC concentrations. GHD included CRA-RA-33 in the Q2 2015 round of the Groundwater Remediation Monitoring Program. Benzene was detected in the groundwater samples collected from CRA-RA-33 at 2.7/2.7 µg/L (duplicate sample), which is less than the RDWCC of 5 µg/L. Vinyl chloride was present at concentrations of 2.5/2.6 µg/L, which slightly exceeds the RDWCC of 2 µg/L. The following are the concentrations of vinyl chloride and benzene in the samples collected from CRA-RA-33:

Date	Vinyl Chloride Concentration (µg/L)	Benzene Concentration (µg/L)
6/23/2015	2.5/2.6[(D)]	2.7/2.7[(D)]
9/2/2015	2.4	2.4
11/25/2015	2.8	1.8
3/8/2016	3.1	1.9
6/6/2016	1.5	1.5

[(D)] – duplicate sample

Table 3.2 provides a summary of groundwater quality data collected from the new monitoring wells as of June 2016. The June 2016 results are slightly less than the RDWCC of 2 μg/L, indicating the western limit of the southern vinyl chloride plume has been delineated.

4. Summary

In April and May 2015, the RSRG installed five boreholes and collected VAS to address data gaps in the existing groundwater quality monitoring network. GHD included the five new wells in the routine Groundwater Remediation Monitoring Program which included measuring groundwater elevations and collecting groundwater samples for VOC analysis on a quarterly frequency.

No COCs were detected in any of the VAS from boreholes VAS-32 through VAS-35 located west, north and northeast of monitoring well 81-8. The RSRG installed four new monitoring wells at the locations of VAS-32 through VAS-35 with well screens installed at the same elevation as the 81-8 well screen, 867 to 872 ft AMSL.

GHD included the four new monitoring wells in the Q2 2015 round of the Groundwater Remediation Monitoring Program. Vinyl chloride was detected at a concentration of 2.1 μg/L which is slightly greater than the RDWCC of 2 μg/L for vinyl chloride in the June 2015 sample collected from CRA-RA-35. GHD collected confirmatory samples from CRA-RA-35 on July 20, 2015 and the concentration of vinyl chloride was 1.9/1.8 μg/L (duplicate sample), slightly less than the RDWCC. No VOCs were detected in the June 2015 through June 2016 groundwater samples collected from CRA-RA-34, CRA-RA-35, CRA-RA-36, and CRA-RA-37. GHD recommends that quarterly groundwater quality monitoring continue at northern monitoring well CRA-RA-35. GHD recommends groundwater sampling at CRA-RA-34, CRA-RA-36 and CRA-RA-37 continue at an annual frequency.

The RSRG installed VAS-31 to delineate the northern extent of the Southern Vinyl Chloride Plume. Vinyl chloride was detected in three VAS samples (ranging from 2.5 μg/L to 3.6 μg/L) at concentrations slightly greater than the RDWCC of 2 μg/L. Benzene was also detected in these three sample intervals but at concentrations less than it's Part 201 RDWCC of 5 μg/L.

The RSRG installed monitoring well CRA-RA-33 at the location of VAS-31 at a depth of 872 to 877 ft AMSL and included CRA-RA-33 in the quarterly Groundwater Remediation Monitoring Program. Since June 2015 benzene was detected in the groundwater samples collected from CRA-RA-33 at concentrations less than the RDWCC of 5 μg/L. Prior to June 2016, vinyl chloride was present at concentrations ranging from 2.4 to 3.6 μg/L, which slightly exceeds the RDWCC of 2 μg/L. The June 2016 results are slightly less than the RDWCC of 2 μg/L, indicating the western limit of the southern vinyl chloride plume has been delineated.

Based on the very low levels of vinyl chloride detected in groundwater at CRA-RA-33 (slightly less than the RDWCC as of June 2016), and the availability of monitoring locations further downgradient, GDH recommends that quarterly groundwater quality monitoring continue at CRA-RA-33, Furthermore, the RSRG will negotiate a restrictive covenant with the property owner that will prohibit installing drinking water wells in that portion of the property.

Quarterly groundwater elevation monitoring will continue at all the new monitoring wells.

FIGURES

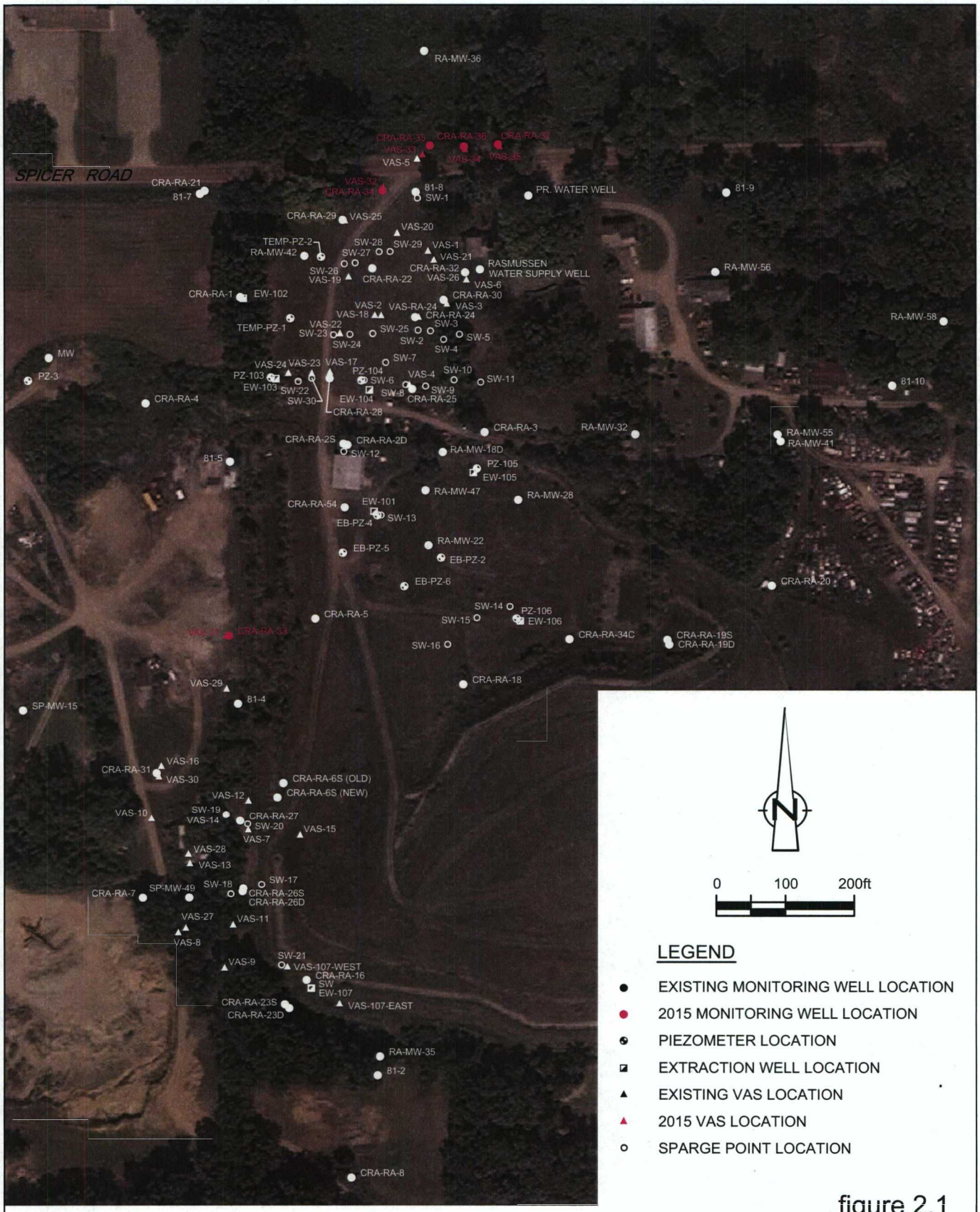


figure 2.1

LOCATION MAP
RASMUSSEN LANDFILL SITE
Livingston County, Michigan

32504-35(006)GN-WA006 JUL 4/2016

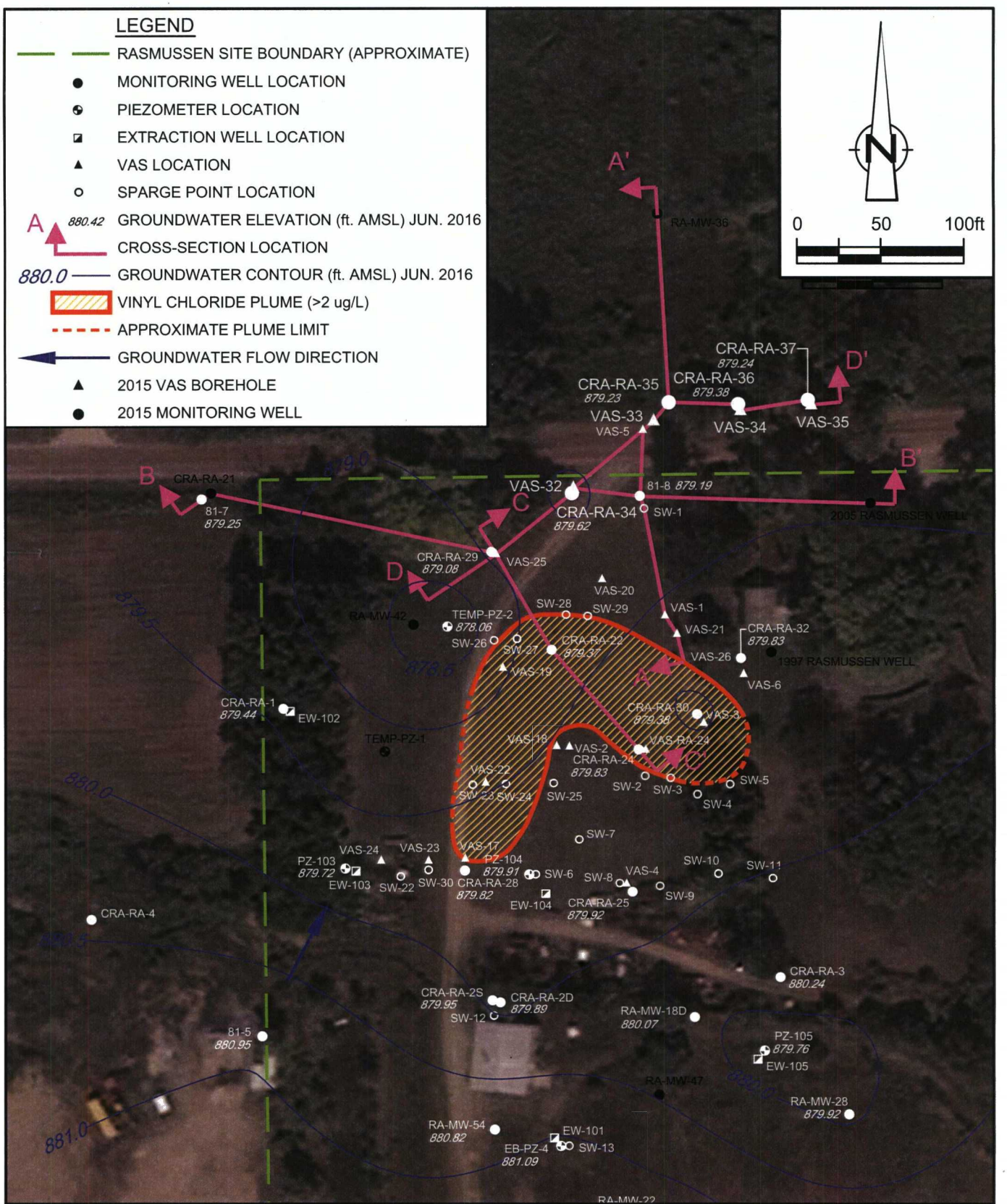


figure 3.1

CROSS-SECTION LOCATION MAP - NORTHERN PLUMES
RASMUSSEN LANDFILL SITE
Livingston County, Michigan

GHD

32504-35(006)GN-WA003 JUL 4/2016

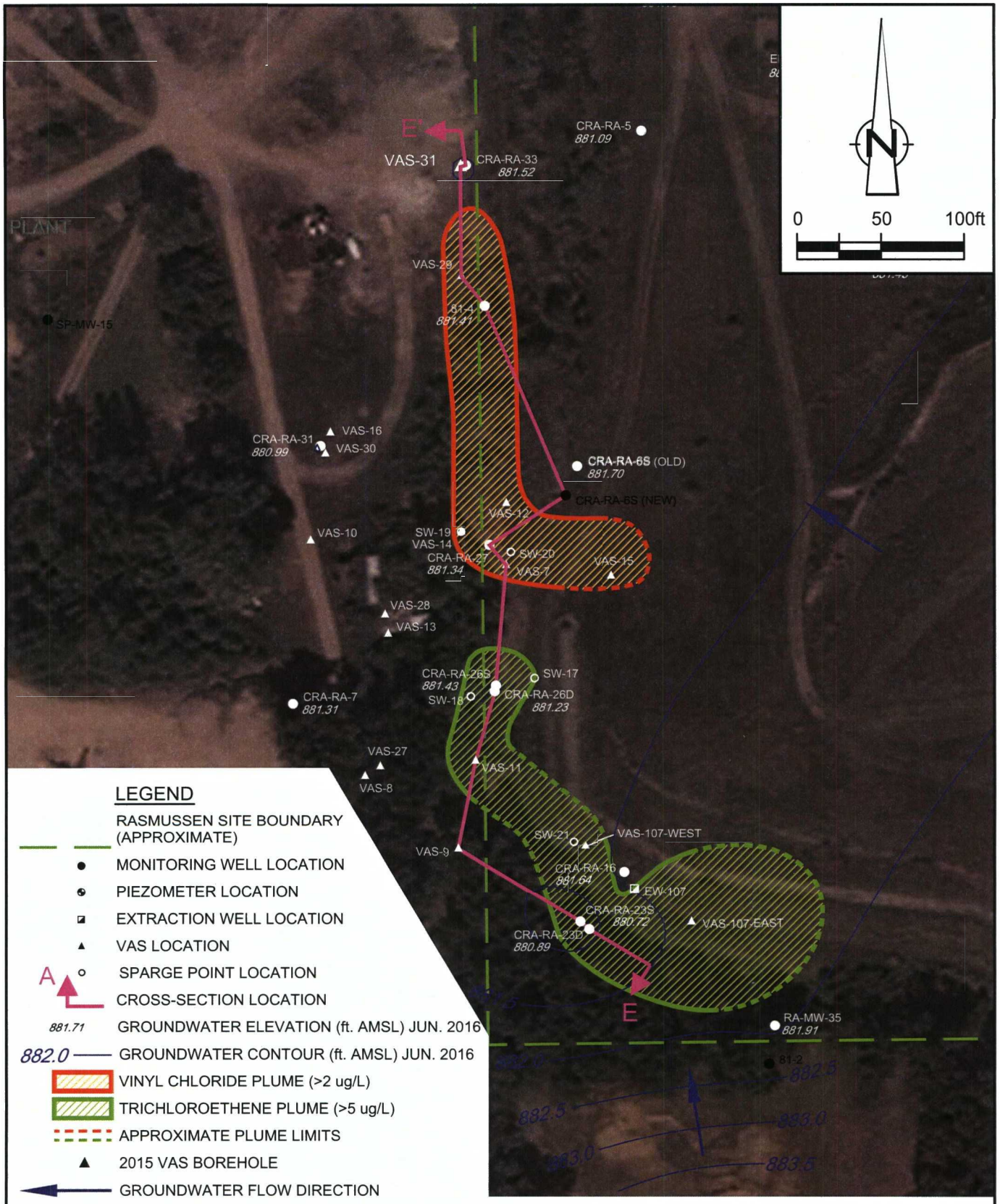
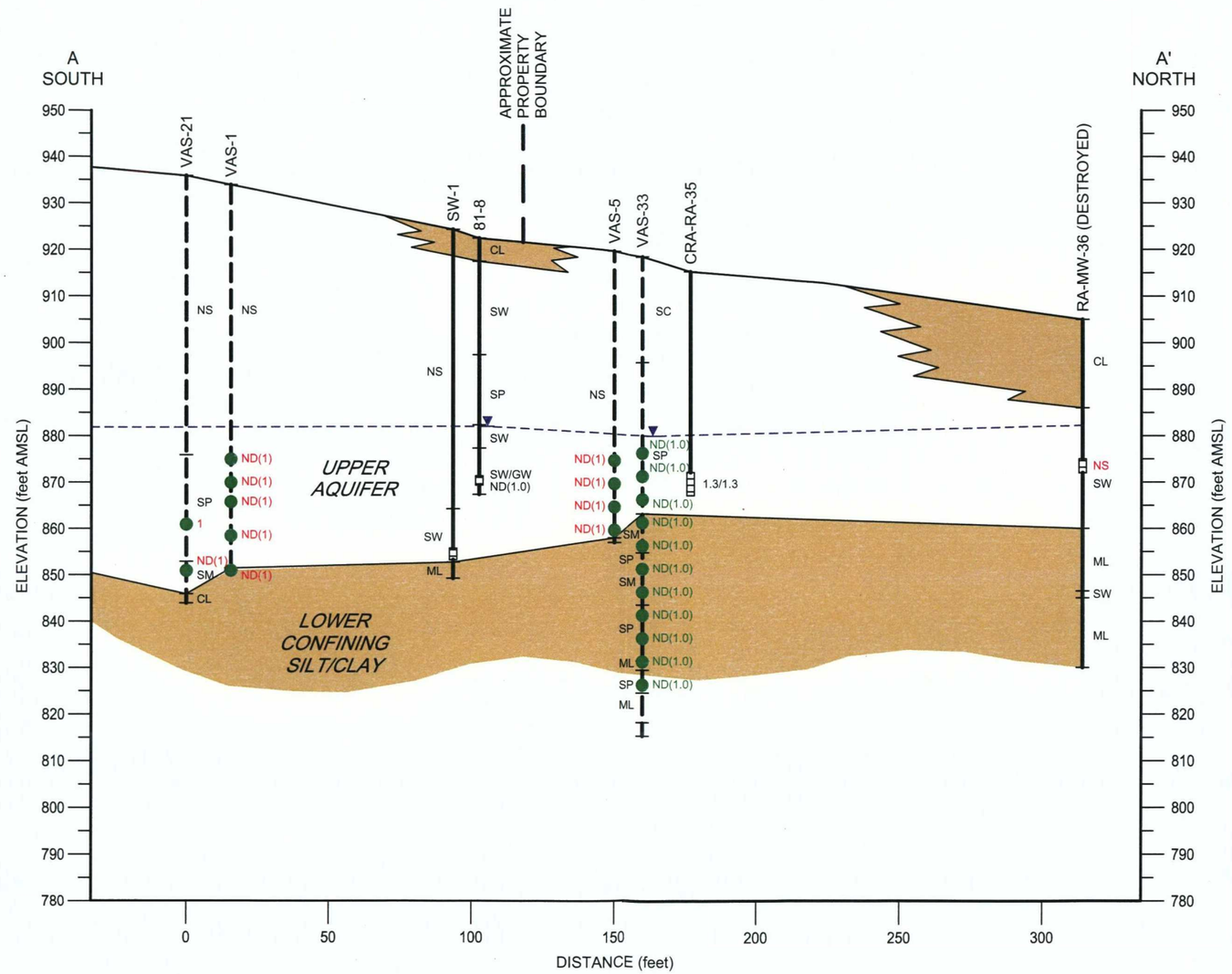


figure 3.2

CROSS-SECTION LOCATION MAP - SOUTHERN PLUMES
RASMUSSEN LANDFILL SITE
Livingston County, Michigan

GHD

32504-35(006)GN-WA003 JUL 4/2016



SCALE: HORZ. 1" = 50'
VERT. 1" = 30'

LEGEND

CRA0-RA-4 — WELL DESIGNATION

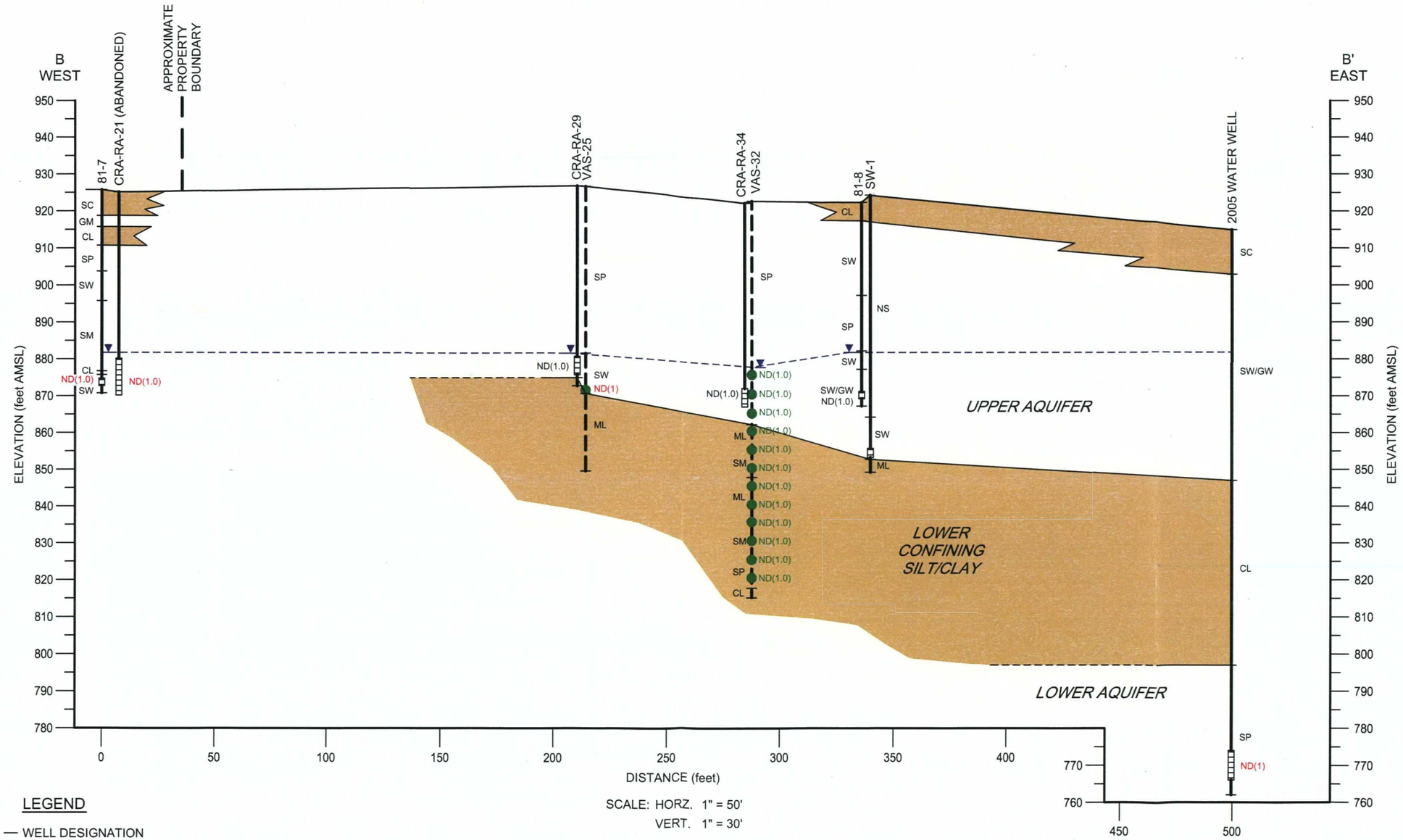
- GROUND SURFACE
- OBSERVATION WELL INSTALLATION
- GROUNDWATER ELEVATION
- DEPTH OF VAS SAMPLE
- STRATIGRAPHIC BOUNDARY
- CL — TYPICAL SOIL CLASSIFICATION (USCS)
- NS — NOT SAMPLED
- SCREENED INTERVAL

ND(1.0)	2016 VINYL CHLORIDE CONCENTRATION (ug/L)
ND(1.0)	2015 VINYL CHLORIDE CONCENTRATION (ug/L)
ND(1)	1994-2004 VINYL CHLORIDE CONCENTRATION (ug/L)
NS	NOT SAMPLED
ND(1)	NOT DETECTED
1.3/1.3	DUPLICATE SAMPLE

figure 3.3

CROSS-SECTION A-A'
RASMUSSEN LANDFILL SITE
Livingston County, Michigan

32504-35(006)GN-WA004 JUL 4/2016



LEGEND

CRA0-RA-4 — WELL DESIGNATION

GROUND SURFACE

— OBSERVATION WELL INSTALLATION

— GROUNDWATER ELEVATION

— DEPTH OF VAS SAMPLE

— STRATIGRAPHIC BOUNDARY

CL — TYPICAL SOIL CLASSIFICATION (USCS)

NS — NOT SAMPLED

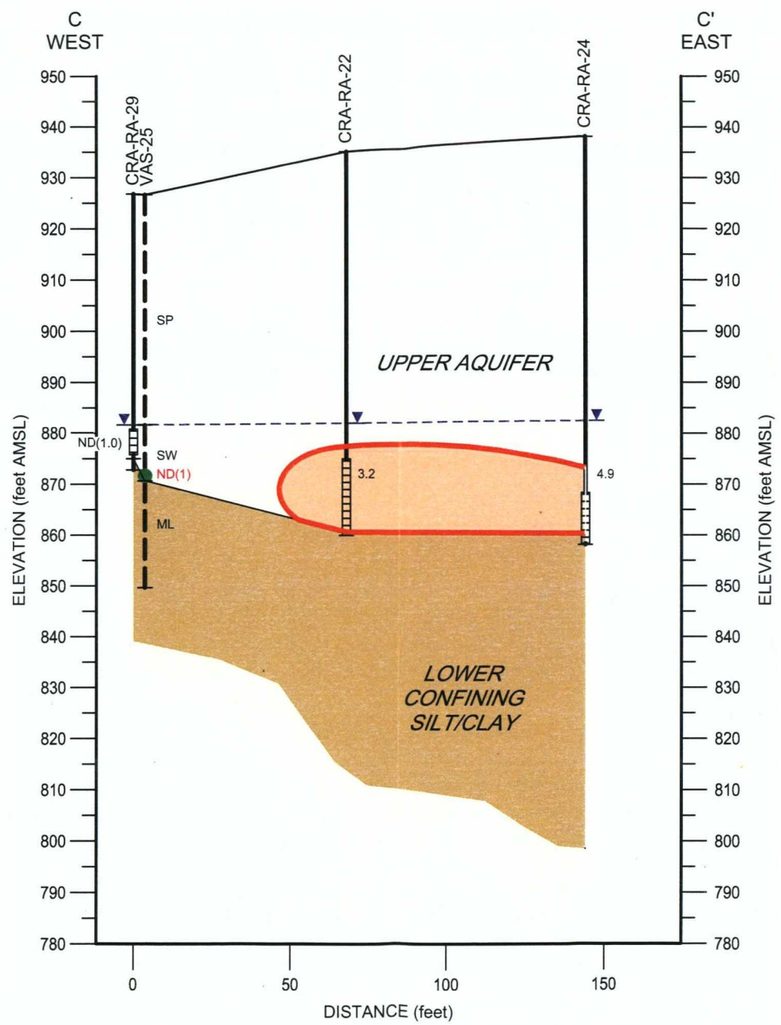
— SCREENED INTERVAL

ND(1.0)	2016 VINYL CHLORIDE CONCENTRATION (ug/L)
ND(1.0)	2015 VINYL CHLORIDE CONCENTRATION (ug/L)
ND(1.0)	2006-2011 VINYL CHLORIDE CONCENTRATION (ug/L)
NS	NOT SAMPLED
ND(1)	NOT DETECTED

figure 3.4

CROSS-SECTION B-B'
RASMUSSEN LANDFILL SITE
Livingston County, Michigan

32504-35(006)GN-WA004 JUL 4/2016



LEGEND

CRA0-RA-4 — WELL DESIGNATION

GROUND SURFACE

— OBSERVATION WELL INSTALLATION

— GROUNDWATER ELEVATION

— DEPTH OF VAS SAMPLE

— STRATIGRAPHIC BOUNDARY

CL — TYPICAL SOIL CLASSIFICATION (USCS)

NS — NOT SAMPLED

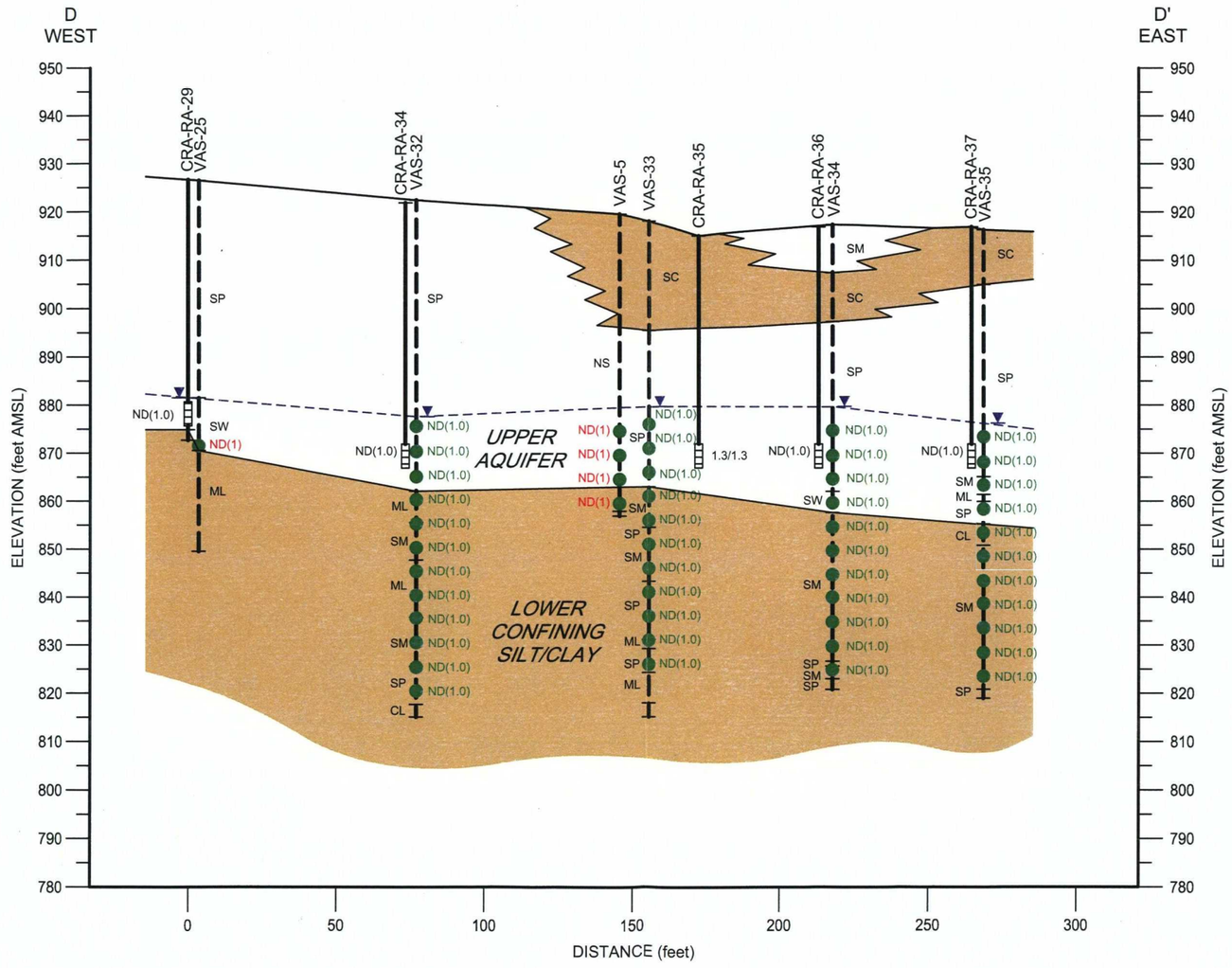
— SCREENED INTERVAL

4.9	2016 VINYL CHLORIDE CONCENTRATION (ug/L)
ND(1)	2002 VINYL CHLORIDE CONCENTRATION (ug/L)
NS	NOT SAMPLED
ND(1.0)	NOT DETECTED
	VINYL CHLORIDE PLUME (>2 ug/L)

figure 3.5

CROSS-SECTION C-C'
RASMUSSEN LANDFILL SITE
Livingston County, Michigan

32504-35(006)GN-WA004 JUL 4/2016



LEGEND

CRA0-RA-4 — WELL DESIGNATION

GROUND SURFACE

— OBSERVATION WELL INSTALLATION

— GROUNDWATER ELEVATION

— DEPTH OF VAS SAMPLE

— STRATIGRAPHIC BOUNDARY

CL — TYPICAL SOIL CLASSIFICATION (USCS)

NS — NOT SAMPLED

— SCREENED INTERVAL

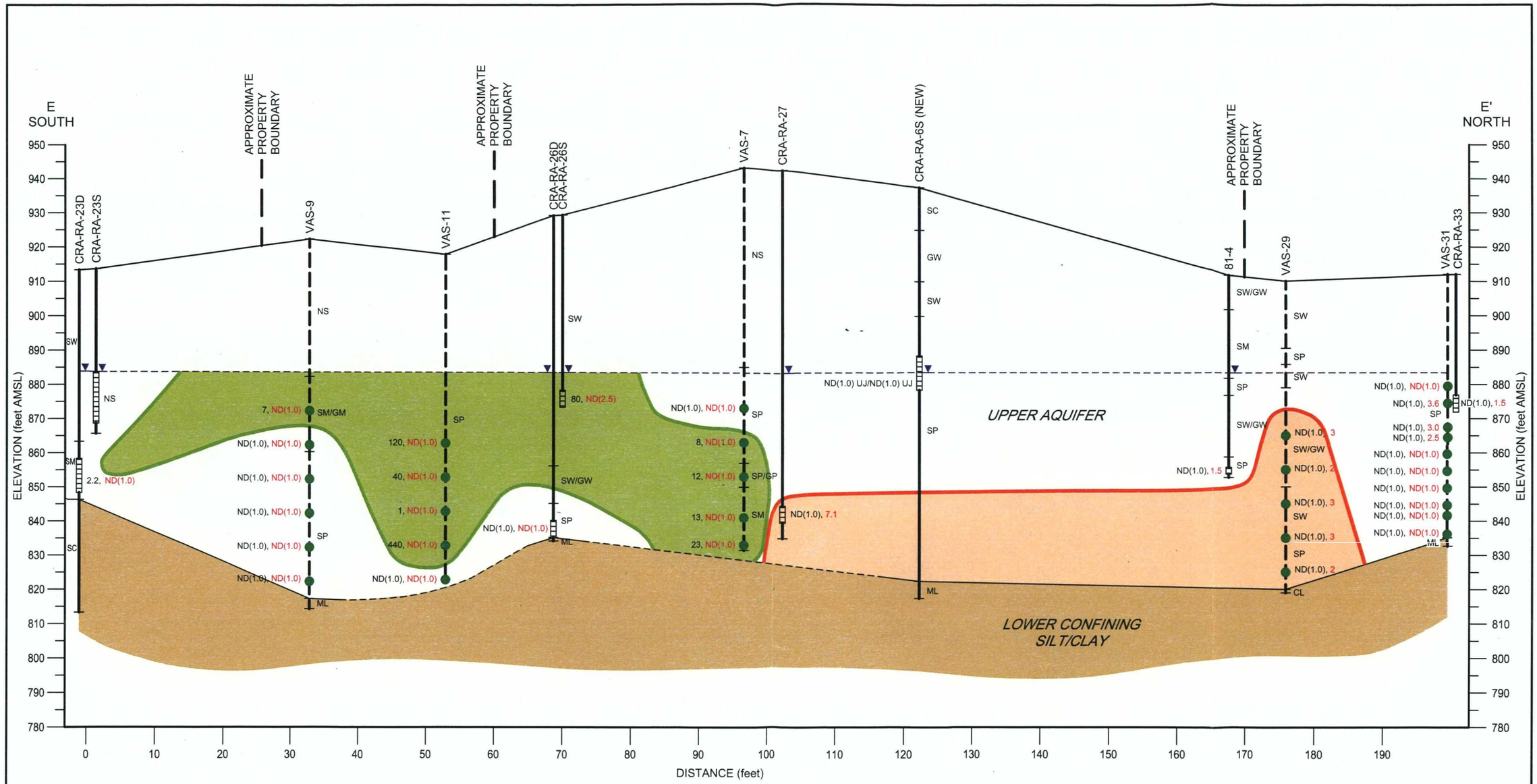
ND(1.0)	2016 VINYL CHLORIDE CONCENTRATION (ug/L)
ND(1.0)	2015 VINYL CHLORIDE CONCENTRATION (ug/L)
5	2002 VINYL CHLORIDE CONCENTRATION (ug/L)
NS	NOT SAMPLED
ND(1)	NOT DETECTED
1.3/1.3	DUPLICATE SAMPLE

VINYL CHLORIDE PLUME (>2 ug/L)

figure 3.6

CROSS-SECTION D-D'
RASMUSSEN LANDFILL SITE
Livingston County, Michigan

32504-35(006)GN-WA004 JUL 4/2016



LEGEND

- CRA0-RA-4 — WELL DESIGNATION
- GROUND SURFACE
- OBSERVATION WELL INSTALLATION
- GROUNDWATER ELEVATION
- DEPTH OF VAS SAMPLE
- STRATIGRAPHIC BOUNDARY
- CL — TYPICAL SOIL CLASSIFICATION (USCS)
- NS — NOT SAMPLED
- SCREENED INTERVAL

83	TCE CONCENTRATION (ug/L)
8.6	VINYL CHLORIDE CONCENTRATION (ug/L)
ND(1.0)	NOT DETECTED
UJ	NOT DETECTED; ESTIMATED DETECTION LIMIT

- VINYL CHLORIDE PLUME (>2 ug/L)
- TRICHLOROETHENE PLUME (>5 ug/L)

GHD

figure 3.7

CROSS-SECTION E-E'
RASMUSSEN LANDFILL SITE
Livingston County, Michigan

32504-35(006)GN-WA002 JUL 4/2016

TABLES

Table 2.1

Summary of Stabilization Parameters
Rasmussen Site
Livingston County, Michigan

Location	Sample Depth (feet below ground surface)	Sample Elevation (feet above mean sea level)	Sample Depth (feet below water table)	Sample Number	Date	Time	Depth to Water (Feet below top of riser)	Temperature (C)	Conductivity (mS/cm)	Turbidity NTU	pH s.u.	ORP (mV)	Volume Purged (gallons)
VAS-31	30 - 45	879 64	0 - 5	001	4/21/2015	14 00	31 9	11 2	0 75	25	6 98	188	60
VAS-31	35 - 40	874 64	5 - 10	002	4/21/2015	15 00	35 3	11 30	1 05	297	7 10	-75	50
VAS-31	42 - 47	867 64	12 - 17	003	4/21/2015	16 30	32 75	11 20	1 23	108	7 10	-107	70
VAS-31	45 - 50	864.64	15 - 20	004/005	4/22/2015	8 30	32 35	11 20	1 28	16	7 00	-109	35
VAS-31	50 - 55	859 64	20 - 25	006	4/22/2015	9 35	32 65	11.10	1 34	11	7 00	-88	40
VAS-31	55 - 60	854 64	25 - 30	007	4/22/2015	10 40	32 45	11 10	1 36	13	7 00	-74	45
VAS-31	60 - 65	849 64	30 - 35	008	4/22/2015	11:40	32 55	11 11	1 31	162	7 12	-70	35
VAS-31	65 - 70	844 64	35 - 40	009	4/22/2015	14 05	33 02	10 97	1 25	187	7 17	-85	33
VAS-31	68 - 73	841 64	38 - 43	010	4/22/2015	13 40	31 90	11 10	1 38	9	7 00	-90	55
VAS-31	73 5 - 78 5	836 14	43 5 - 48 5	011/012	4/23/2015	8 05	32 30	11 40	1 79	350	7 00	-98	60
VAS-32	45 - 50	875 06	0 - 5	048	5/5/2015	14 50	47 10	11 70	0 621	11 1	5 70	106	29
VAS-32	50 - 55	870 06	5 - 10	049/050	5/5/2015	16 05	42 10	11 59	0 693	470	5 86	140	19
VAS-32	55 - 60	865 06	10 - 15	051	5/5/2015	17 25	42 35	11 56	0 903	297	5 66	106	20
VAS-32	60 - 65	860 06	15 - 20	052	5/6/2015	9 30	44 39	13 58	1 08	>1000	6.11	-65	24 5
VAS-32	65 - 70	855 06	20 - 25	053	5/6/2015	11 15	60 65	15 30	1 07	561	6 44	-77	7
VAS-32	70 - 75	850 06	25 - 30	054	5/6/2015	12.45	61 85	18 43	1 09	276	6 17	-87	9
VAS-32	75 - 80	845 06	30 - 35	055	5/6/2015	14 15	64 10	17 10	1 12	>1000	6 29	-89	3 5
VAS-32	80 - 85	840 06	35 - 40	056	5/6/2015	15 50	69 75	15 70	1 10	>1000	6 20	-86	3
VAS-32	85 - 90	835 06	40 - 45	057	5/6/2015	17 45	62 00	16 39	0 969	>1000	6 27	-116	17
VAS-32	90 - 95	830 06	45 - 50	058	5/7/2015	9 20	62 40	13 18	0 988	315	6 78	-119	21
VAS-32	95 - 100	825 06	50 - 55	059/060	5/7/2015	11 15	52 45	12 71	1 09	202	6.71	-93	24
VAS-32	100 - 105	820 06	55 - 60	061	5/7/2015	13 50	52 10	13 95	1.11	>1000	6 67	-99	27
VAS-33	40 - 45	875 74	0 - 5	013	4/23/2015	13 05	40 88	11 18	0 800	20 4	6 73	-30	30
VAS-33	45 - 50	870 74	5 - 10	014	4/23/2015	13 45	40 75	11 22	0 777	295	6.79	39	30
VAS-33	50 - 55	865 74	10 - 15	015	4/23/2015	14.30	40 75	11 23	0.779	50 4	6 83	-66	30
VAS-33	55 - 60	860 74	15 - 20	016	4/23/2015	15 40	48 00	11 26	0 806	575	6 95	-65	7 5
VAS-33	60 - 65	855 74	20 - 25	017	4/24/2015	9 15	46 55	11 24	0 828	24 7	6 83	-92	18
VAS-33	65 - 70	850 74	25 - 30	018	4/24/2015	11 20	47 00	14 11	0 886	12 3	6 83	-68	7 5
VAS-33	70 - 75	845 74	30 - 35	019	4/27/2015	10.45	46 00	12 27	0 860	373	6 74	-132	15
VAS-33	75 - 80	840 74	35 - 40	020	4/27/2015	13.45	49 95	11 63	0 866	953	6 86	-89	20
VAS-33	80 - 85	835 74	40 - 45	021	4/27/2015	15.10	49.05	11 60	0 870	555	6 89	-73	20
VAS-33	85 - 90	830 74	45 - 50	022	4/27/2015	16.50	47 50	11 61	0 872	>1000	6 84	-70	20
VAS-33	90 - 95	825 74	50 - 55	023	4/28/2015	9 10	49 50	11 71	0 862	>1000	6 89	-113	16

Table 2.1

Summary of Stabilization Parameters
Rasmussen Site
Livingston County, Michigan

Location	Sample Depth (feet below ground surface)	Sample Elevation (feet above mean sea level)	Sample Depth (feet below water table)	Sample Number	Date	Time	Depth to Water (Feet below top of riser)	Temperature (C)	Conductivity (mS/cm)	Turbidity NTU	pH s.u.	ORP (mV)	Volume Purged (gallons)
VAS-34	40 - 45	875 02	0 - 5	024/025	4/28/2015	14 40/14 4	39 70	11 91	0 671	34	6 84	-14	25
VAS-34	45 - 50	870 02	5 - 10	026	4/28/2015	15 25	39 95	11 86	0 778	206	6.87	-39	24
VAS-34	50 - 55	865 02	10 - 15	027	4/28/2015	16 30	40 35	12 15	0 785	504	6 90	-50	24
VAS-34	55 - 60	860 02	15 - 20	028	4/29/2015	8 15	40 25	11 24	0 792	>1000	6 46	-80	24
VAS-34	60 - 65	855 02	20 - 25	029	4/29/2015	9 45	48.85	12 13	0 824	635	6.82	-92	12
VAS-34	65 - 70	850 02	25 - 30	030	4/29/2015	11 35	48 65	13 76	0 854	330	6 93	-53	12
VAS-34	70 - 75	845 02	30 - 35	031	4/29/2015	14 10	49 59	13 88	0 851	>1000	6 95	-56	8
VAS-34	75 - 80	840 02	35 - 40	032	4/29/2015	16·00	50 35	14 02	0 819	>1000	7 03	-35	8
VAS-34	80 - 85	835 02	40 - 45	033	4/30/2015	8 40	47 30	11.95	0.795	>1000	6 77	-141	8
VAS-34	85 - 90	830 02	45 - 50	034	4/30/2015	10 25	64 30	11 66	0 807	834	6 86	-98	10
VAS-34	90 - 95	825 02	50 - 55	035	4/30/2015	12 25	64.19	12 20	0 796	>1000	7 13	-49	8
VAS-35	40 - 45	873 94	0 - 5	036	4/30/2015	17 00	39 50	11 30	0 604	391	6 88	90	24
VAS-35	45 - 50	868 94	5 - 10	037/038	5/1/2015	8·25/8 35	38 60	11 27	0 609	404	6 68	34	24
VAS-35	50 - 55	863 94	10 - 15	039	5/1/2015	10.10	39 45	11 95	0 663	>1000	6 85	-36	20
VAS-35	55 - 60	858 94	15 - 20	040	5/1/2015	11·45	39 00	12 08	0 709	240	6 81	-77	40
VAS-35	60 - 65	853 94	20 - 25	041	5/1/2015	14 30	49.50	14 62	0 741	>1000	6.81	-99	6
VAS-35	65 - 70	848 94	25 - 30	042	5/4/2015	11.40	50 72	11.93	0 763	195	6 62	-82	23
VAS-35	70 - 75	843 94	30 - 35	043	5/4/2015	13 50	51 41	11 96	0 757	215	6 74	-112	15
VAS-35	75 - 80	838 94	35 - 40	044	5/4/2015	15 35	52 40	12 42	0 766	40 9	6 80	-108	20
VAS-35	80 - 85	833 94	40 - 45	045	5/4/2015	17 20	50 15	12 99	0 776	879	6 78	-111	29
VAS-35	85 - 90	828 94	45 - 50	046	5/5/2015	8 40	50 65	11 66	0 865	601	5 32	-119	24
VAS-35	90 - 95	823 94	50 - 55	047	5/5/2015	10 15	52 10	12 28	0 870	181	5 80	-109	Not listed

Table 3.1

Summary of Detected Compounds
2015 VAS Results
Rasmussen Site
Livingston County, Michigan

Location	Sample Depth (feet below ground surface)	Sample Elevation (feet above mean sea level)	Benzene (µg/L)	1,1,1-Trichloroethane (µg/L)	Vinyl Chloride (µg/L)	Number	Date
Part 201 December 2013 Generic RDWCC			5	200	2		
VAS-31/CRA-RA-33	30 - 45	879.64	ND(1.0)	1.1	ND(1.0)	001	4/21/2015
VAS-31/CRA-RA-33	35 - 40	874.64	3.1	ND(1 0)	3.6	002	4/21/2015
VAS-31/CRA-RA-33	42 - 47	867.64	1 8	ND(1 0)	3 0	003	4/21/2015
VAS-31/CRA-RA-33	45 - 50	864.64	ND(1.0)	ND(1.0)	2.5	004	4/22/2015
VAS-31/CRA-RA-33	45 - 50	864.64	ND(1.0)	ND(1.0)	2 5	005	4/22/2015
VAS-31/CRA-RA-33	50 - 55	859 64	ND(1.0)	ND(1.0)	ND(1 0)	006	4/22/2015
VAS-31/CRA-RA-33	55 - 60	854.64	ND(1.0)	ND(1.0)	ND(1.0)	007	4/22/2015
VAS-31/CRA-RA-33	60 - 65	849 64	ND(1.0)	ND(1.0)	ND(1 0)	008	4/22/2015
VAS-31/CRA-RA-33	65 - 70	844 64	ND(1.0)	ND(1.0)	ND(1 0)	009	4/22/2015
VAS-31/CRA-RA-33	68 - 73	841 64	ND(1.0)	ND(1.0)	ND(1.0)	010	4/22/2015
VAS-31/CRA-RA-33	73.5 - 78.5	836 14	ND(1.0)	ND(1.0)	ND(1 0)	011	4/23/2015
VAS-31/CRA-RA-33	73.5 - 78.5	836 14	ND(1.0)	ND(1.0)	ND(1.0)	012	4/23/2015
VAS-32/CRA-RA-34	45 - 50	875 06	ND(1.0)	ND(1 0)	ND(1 0)	048	5/2/2015
VAS-32/CRA-RA-34	50 - 55	870 06	ND(1 0)	ND(1 0)	ND(1 0)	049	5/2/2015
VAS-32/CRA-RA-34	50 - 55	870.06	ND(1.0)	ND(1.0)	ND(1.0)	050	5/2/2015
VAS-32/CRA-RA-34	55 - 60	865 06	ND(1.0)	ND(1.0)	ND(1 0)	051	5/2/2015
VAS-32/CRA-RA-34	60 - 65	860 06	ND(1.0)	ND(1.0)	ND(1 0)	052	5/6/2015
VAS-32/CRA-RA-34	65 - 70	855.06	ND(1.0)	ND(1.0)	ND(1 0)	053	5/6/2015
VAS-32/CRA-RA-34	70 - 75	850.06	ND(1.0)	ND(1.0)	ND(1 0)	054	5/6/2015
VAS-32/CRA-RA-34	75 - 80	845 06	ND(1.0)	ND(1.0)	ND(1 0)	055	5/6/2015
VAS-32/CRA-RA-34	80 - 85	840 06	ND(1 0)	ND(1.0)	ND(1.0)	056	5/6/2015
VAS-32/CRA-RA-34	85 - 90	835 06	ND(1.0)	ND(1.0)	ND(1.0)	057	5/6/2015
VAS-32/CRA-RA-34	90 - 95	830 06	ND(1.0)	ND(1.0)	ND(1 0)	058	5/7/2015
VAS-32/CRA-RA-34	95 - 100	825.06	ND(1 0)	ND(1 0)	ND(1 0)	059	5/7/2015
VAS-32/CRA-RA-34	95 - 100	825.06	ND(1 0)	ND(1.0)	ND(1.0)	060	5/7/2015
VAS-32/CRA-RA-34	100 - 105	820.06	ND(1 0)	ND(1 0)	ND(1 0)	061	5/7/2015

Notes:

RDWCC	Residential Drinking Water Cleanup Criteria.
3	Concentration is greater than the RDWCC.
ND (1 0)	Parameter not detected at a concentration above the detection limit in parentheses.

Table 3.1

Summary of Detected Compounds
2015 VAS Results
Rasmussen Site
Livingston County, Michigan

Location	Sample Depth (feet below ground surface)	Sample Elevation (feet above mean sea level)	Benzene (µg/L)	1,1,1-Trichloroethane (µg/L)	Vinyl Chloride (µg/L)	Number	Date
Part 201 December 2013 Generic RDWCC			5	200	2		
VAS-33/CRA-RA-35	40 - 45	875.74	ND(1 0)	ND(1 0)	ND(1.0)	013	4/23/2015
VAS-33/CRA-RA-35	45 - 50	870.74	ND(1 0)	ND(1 0)	ND(1.0)	014	4/23/2015
VAS-33/CRA-RA-35	50 - 55	865 74	ND(1 0)	ND(1.0)	ND(1 0)	015	4/23/2015
VAS-33/CRA-RA-35	55 - 60	860 74	ND(1 0)	ND(1.0)	ND(1.0)	016	4/23/2015
VAS-33/CRA-RA-35	60 - 65	855 74	ND(1 0)	ND(1 0)	ND(1 0)	017	4/24/2015
VAS-33/CRA-RA-35	65 - 70	850 74	ND(1.0)	ND(1 0)	ND(1.0)	018	4/24/2015
VAS-33/CRA-RA-35	70 - 75	845.74	ND(1.0)	ND(1 0)	ND(1.0)	019	4/27/2015
VAS-33/CRA-RA-35	75 - 80	840.74	ND(1.0)	ND(1.0)	ND(1.0)	020	4/27/2015
VAS-33/CRA-RA-35	80 - 85	835.74	ND(1 0)	ND(1.0)	ND(1.0)	021	4/27/2015
VAS-33/CRA-RA-35	85 - 90	830 74	ND(1 0)	ND(1 0)	ND(1.0)	022	4/27/2015
VAS-33/CRA-RA-35	90 - 95	825 74	ND(1 0)	ND(1.0)	ND(1.0)	023	4/28/2015
VAS-34/CRA-RA-36	40 - 45	875.02	ND(1.0)	ND(1.0)	ND(1 0)	024	4/28/2015
VAS-34/CRA-RA-36	40 - 45	875 02	ND(1.0)	ND(1 0)	ND(1 0)	025	4/28/2015
VAS-34/CRA-RA-36	45 - 50	870 02	ND(1 0)	ND(1 0)	ND(1.0)	026	4/28/2015
VAS-34/CRA-RA-36	50 - 55	865.02	ND(1 0)	ND(1.0)	ND(1 0)	027	4/28/2015
VAS-34/CRA-RA-36	55 - 60	860 02	ND(1.0)	ND(1 0)	ND(1 0)	028	4/29/2015
VAS-34/CRA-RA-36	60 - 65	855.02	ND(1.0)	ND(1.0)	ND(1 0)	029	4/29/2015
VAS-34/CRA-RA-36	65 - 70	850.02	ND(1.0)	ND(1.0)	ND(1.0)	030	4/29/2015
VAS-34/CRA-RA-36	70 - 75	845.02	ND(1 0)	ND(1.0)	ND(1.0)	031	4/29/2015
VAS-34/CRA-RA-36	75 - 80	840.02	ND(1 0)	ND(1.0)	ND(1.0)	032	4/29/2015
VAS-34/CRA-RA-36	80 - 85	835 02	ND(1 0)	ND(1.0)	ND(1.0)	033	4/30/2015
VAS-34/CRA-RA-36	85 - 90	830 02	ND(1.0)	ND(1.0)	ND(1.0)	034	4/30/2015
VAS-34/CRA-RA-36	90 - 95	825.02	ND(1.0)	ND(1 0)	ND(1 0)	035	4/30/2015

Notes:

RDWCC	Residential Drinking Water Cleanup Criteria.
3	Concentration is greater than the RDWCC
ND (1 0)	Parameter not detected at a concentration above the detection limit in parentheses

Table 3.1

Summary of Detected Compounds
2015 VAS Results
Rasmussen Site
Livingston County, Michigan

Location	Sample Depth (feet below ground surface)	Sample Elevation (feet above mean sea level)	Benzene (µg/L)	1,1,1-Trichloroethane (µg/L)	Vinyl Chloride (µg/L)	Number	Date
Part 201 December 2013 Generic RDWCC			5	200	2		
VAS-35/CRA-RA-37	40 - 45	873.94	ND(1.0)	ND(1.0)	ND(1 0)	036	4/30/2015
VAS-35/CRA-RA-37	45 - 50	868.94	ND(1.0)	ND(1.0)	ND(1.0)	037	5/1/2015
VAS-35/CRA-RA-37	45 - 50	868.94	ND(1 0)	ND(1 0)	ND(1 0)	038	5/1/2015
VAS-35/CRA-RA-37	50 - 55	863.94	ND(1 0)	ND(1.0)	ND(1 0)	039	5/1/2015
VAS-35/CRA-RA-37	55 - 60	858.94	ND(1 0)	ND(1.0)	ND(1 0)	040	5/1/2015
VAS-35/CRA-RA-37	60 - 65	853 94	ND(1 0)	ND(1 0)	ND(1 0)	041	5/1/2015
VAS-35/CRA-RA-37	65 - 70	848.94	ND(1.0)	ND(1.0)	ND(1 0)	042	5/4/2015
VAS-35/CRA-RA-37	70 - 75	843 94	ND(1 0)	ND(1 0)	ND(1 0)	043	5/4/2015
VAS-35/CRA-RA-37	75 - 80	838 94	ND(1.0)	ND(1.0)	ND(1.0)	044	5/4/2015
VAS-35/CRA-RA-37	80 - 85	833.94	ND(1 0)	ND(1.0)	ND(1 0)	045	5/4/2015
VAS-35/CRA-RA-37	85 - 90	828 94	ND(1.0)	ND(1.0)	ND(1 0)	046	5/5/2015
VAS-35/CRA-RA-37	90 - 95	823 94	ND(1.0)	ND(1 0)	ND(1 0)	047	5/5/2015

Notes

RDWCC	Residential Drinking Water Cleanup Criteria
3	Concentration is greater than the RDWCC
ND (1.0)	Parameter not detected at a concentration above the detection limit in parentheses.

Table 3.2

Groundwater Quality Results - Monitoring Wells
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
CRA-RA-33	GW-DT-002	6/23/2015	*Duplicate*	ND(1 0)	ND(1 0)	ND(10)	ND(10)	ND(10)	2 7	ND(1 0)	ND(1 0)	ND(1 0)	ND(1 0)	ND(1 0)	2 6	ND(1 0)
CRA-RA-33	GW-DT-002	6/23/2015	*Duplicate*	ND(1 0)	ND(1 0)	ND(10)	ND(10)	ND(10)	2 7	ND(1 0)	ND(1 0)	ND(1 0)	ND(1 0)	ND(1 0)	2 6	ND(1 0)
CRA-RA-33	GW-DT-004	9/2/2015		ND(1 0)	ND(1 0)	ND(10)	ND(10)	ND(10)	2 4	ND(1 0)	ND(1 0)	ND(1 0)	ND(1 0)	ND(1 0)	2 4	ND(1 0)
CRA-RA-33	GW-DT-006	11/25/2015		ND(1 0)	ND(1 0)	ND(10)	ND(10)	ND(10)	1 8	ND(1 0)	ND(1 0)	ND(1 0)	ND(1 0)	ND(1 0)	2 8	ND(1 0)
CRA-RA-33	GW-DT-004	3/8/2016		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)	3 1	ND(1 0)
CRA-RA-33	GW-BW-006	6/6/2016		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 5	ND(1 0)
			Change						Down 0 4 µg/L						Down 1 6 µg/L	
CRA-RA-34	GW-DT-004	6/23/2015		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)
CRA-RA-34	GW-DT-003	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)
CRA-RA-34	GW-DT-005	11/25/2015		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)
CRA-RA-34	GW-DT-003	3/8/2016		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-34	GW-BW-001	6/6/2016		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)
			Change						Stable, all Non-Detect							
CRA-RA-35	GW-DT-003	6/23/2015		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)	2 1	ND(1 0)
CRA-RA-35	GW-DT-001	7/20/2015		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)	1 9	ND(1 0)
CRA-RA-35	GW-DT-002	7/20/2015	*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 8	ND(1 0)
CRA-RA-35	GW-DT-005	9/2/2015		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)	1 7	ND(1 0)
CRA-RA-35	GW-DT-006	9/2/2015	*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 8	ND(1 0)
CRA-RA-35	GW-DT-003	11/25/2015		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)	1 8	ND(1 0)
CRA-RA-35	GW-DT-004	11/25/2015	*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 7	ND(1 0)
CRA-RA-35	GW-DT-005	3/8/2016		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)	1 9	ND(1 0)
CRA-RA-35	GW-DT-006	3/8/2016	*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 8	ND(1 0)
CRA-RA-35	GW-BW-004	6/6/2016		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)	1 3	ND(1 0)
CRA-RA-35	GW-BW-005	6/6/2016	*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 3	ND(1 0)
			Change												Down 0 5 µg/L	
CRA-RA-36	GW-DT-002	6/23/2015		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)
CRA-RA-36	GW-DT-002	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)
CRA-RA-36	GW-DT-002	11/25/2015		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)
CRA-RA-36	GW-DT-002	3/8/2016		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-36	GW-BW-003	6/6/2016		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)
			Change						Stable, all Non-Detect							
CRA-RA-37	GW-DT-001	6/23/2015		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)
CRA-RA-37	GW-DT-001	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)
CRA-RA-37	GW-DT-001	11/25/2015		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)
CRA-RA-37	GW-DT-001	3/8/2016		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-37	GW-BW-002	6/6/2016		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)
			Change						Stable, all Non-Detect							

(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

Appendices

Appendix A
Responses to Comments

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

RICK SNYDER
GOVERNOR

DAN WYANT
DIRECTOR

June 9, 2015

Mr. Howard Caine
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard (SR-6J)
Chicago, Illinois 60604-3507

Dear Mr. Caine:

SUBJECT: Comments Regarding the Rasmussen 2015 Groundwater Investigation Report Submitted by Conestoga-Rovers & Associates

The Michigan Department of Environmental Quality (MDEQ) appreciates the opportunity to review and provide comments regarding the 2015 Groundwater Investigation Report submitted by Conestoga-Rovers & Associates (CRA) on June 3, 2015, on behalf of the Rasmussen Site Remediation Group. Listed below are both general and some more specific comments for your consideration.

Comment No. 1: In the first paragraph of the introduction, it states that the United States Environmental Protection Agency (USEPA) requested additional groundwater investigation; it should be clear that per the referenced third Five-Year Review, the objective of the required investigation(s) is to "fully characterize and delineate" contamination. The introduction of this investigation report should restate this exact objective. As is, the text states, "request for investigations" and "to address data gaps." This does not identify what the objectives are.

Comment No. 2; page 1, last paragraph: Section 4 does not actually recommend additional investigative work to fully delineate the plumes beneath the property west of the site, as indicated. Therefore, the text should be revised on page 1. Section 4 should propose next investigative steps and/or identify a date by which an additional plan for investigation will be submitted. Section 4 needs to include recommendations for fully delineating the extent of the southern contaminant plumes as the objectives of the investigation have not been met, and issues identified during previous Five-Year Reviews have not been resolved pertaining to the southern plume.

It should be noted that the vertical aquifer sampling (VAS) conducted (VAS-32 through VAS-35) and proposed monitor well (MW) installation at those "northern plume" locations appear appropriate for delineation of that plume at this time; however, as noted, the southern plume has not been defined by VAS-31. Contaminants of concern are present above criteria an unknown distance and direction outward from the location of VAS-31. Installing a permanent MW alone at the location of VAS-31 does not define contamination in this direction, but the well installation should proceed. Given problems

noted in the field during the VAS work, the depth at which this well should be screened needs to be discussed (see "Points to Consider" discussion below). The VAS results indicate that the southern sparge system has not prevented the migration of contamination during treatment system operation, which is inconsistent with the Record of Decision (ROD). Additional, but not yet discussed monitoring wells are needed to define the southern plume(s).

Delineating the extent is also necessary for determining what and where land-use (groundwater) restrictions are necessary on the Spiegelberg property. A plan for that should be developed at this time.

Comment No 3; Section 3.1: This paragraph should be revised. The purpose of the northern plume "investigation" was to hopefully delineate the extent well enough, but it was also to provide additional data via monitor well hydraulic and chemical monitoring to better understand the unique groundwater flow pattern in the northwest corner of the Rasmussen property. That should be recognized and incorporated into this report. Similarly, regarding the southern plumes, the sampling well installation purpose was to hopefully define the extent of contamination known to be present at least to where there are monitoring locations along the (east) property boundary. Specifically, referencing downgradient of VAS-29/MW 81-4 as indicated in the text is an over-generalization of the issue and, thereby, minimizes the concern with southern portions of the southern plumes. This clarification needs to be incorporated into this report as well by recognizing the size of the plume(s) and where migration is occurring.

This section of the report references Figures 3.1 through 3.7 and indicates those figures show the distribution of contaminants of concern. The word "perceived" distribution needs to be inserted, as undefined boundaries of contaminants of concern can only be inferred given the monitoring network and that the extent is not known. Such estimates are usually depicted on figures as a dashed line to indicate an estimated boundary. The corresponding Figures should utilize dashed lines to show where the extent of contamination can only be estimated due to a lack of monitoring locations and the ongoing migration.

As a matter of semantics, the word "proposed" should be deleted from the next to last sentence as the investigation was initiated and VAS work completed last April/May; thus, the "investigations" are no longer "proposed."

Comment No. 4; Section 3.2, fourth paragraph, next to last sentence: Based on observations and a review of the boring logs, what is being described and depicted on cross-sections as a Lower Confining Silt/Clay is in many places, a dense sand (SP) or silt/sand (SM) mixture. The boring logs recorded samples as SP or SM; however, the cross-sections of this report show a definitive continuous cohesive unit across most of the site and describe it on the Figures as a Lower Confining Silt/Clay in spite of field observations and classification. The text of the report and all cross-sections should be revised accordingly. It should also be noted that refusal was not encountered in

VAS-33. Rather, the depth was the downhole limit of the drill rig utilized for this sampling and conditions. The boring log needs to be corrected.

Comment No. 5; Section 3.2, fifth paragraph, first sentence: Please revise this sentence to state, "VAS-32 results ***appear to*** delineate the extent of vinyl chloride ***in the northwest corner of the Rasmussen property."***

Comment No. 6; Section 3.2, sixth paragraph: Please replace this paragraph with the following: ***The groundwater flow direction in the northwest corner of the Rasmussen property consistently shows a downward gradient and unique flow pattern compared to other areas of the property. With the addition of permanent monitoring wells at the VAS locations (VAS-32 through VAS-35), groundwater elevation data will provide additional information that may help better understand flow regimes in the northwest portion of the site.***

Comment No. 7; Section 3.2, seventh paragraph, second sentence: Please revise this text to state, "CRA recommends the new monitoring wells be incorporated into the current quarterly groundwater elevation monitoring program ***to better characterize groundwater flow near the northwest portion of the Rasmussen property. CRA also...."***

Comment No. 8; Section 3.3, page 5: The end of this paragraph references "the Lower Confining Silt/Clay"; however, the material encountered is not a confining silt/clay but, rather, it is primarily dense sand. This unit may have some intermittent, more cohesive layers or lenses within, but do not appear to be consistent or competent across the investigation area. The text and cross-sections within the report should be revised accordingly.

Comment No. 9; Section 4.0: This Section does not include recommendations for additional investigation to delineate the extent of contamination as indicated (see page 1, last paragraph). Additional investigation is necessary in order to delineate the full extent of contamination.

Comment No. 10; Section 4.0, third paragraph: While it may have been hoped that the installation of VAS-31 would delineate the lateral extent of contamination in this direction, this did not happen. The text should be revised to indicate: ***VAS-31 was conducted to evaluate the extent of the southern plume and/or to confirm if contamination was migrating off-site during system operation, beyond the current monitoring well locations.*** It should be noted that Volatile Organic Compounds are now known to be present off-site above criteria, and contaminant migration is occurring during treatment system operation and the extent is greater than what was hoped, and remains undefined. That is inconsistent with the requirements of the ROD and issues identified during the Five-Year Review process. In addition to a monitoring well at VAS-31, monitoring wells will be required to fully delineate this contamination to the west and north. The VAS investigation also confirms that monitoring well CRA-7 is screened above the zone of contaminant transport; thus,

CRA-7 does not properly evaluate contaminant transport in that southern portion of the southern plume(s). CRA-7 should be replaced with a well that is properly screened at the correct elevation.

Comment No. 11; Cross-Sections: Please note that poorly graded sands with little fines, and sand/silt mixtures were encountered during the VAS investigation. In places, the density and transmissivity of these SP and SM materials decreased with depth; however, they do not represent a Lower Confining Silt/Clay. Based on observations, boring logs, etc., much of the material shown as the Lower Confining Silt/Clay on the cross-sections is actually dense sand or a silty-sand. The cross-sections should be revised to accurately reflect material encountered. The known and estimated extent of each unit/layer should be properly reflected. Depicting conditions on a Figure where there is no information should at least be qualified.

The material encountered near depth in VAS-33 is different than what was encountered near depth at VAS-35. However, as one example, the cross-sections show a competent, consistent Lower Confining Silt/Clay between these locations, yet much of the material is sand. Significant revisions to the cross-sections are necessary to accurately reflect site conditions.

Comment No. 12; VAS-33 Boring Log: This boring was not terminated because of "refusal." Instead, the downhole capacity of the drill rig utilized for the drilling conditions was maximized, and further downhole advancement placed recovery of the drill augers in jeopardy according to the driller. The term "Refusal" should be removed from the log and be replaced with "End of Boring."

Comment No. 13: The MDEQ agrees with the proposed location of an additional permanent monitor well(s) installation at this time, as qualified by the discussion in "Points to Consider" below.

Points to Consider

During field work overseen by the MDEQ, the representativeness and comparability of the groundwater analytical results from the first five intervals at location VAS-31 may be compromised due to the irregularities that occurred during profiling of VAS-31. As a result of these potentially compromised data, the MDEQ, USEPA, and CRA should discuss possible installation of a second screened interval at the VAS-31 location from 42-47 feet below ground surface (bgs) and just below the currently proposed interval. With the currently proposed interval (i.e., 35 – 40 feet bgs), the monitoring of these two 5-foot intervals will be designed to capture the highest levels of contamination identified at the VAS-31 location. The monitoring program is more likely to include the "actual" interval with the highest level of contamination if two screened well depths are installed to address this 35 – 47 feet bgs interval. In support of this proposal, it should also be noted that the Oxidation Reduction Potential values recorded for the lower additional interval (i.e., the 42 – 47 feet bgs) are more anomalous than the 35 – 40 feet bgs interval (see Table 2.1).

Given that the extent of the southern plume(s) migration onto the Spiegelberg property was not delineated; and will require the installation of at least three additional wells to define the extent in appropriate directions, it is worth considering the possibility of eliminating such a need by expanding the southern sparge system. This scenario is even more relevant if the property owner is unwilling to grant such access or if structures on his property or use of his property precludes proper well placement. The enhanced sparging can be designed to mitigate plume migration onto the Spiegelberg property. A monitoring point(s) at the location of VAS-31 remains necessary to evaluate treatment system performance and, hopefully, compliance at some point.

The MDEQ appreciates the opportunity to participate in a collaborative process to address these Five-Year Review issues regarding Rasmussen's site-related contamination. Please feel free to contact me if there are any questions regarding the comments and to schedule a conference call to discuss how to proceed given the two different proposals on how to address the results found at VAS-31 to reach consensus on a path moving forward. You may reach me at 517-284-5122; krawczykk@michigan.gov; or MDEQ, Remediation and Redevelopment Division, P.O. Box 30426, Lansing, Michigan 48909-7926.

Sincerely,

Keith Krawczyk
Senior Project Manager
Site Assessment and Site Management Unit
Superfund Section
Remediation and Redevelopment Division
517-284-5122

cc: Mr. Alan Deal, CRA
Mr. Eric Alexander, MDEQ
Ms. Daria W. Devantier, MDEQ
Mr. John Bradley, MDEQ

United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Date: August 14, 2015

Subject: Conference Call: Rasmussen's Dump Discussion on 2015 Groundwater Investigation Report

From: Howard Caine, RPM

To: File

Introduction and Purpose

The United States Environmental Protection Agency (EPA), Michigan Department of Environmental Quality (MDEQ), Conestoga-Rovers Associates (CRA, now known as GHD) and the Potentially Responsible Party (PRP) Group held a conference call to discuss discrepancies regarding sampling conducted for VAS-31 located on the Spiegelberg property for the southern plume. The purpose of the call was to resolve the issue associated with the sampling conducted and placement of the well screen for a groundwater monitoring well associated with vertical aquifer sample VAS-31.

The call took place on June 15, 2015 at 9:00 am Central time.

Participants

Howard Caine, U.S. EPA

Keith Krawczyk, MDEQ
John Bradley, MDEQ

Bart Bartholomy, CRA/GHD

Steve Nadeau, Honigman, Miller, Schwatz and Cohn (Honigman) for the PRP Group

Discussion

EPA opened the discussion to verify that the location of the proposed well on the Spiegelberg property was acceptable. MDEQ responded that it was acceptable.

The discussion then continued to the well screen location. MDEQ voiced its concern that two screens may be necessary. It also discussed that the sampling methods were not followed and that sampling rate was at 30 times the normal rate. CRA said that they were surprised that this was an issue and said that it was not brought up at the time sampling

was done in the field. MDEQ countered that they did bring this issue up during sampling.

EPA raised the issue that the sampling showed where there was contamination. EPA said it appreciated the concern with the sampling rate, but the sampling data did show the zone of contamination. EPA said that the screen is placed at the point of highest contamination and also pointed out that this was considered per CRA's proposal. EPA said it was comfortable with the screen location. MDEQ responded that decision makers need to make the decision and that he could only discuss the concern with the sampling. Honigman responded that he agreed with the screen location and that the well installation should move forward.

EPA followed up by asking if the five groundwater monitoring wells were going to be installed during the week. CRA responded that they would be installed.

MDEQ asked if the CRA's report was going to be amended with MDEQ's comments. EPA responded that CRA should be allowed to respond to the comments first. Based on their comments and subsequent review, CRA may need to do an addendum to the original report.

This concluded the conference call.

Privileged & Confidential
Attorney Work Product

July 13, 2016

Reference No. 032504-35

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

Dear Mr. Caine:

Re: MDEQ Comments Regarding the Rasmussen 2015 Groundwater Investigation Report

On behalf of Rasmussen Site Remediation Group (RSRG), GHD[1] is providing this response to comments received from the Michigan Department of Environmental Quality (MDEQ) in a letter dated June 9, 2015 to Mr. Howard Caine of the United States Environmental Protection Agency (US EPA) on the draft "2015 Groundwater Investigation Report" (CRA, June 2015).

For clarity, MDEQ comments have been reproduced verbatim from the June 9, 2015 letter and are shown in bold italic font, followed by GHD's response. Some of the more lengthy comments have been subdivided in order to facilitate the response.

Comment No. 1

In the first paragraph of the introduction, it states that the United States Environmental Protection Agency (USEPA) requested additional groundwater investigation; it should be clear that per the referenced third Five-Year Review, the objective of the required investigation(s) is to "fully characterize and delineate" contamination . The introduction of this investigation report should restate this exact objective. As is, the text states, "request for investigations" and "to address data gaps." This does not identify what the objectives are.

Response No. 1

The 3rd 5YR was issued on March 30, 2010. A letter from USEPA requesting the RSRG submit a work plan to, among other things, "fully characterize and delineate the northern and southern groundwater plumes" was dated May 27, 2010. At a meeting between the RSRG, USEPA and MDEQ on July 11, 2011, the 3rd 5YR was discussed. The scope of the investigation was refined and it was agreed that GHD would submit a groundwater investigation work plan for approval that would "propose locations for four vertical aquifer sampling (VAS) boreholes to be installed to address data gaps in the existing groundwater quality monitoring network". GHD submitted the draft "2015 Groundwater Investigation" report on June 2, 2015, which included the results of the VAS and recommendations with respect to installing new monitoring wells based on the VAS results. USEPA and MDEQ provided comments on the report on June 9, 2015

[1] On July 1, 2015 Conestoga Rovers & Associates became GHD For convenience, the wording in this report reflects the new name

and indicated that the installation of five new monitoring wells could proceed as recommended in the draft report. GHD has modified the draft 2015 Groundwater Investigation Report to clarify the objective of the work, recognizing it has evolved significantly since USEPA issued the 3rd 5YR in 2010.

Comment No. 2A

Section 4 does not actually recommend additional investigative work to fully delineate the plumes beneath the property west of the site, as indicated. Therefore, the text should be revised on page 1. Section 4 should propose next investigative steps and/or identify a date by which an additional plan for investigation will be submitted. Section 4 needs to include recommendations for fully delineating the extent of the southern contaminant plumes as the objectives of the investigation have not been met, and issues identified during previous Five-Year Reviews have not been resolved pertaining to the southern plume.

Response No. 2A

Based on the relatively low concentrations of vinyl chloride detected in groundwater samples collected from at CRA-RA-33, which as of June 2016 were less than the Part 201 December 2013 Generic Residential Drinking Water Cleanup Criteria (RDWCC) of 2, the western limit of the southern vinyl chloride plume has been delineated GDH recommends that quarterly groundwater quality monitoring continue at CRA-RA-33 Furthermore, the RSRG will negotiate a restrictive covenant with the property owner that will prohibit installing drinking water wells in that portion of the property.

Comment No. 2B

It should be noted that the vertical aquifer sampling (VAS) conducted (VAS-32 through VAS-35) and proposed monitor well (MW) installation at those "northern plume" locations appear appropriate for delineation of that plume at this time; however, as noted, the southern plume has not been defined by VAS-31. Contaminants of concern are present above criteria an unknown distance and direction outward from the location of VAS-31. Installing a permanent MW alone at the location of VAS-31 does not define contamination in this direction, but the well installation should proceed. Given problems noted in the field during the VAS work, the depth at which this well should be screened needs to be discussed (see "Points to Consider" discussion below). The results indicate that the southern sparge system has not prevented the migration of the VAS results indicate that the southern sparge system has not prevented the migration of contamination during treatment system operation, which is inconsistent with the Record of Decision (ROD). Additional, but not yet discussed monitoring wells are needed to define the southern plume(s).

Response No. 2B

The issues with respect to the data from VAS-31 were resolved during a conference call between Honigman, GHD, USEPA and MDEQ on June 15, 2015. The data was accepted without qualification.

With respect to the timing of the contaminant migration onto the adjacent property, this may have occurred prior to installation of the sparge well system and is not necessarily an indication that the sparge well system allowed the migration of contaminants onto the adjacent property.

Comment No. 2C

Delineating the extent is also necessary for determining what and where land-use (groundwater) restrictions are necessary on the Spiegelberg property. A plan for that should be developed at this time.

Response No. 2C

As described in the response to Comment 2A, GHD believes an adequate area for the Spiegelberg Restrictive Covenant can be established using the existing monitoring well network

Comment No. 3A

Section 3.1: This paragraph should be revised. The purpose of the northern plume "investigation" was to hopefully delineate the extent well enough, but it was also to provide additional data via monitor well hydraulic and chemical monitoring to better understand the unique groundwater flow pattern in the northwest corner of the Rasmussen property. That should be recognized and incorporated into this report. Similarly, regarding the southern plumes, the sampling well installation purpose was to hopefully define the extent of contamination known to be present at least to where there are monitoring locations along the (east) property boundary. Specifically, referencing downgradient of VAS-29/MW 81-4 as indicated in the text is an over-generalization of the issue and, thereby, minimizes the concern with southern portions of the southern plumes. This clarification needs to be incorporated into this report as well by recognizing the size of the plume(s) and where migration is occurring.

Response No. 3A

The text has been revised to reflect 2015 and 2016 groundwater elevation data collected from the four new northern wells. With respect to CRA-RA-33, located west of the Site, it was installed to delineate the northern (downgradient) extent of the Southern Vinyl Chloride Plume and no further revisions to the text are necessary.

Comment No. 3B

This section of the report references Figures 3.1 through 3.7 and indicates those figures show the distribution of contaminants of concern. The word "perceived" distribution needs to be inserted, as undefined boundaries of contaminants of concern can only be inferred given the monitoring network and that the extent is not known. Such estimates are usually depicted on figures as a dashed line to indicate an estimated boundary. The corresponding Figures should utilize dashed lines to show where the extent of contamination can only be estimated due to a lack of monitoring locations and the ongoing migration.

Response No. 3A

The limits of the plumes have been revised with the dashed lines where the plume limits are approximate

Comment No. 3C

As a matter of semantics, the word "proposed" should be deleted from the next to last sentence as the investigation was initiated and VAS work completed last April/May; thus, the "investigations" are no longer "proposed."

Response No. 3C

Concur. The report has been revised accordingly.

Comment No. 4A

Section 3.2, fourth paragraph, next to last sentence: Based on observations and a review of the boring logs, what is being described and depicted on cross-sections as a Lower Confining Silt/Clay is in many places, a dense sand (SP) or silt/sand (SM) mixture. The boring logs recorded samples as SP or SM; however, the cross-sections of this report show a definitive continuous cohesive unit across most of the site and describe it on the Figures as a Lower Confining Silt/Clay in spite of field observations and classification. The text of the report and all cross-sections should be revised accordingly.

Response No. 4A

The Lower Confining Silt/Clay is a hydrostratigraphic unit composed of a variety of different soil types, as with the Upper Aquifer. It is not literally "Silt/Clay". In fact, its defining characteristics are that it is beneath the Upper Aquifer (Lower), it is a barrier to vertical ground water movement (Confining) and it is relatively fine grained compared to the Upper Aquifer (Silt/Clay).

At each of the five 2015 VAS locations the contact was defined by a decrease in the static water level during VAS, indicating a downward vertical hydraulic gradient, and a decrease in the recharge rate during purging. There was a decrease in grain size and/or an increase in silt (or clay) content at the contact with the Lower Confining Layer; from poorly graded sand (SP) to silty sand (SM), from well graded sand (SW) to SM, from SP to clay (CL) and from SP to silt (ML) Therefore, while the Lower Confining Layer is not of homogeneous uniform composition it is a distinctly different hydrogeologic unit and is correctly depicted on the cross sections.

Comment No. 4B

It should also be noted that refusal was not encountered at VAS-33. Rather, the depth was the downhole limit of the drill rig utilized for this sampling and conditions. The boring log needs to be corrected.

Response No. 4B

Concur. The log has been revised accordingly.

Comment No. 5

Section 3.2, fifth paragraph, first sentence: Please revise this sentence to state, "VAS-32 results appear to delineate the extent of vinyl chloride in the northwest corner of the Rasmussen property."

Response No. 5

The report has been revised to include groundwater quality data from CRA-RA-33 through CRA-RA-37 which were not available when the draft report was submitted.

Comment No. 6

Section 3.2, sixth paragraph: Please replace this paragraph with the following: "The groundwater flow direction in the northwest corner of the Rasmussen property consistently shows a downward gradient and unique flow pattern compared to other areas of the property. With the addition of permanent monitoring wells at the VAS locations (VAS-32 through VAS-35), groundwater elevation data will provide additional information that may help better understand flow regimes in the northwest portion of the site."

Response No. 6

GHD has updated this portion of the report to reflect the groundwater elevations measured at the new wells in 2015 and 2016. These were not available when the draft report was submitted.

Comment No. 7

Section 3.2, seventh paragraph, second sentence: Please revise this text to state, "CRA recommends the new monitoring wells be incorporated into the current quarterly groundwater elevation monitoring program to better characterize groundwater flow near the northwest portion of the Rasmussen property. CRA also...."

Response No. 7

GHD does not believe this comment is necessary. For convenience, the sentence in question in the draft report is as follows:

> *"GHD recommends the new monitoring wells be incorporated into the current quarterly groundwater elevation monitoring program in order to provide data that will verify the local groundwater flow regime in the immediate vicinity of 81-8."*

Upon review of the groundwater elevation data collected in 2015 and 2016 GHD recommends ongoing quarterly groundwater elevation monitoring at the new wells.

Comment No. 8

Section 3.3, page 5: The end of this paragraph references "the Lower Confining Silt/Clay"; however, the material encountered is not a confining silt/clay but, rather, it is primarily dense sand. This unit may have some intermittent, more cohesive layers or lenses within, but do not appear to be consistent or competent across the investigation area. The text and cross-sections within the report should be revised accordingly.

Response No. 8

See Response No. 4A above. No revision is necessary.

Comment No. 9

Section 4.0: This Section does not include recommendations for additional investigation to delineate the extent of contamination as indicated (see page 1, last paragraph). Additional investigation is necessary in order to delineate the full extent of contamination.

Response No. 9

The draft report has been revised accordingly

Comment No. 10A

Section 4.0, third paragraph: While it may have been hoped that the installation of VAS-31 would delineate the lateral extent of contamination in this direction, this did not happen. The text should be revised to indicate: "VAS-31 was conducted to evaluate the extent of the southern plume and/or to confirm if contamination was migrating off-site during system operation, beyond the current monitoring well locations." It should be noted that Volatile Organic Compounds are now known to be present off-site above criteria, and contaminant migration is occurring during treatment system operation and the extent is greater than what was hoped, and remains undefined. That is inconsistent with the requirements of the ROD and issues identified during the Five-Year Review process. In addition to a monitoring well at VAS-31, monitoring wells will be required to fully delineate this contamination to the west and north.

Response No. 10A

The report has been revised accordingly.

Comment No. 10B

The VAS investigation also confirms that monitoring well CRA-7 is screened above the zone of contaminant transport; thus, CRA-7 does not properly evaluate contaminant transport in that

southern portion of the southern plume(s). CRA-7 should be replaced with a well that is properly screened at the correct elevation.

Response No. 10B

The CRA-RA-7 well screen elevation corresponds to the maximum concentration of CoCs in VAS-31. The maximum concentration of CoCs in the VAS-31 samples was collected at an elevation of 874.6 ft AMSL. The elevation of the CRA-RA-7 well screen extends from 873.4 to 888.4 ft AMSL. The bottom of the CRA-RA-7 well screen is one foot below the maximum concentration of CoCs in VAS-31. Therefore, replacing CRA-RA-7 is not warranted.

Comment No. 11

Cross-Sections: Please note that poorly graded sands with little fines, and sand/silt mixtures were encountered during the VAS investigation. In places, the density and transmissivity of these SP and SM materials decreased with depth; however, they do not represent a Lower Confining Silt/Clay. Based on observations, boring logs, etc., much of the material shown as the Lower Confining Silt/Clay on the cross-sections is actually dense sand or a silty-sand. The cross-sections should be revised to accurately reflect material encountered. The known and estimated extent of each unit/layer should be properly reflected. Depicting conditions on a Figure where there is no information should at least be qualified.

The material encountered near depth in VAS-33 is different than what was encountered near depth at VAS-35. However, as one example, the cross-sections show a competent, consistent Lower Confining Silt/Clay between these locations, yet much of the material is sand. Significant revisions to the cross-sections are necessary to accurately reflect site conditions.

Response No. 11

See Comment No. 4A above

Comment No. 12

VAS-33 Boring Log: This boring was not terminated because of "refusal." Instead, the downhole capacity of the drill rig utilized for the drilling conditions was maximized, and further downhole advancement placed recovery of the drill augers in jeopardy according to the driller. The term "Refusal" should be removed from the log and be replaced with "End of Boring."

Response No. 12

See response to Comment 4B

Comment No. 13

The MDEQ agrees with the proposed location of an additional permanent monitor well(s) installation at this time, as qualified by the discussion in "Points to Consider" below.

Response No. 13

No response required.

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

Yours truly,

GHD

Alan Deal

AJD/cb/42

cc. Mike Stoelton, JCI
Chuck Pinter, Ford
Karyllan Dodson Mack, BASF
Michael Simpson
Steven Nadeau, Honigman
Bart Bartholomy, GHD

Appendix B
Stratigraphic Logs

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-31
DATE COMPLETED: April 23, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: A. DEAL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	GROUND SURFACE	912.14					
	SP-SAND, trace gravel, trace silt, fine to medium grained, brown, moist						
2							
4							
6							
8							
10							
12			SOIL CUTTINGS				
14							
16							
18							
20			8" BOREHOLE				
22							
24							
26							
28							
30							
32				30-35'-001			
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-31
DATE COMPLETED: April 23, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: A. DEAL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
36							
				35-40' -002			
38							
40							
42							
44				42-47' -003			
			SOIL CUTTINGS				
46							
				45-50' -004/ 005			
48							
50	- increasingly fine grained with depth, gray at 50.0ft BGS						
52				50-55' -006			
54							
			8" BOREHOLE				
56							
				55-60' -007			
58							
60							
62				60-65' -008			
64							
66							
				65-70' -009			
68							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ◯

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-31
DATE COMPLETED: April 23, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: A. DEAL

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
72				68-73' -010			
74							
76			2" BOREHOLE	73.5-78.5 -011/ 012			
	ML-CLAYEY SILT (TILL), with sand, trace gravel, hard, gray, dry	835.14	SOIL CUTTINGS				
78			NATURAL COLLAPSE	1SS	☒	83	50/ 4"
	END OF BOREHOLE @ 79.3ft BGS	832.81					
80							
82							
84							
86							
88							
90							
92							
94							
96							
98							
100							
102							
104							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ◯

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-32
DATE COMPLETED: May 7, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	GROUND SURFACE	922.56					
	SP-SAND, trace silt, compact, fine grained, poorly graded, light brown, moist						
2							
4							
6							
8							
10							
12			BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE				
14							
16							
18							
20			8" BOREHOLE				
22							
24							
26							
28							
30							
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-32
DATE COMPLETED: May 7, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
36							
38							
40				1SS	X		26
42							
44							
46	SP-SAND, trace silt, compact, fine grained, poorly graded, light brown, wet	877.56	BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE	2SS (45-50" -048)	X		12
48							
50				3SS (50-55" -049/ 050)	X		11
52							
54							
56	SP-SAND, few silt, compact, fine grained, poorly graded, light brown, wet	867.56	8" BOREHOLE	4SS (55-60" -051)	X		10
58							
60				5SS (60-65" -052)	X		7
62							
64							
66	ML-SILT, trace clay, few fine sand, trace fine gravel, dense, gray, moist to slightly wet	857.56		6SS (65-70" -053)	X		11
68							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ( )

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-32
DATE COMPLETED: May 7, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
72, 74	SM-SILTY SAND, compact, fine grained, gray, wet	852.56		7SS (70-75 -054)	X		16
76, 78	ML-SANDY SILT, trace fine gravel, dense, fine grained, gray, wet	847.56	BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE	8SS (75-80 -055)	X		39
80, 82, 84	ML-SANDY SILT, dense, fine grained, gray, wet	842.56	8" BOREHOLE	9SS (80-85 -056)	X		49
86, 88	ML-SANDY SILT, trace fine gravel, very dense, fine grained, gray, slightly wet to wet	837.56		10SS (85-90 -057)	X		30
90, 92, 94, 96, 98	SM-SILTY SAND, trace fine gravel, compact, fine grained, gray, wet	832.56		11SS (90-95 -058)	X		63
				12SS (95-100 -059/ 060)	X		61
100, 102, 104	SP-SAND, few silt, trace fine gravel, dense, fine grained, gray, wet	822.56		13SS (100-105 -061)	X		40

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ( )

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-32
DATE COMPLETED: May 7, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
106	CL-SILTY CLAY, trace fine sand and fine gravel, hard, low plasticity, gray, moist	817.56		14SS	X		50
	END OF BOREHOLE @ 107.0ft BGS	815.56					
108							
110							
112							
114							
116							
118							
120							
122							
124							
126							
128							
130							
132							
134							
136							
138							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-33
DATE COMPLETED: April 28, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: A. DEAL/D. RIVERS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	GROUND SURFACE	918.24					
2, 4, 6, 8, 10, 12, 14, 16, 18, 20	SC-CLAYEY SAND, with silt, trace fine gravel, fine to coarse grained, poorly graded, brown		BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE; 8" BOREHOLE				
22, 24, 26, 28, 30, 32, 34	SP-SAND, trace silt and fine gravel, fine to medium grained, poorly graded, light brown, moist	896.24					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-33
DATE COMPLETED: April 28, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: A. DEAL/D. RIVERS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
36							
38	- fine to coarse grained, brown, wet at 38.5ft BGS						
40							
42				40-45 -013			
44							
46			BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE				
48				45-50 -014			
50	- increase in silt content, grayish brown at 50.0ft BGS						
52				50-55 -015			
54							
56	SM-SILTY SAND, trace clay and fine gravel, fine grained, trace medium to coarse grained, poorly graded, gray, wet	863.24	8" BOREHOLE				
58				55-60 -016			
60				1SS	X		15
62				60-65 -017			
64	SP-SAND, trace silt and fine gravel, fine to coarse grained, poorly graded, gray, wet	855.24		2SS	X		15
66	SM-SILTY SAND, trace clay, dense, fine grained, poorly graded, gray, wet	852.24					
68				65-70 -018 3SS	X		22

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ( )

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-33
DATE COMPLETED: April 28, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: A. DEAL/D. RIVERS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
72				70-75 -019			
74	SP-SAND, trace silt and fine gravel, dense, fine to coarse grained, poorly graded, gray, wet	844.24		4SS	X		47
76							
78			BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE	75-80 -020			
				5SS	X		24
80			8" BOREHOLE				
82				80-85 -021			
84							
86	ML-SANDY SILT, trace clay, dense, fine grained, non plastic, with laminations, gray, moist to wet	832.24		6SS	X		35
				85-90 -022			
88	SP-SAND, trace silt, clay and fine gravel, dense, fine to coarse grained, poorly graded, gray, wet	830.24		7SS	X		28
90							
92				90-95 -023			
	ML-SANDY SILT, trace clay, dense, fine grained, non plastic, gray, moist to wet	825.24					
94							
96				8SS	X		39
	AUGERED (97.0 to 100.0ft BGS)	821.24					
98							
100	- REFUSAL at 100.0ft BGS	818.24					
	END OF BOREHOLE @ 100.0ft BGS						
102							
104							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ◯

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-34
DATE COMPLETED: April 30, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: D. RIVERS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	GROUND SURFACE	917.52					
2, 4, 6, 8	SM-SILTY SAND, trace clay and fine gravel, fine to coarse grained, poorly graded, light brown, moist						
10	SC-CLAYEY SAND, with silt, trace fine gravel, fine to coarse grained, poorly graded, brown	907.52	BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE				
12, 14, 16	- trace silt and fine gravel, greenish brown at 16.0ft BGS						
18, 20	SP-SAND, trace silt and fine gravel, fine to medium grained, poorly graded, brown, moist	897.52	8" BOREHOLE				
22, 24, 26, 28, 30, 32, 34	- fine to medium grained, light brown at 22.0ft BGS						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-34
DATE COMPLETED: April 30, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: D. RIVERS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
36							
38	- fine to coarse grained, brown, wet at 37.5ft BGS			1SS	X		17
40							
42				40-45 -024/ 025			
44			BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE				
46				45-50 -026			
48							
50	- grayish brown at 50.0ft BGS						
52				50-55 -027			
54							
56	SW-SAND, with fine gravel, compact, fine to coarse grained, well graded, gray, wet	862.52	8" BOREHOLE	2SS	X		9
58				55-60 -028			
60	SM-SILTY SAND, loose, fine grained, poorly graded, gray, wet	857.52		3SS	X		8
62				60-65 -029			
64							
66	SM-SILTY SAND, dense, fine grained, poorly graded, gray, wet	852.52		4SS	X		28
68				65-70 -030			

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-34
DATE COMPLETED: April 30, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: D. RIVERS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
72				5SS	X		27
				70-75' -031			
74							
76				6SS	X		61
78			BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE	75-80' -032			
80	SM-SILTY SAND, trace clay and fine gravel, dense, fine grained, poorly graded, gray, wet	837.52	8" BOREHOLE	7SS	X		41
82				80-85' -033			
84							
86				8SS	X		30
88				85-90' -034			
90							
	SP-SAND, with silt, trace fine gravel, dense, fine to coarse grained, poorly graded, gray, wet	826.52		9SS	X		45
92		825.52		90-95' -035			
94	SM-SILTY SAND, trace clay and fine gravel, dense, fine grained, poorly graded, gray, wet						
	SP-SAND, with silt, trace fine gravel, dense, fine to coarse grained, poorly graded, gray, wet	822.52		10SS	X		57
96							
	END OF BOREHOLE @ 97.0ft BGS	820.52					
98							
100							
102							
104							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ( )

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-35
DATE COMPLETED: May 5, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: D. RIVERS/E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	GROUND SURFACE	916.44					
2, 4, 6, 8, 10	SC-CLAYEY SAND, trace silt and fine gravel, trace medium to coarse grained, poorly graded, brown, moist						
		905.44					
12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34	SP-SAND, trace silt and fine gravel, fine to medium grained, poorly graded, light brown, moist - with silt, fine grained, trace medium to coarse grained at 20.0ft BGS		BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE 8" BOREHOLE				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-35
DATE COMPLETED: May 5, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: D. RIVERS/E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
36							
	- trace silt, fine to medium grained, trace coarse grained, wet at 37.0ft BGS						
38							
40							
				1SS			10
42				40-45' -036			
44							
			BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE				
46							
48				45-50' -037/ 038			
50	- fine to coarse grained at 50.0ft BGS						
	SM-SILTY SAND, trace clay and fine gravel, compact, fine to coarse grained, poorly graded, gray, wet	865.44		2SS			8
52				50-55' -039			
54							
	ML-CLAYEY SILT, trace fine sand to fine gravel, soft to firm, non plastic, gray, moist	861.44	8" BOREHOLE				
56		860.44		3SS			3
	SP-SAND, trace silt and fine gravel, loose, fine to coarse grained, poorly graded, gray, wet						
58				55-60' -040			
60							
	CL-CLAY, with silt and fine to coarse sand, firm, low plasticity, gray, moist	855.44		4SS			12
62				60-65' -041			
64							
	SM-SILTY SAND, trace clay and fine gravel, compact, fine to coarse grained, poorly graded, gray, wet	851.44		5SS			28
66							
68				65-70' -042			

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ( )

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: VAS-35
DATE COMPLETED: May 5, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: D. RIVERS/E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE INSTALLATION	SAMPLE NUMBER	INTERVAL	REC (%)	'N' VALUE
	SM-SILTY SAND, trace fine gravel, trace clay, compact, fine grained, poorly graded, gray, wet	846.44		6SS (70-75' -043)	X		40
72, 74							
	SM-SILTY SAND, trace fine gravel, compact, fine grained, poorly graded, gray, wet - silt seam and broken rock from 76.7 to 76.8ft BGS	841.44	BACKFILLED WITH BENTONITE GROUT AND NATURAL COLLAPSE	7SS (75-80' -044)	X		58
76, 78							
	SM-SILTY SAND, few clay, trace fine gravel, compact, fine grained, poorly graded, gray, wet	836.44	8" BOREHOLE	8SS (80-85' -045)	X		72
80, 82, 84							
	SM-SILTY SAND, trace fine gravel, compact, fine grained, gray, wet	831.44		9SS (85-90' -046)	X		86
86, 88							
	SM-SILTY SAND, trace fine gravel and clay, compact, fine grained, gray, wet - broken rock at 91.0ft BGS - silt seam from 91.8 to 91.9ft BGS	826.44		10SS (90-95' -047)	X		50
90, 92, 94							
	SP-SAND, with silt, compact, fine grained, gray, wet	821.44		11SS	X		50
96							
	END OF BOREHOLE @ 97.0ft BGS	819.44					
98, 100, 102, 104							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

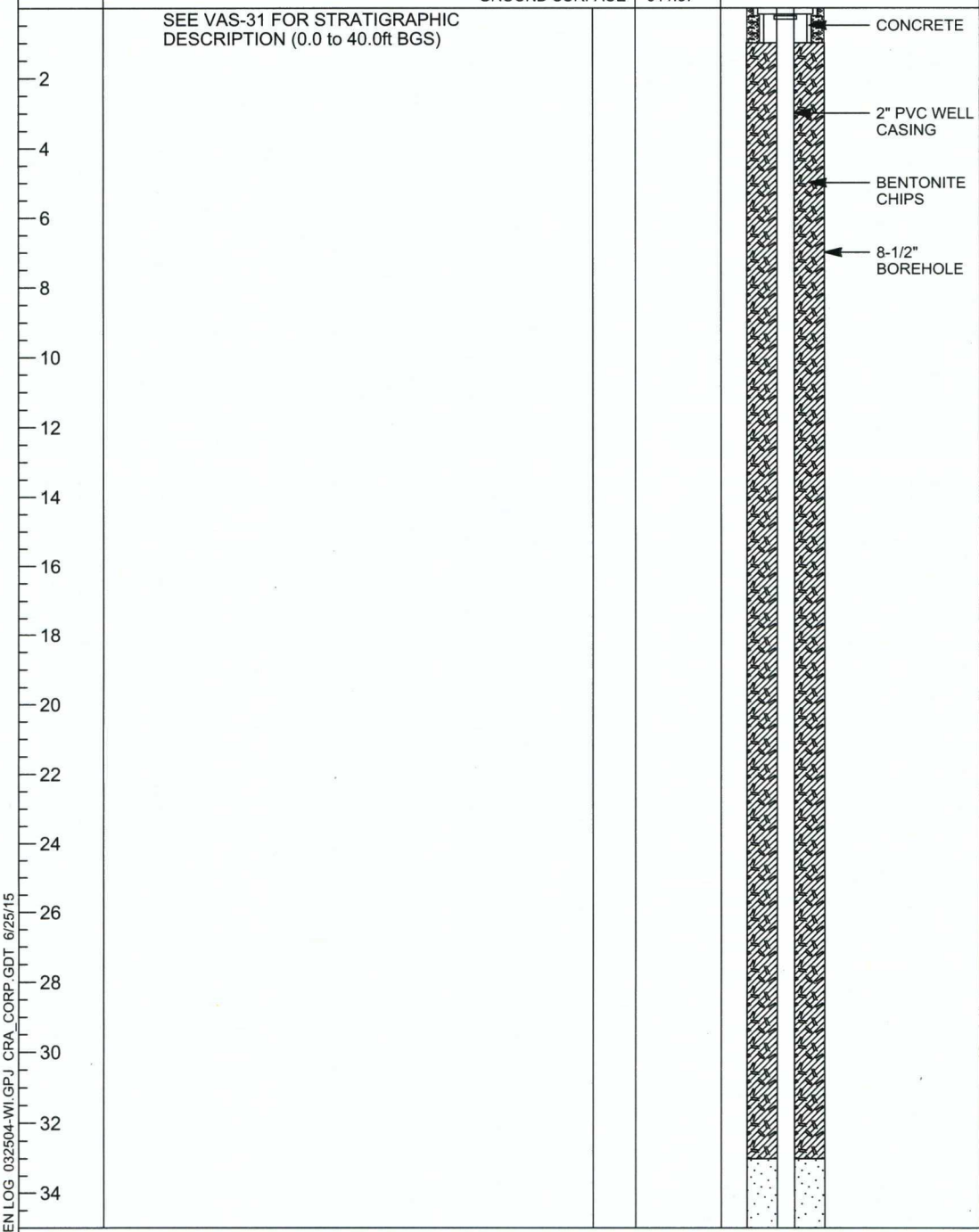
CHEMICAL ANALYSIS ( )

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: CRA-RA-33
DATE COMPLETED: June 17, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 348523.44 EASTING: 13284130.53	TOP OF RISER 914.76 TOP OF CASING 914.35 GROUND SURFACE 911.87					
	SEE VAS-31 FOR STRATIGRAPHIC DESCRIPTION (0.0 to 40.0ft BGS)		CONCRETE 2" PVC WELL CASING BENTONITE CHIPS 8-1/2" BOREHOLE	1HSA 2HSA 3HSA 4HSA 5HSA 6HSA 7HSA			



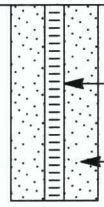
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: CRA-RA-33
DATE COMPLETED: June 17, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
36			 2" PVC WELL SCREEN; SAND PACK	8HSA 37-39'			
38							
40	END OF BOREHOLE @ 40.0ft BGS	871.87	WELL DETAILS Screened interval: 876.87 to 871.87ft 35.00 to 40.00ft BGS Length: 5ft Diameter: 2in Slot Size: 0.010 Material: PVC Seal: 910.87 to 878.87ft 1.00 to 33.00ft BGS Material: 3/8" BAROID BENTONITE CHIPS Sand Pack: 878.87 to 871.87ft 33.00 to 40.00ft BGS Material: K&E FILTER SAND				
42							
44							
46							
48							
50							
52							
54							
56							
58							
60							
62							
64							
66							
68							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

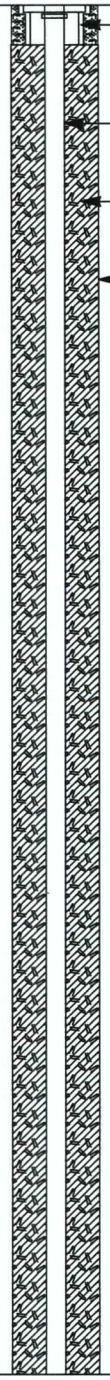
CHEMICAL ANALYSIS ( )

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: CRA-RA-34
DATE COMPLETED: June 17, 2014
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 349184.18 EASTING: 13284328.88	TOP OF CASING 926.87 TOP OF RISER 922.30 GROUND SURFACE 922.08					
	SEE VAS-32 FOR STRATIGRAPHIC DESCRIPTION (0.0 to 55.0ft BGS)		CONCRETE 2" PVC WELL CASING BENTONITE CHIPS 8-1/2" BOREHOLE	1HSA 2HSA 3HSA 4HSA 5HSA 6HSA 7HSA			



NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

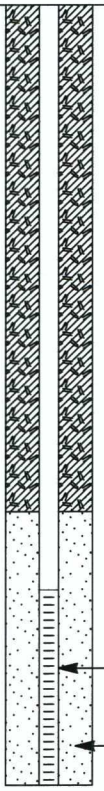
CHEMICAL ANALYSIS ◯

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: CRA-RA-34
DATE COMPLETED: June 17, 2014
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
36							
38				8HSA			
40							
42				9HSA			
44							
46							
48				10HSA			
50							
52			2" PVC WELL SCREEN	11HSA 52-54'			
54			SAND PACK				
	END OF BOREHOLE @ 55.0ft BGS	867.08					
56							
58							
60							
62							
64							
66							
68							



WELL DETAILS
Screened interval:
872.08 to 867.08ft
50.00 to 55.00ft BGS
Length: 5ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
921.08 to 874.08ft
1.00 to 48.00ft BGS
Material: 3/8" BAROID BENTONITE CHIPS
Sand Pack:
874.08 to 867.08ft
48.00 to 55.00ft BGS
Material: K&E FILTER SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: CRA-RA-35
DATE COMPLETED: June 16, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE NUMBER	INTERVAL	REC (%)	'N' VALUE
	NORTHING: 349252.52 TOP OF RISER EASTING: 13284395.52 GROUND SURFACE	912.10 911.68					
	SEE VAS-33 FOR STRATIGRAPHIC DESCRIPTION (0.0 to 48.0ft BGS)		CONCRETE				
2			2" PVC WELL CASING	1HSA			
4			BENTONITE CHIPS				
6			8-1/2" BOREHOLE				
8				2HSA			
10							
12				3HSA			
14							
16							
18				4HSA			
20							
22				5HSA			
24							
26							
28				6HSA			
30							
32				7HSA			
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

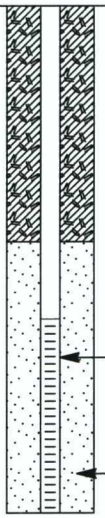
CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: CRA-RA-35
DATE COMPLETED: June 16, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
36							
38				8HSA			
40							
42				9HSA			
44			2" PVC WELL SCREEN	44-46'			
46			SAND PACK	10HSA			
48	END OF BOREHOLE @ 48.0ft BGS	863.68					
50							
52							
54							
56							
58							
60							
62							
64							
66							
68							



WELL DETAILS
Screened interval:
868.68 to 863.68ft
43.00 to 48.00ft BGS
Length: 5ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
910.68 to 870.68ft
1.00 to 41.00ft BGS
Material: 3/8" BAROID BENTONITE CHIPS
Sand Pack:
870.68 to 863.68ft
41.00 to 48.00ft BGS
Material: K&E FILTER SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

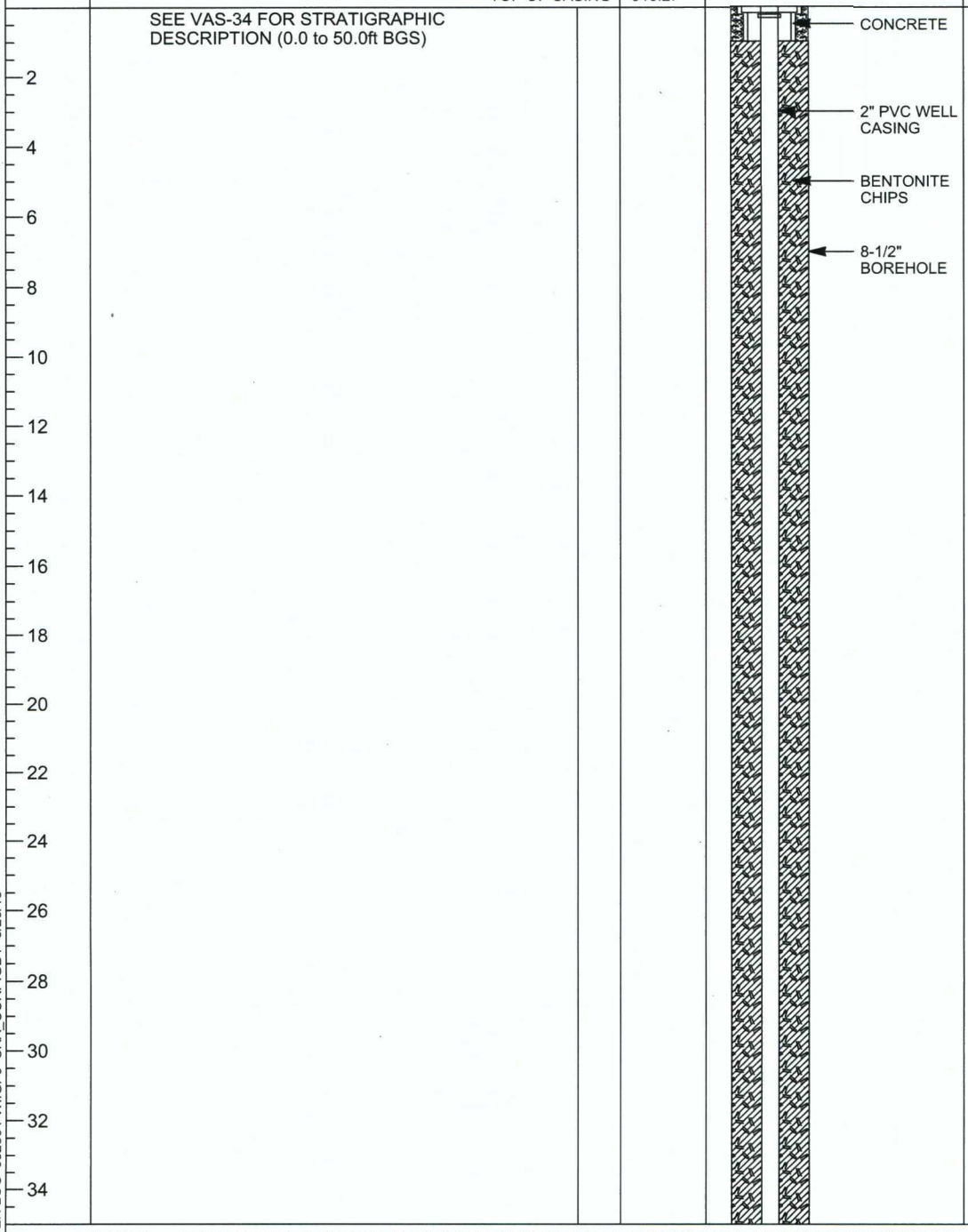
CHEMICAL ANALYSIS ( )

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: CRA-RA-36
DATE COMPLETED: June 16, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 349253.03 EASTING: 13284445.01	TOP OF RISER 916.56 GROUND SURFACE 916.33 TOP OF CASING 916.27					
	SEE VAS-34 FOR STRATIGRAPHIC DESCRIPTION (0.0 to 50.0ft BGS)		CONCRETE 2" PVC WELL CASING BENTONITE CHIPS 8-1/2" BOREHOLE	1HSA 2HSA 3HSA 4HSA 5HSA 6HSA 7HSA			



NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

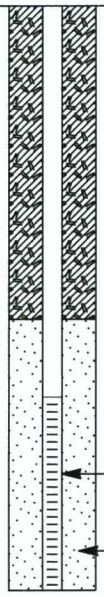
CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: CRA-RA-36
DATE COMPLETED: June 16, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
36							
38				8HSA			
40							
42				9HSA			
44							
46			2" PVC WELL SCREEN	46-48' 10HSA			
48			SAND PACK				
50	END OF BOREHOLE @ 50.0ft BGS	866.33					
52							
54							
56							
58							
60							
62							
64							
66							
68							



WELL DETAILS
Screened interval:
871.33 to 866.33ft
45.00 to 50.00ft BGS
Length: 5ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
915.33 to 873.33ft
1.00 to 43.00ft BGS
Material: 3/8" BAROID BENTONITE CHIPS
Sand Pack:
873.33 to 866.33ft
43.00 to 50.00ft BGS
Material: K&E FILTER SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

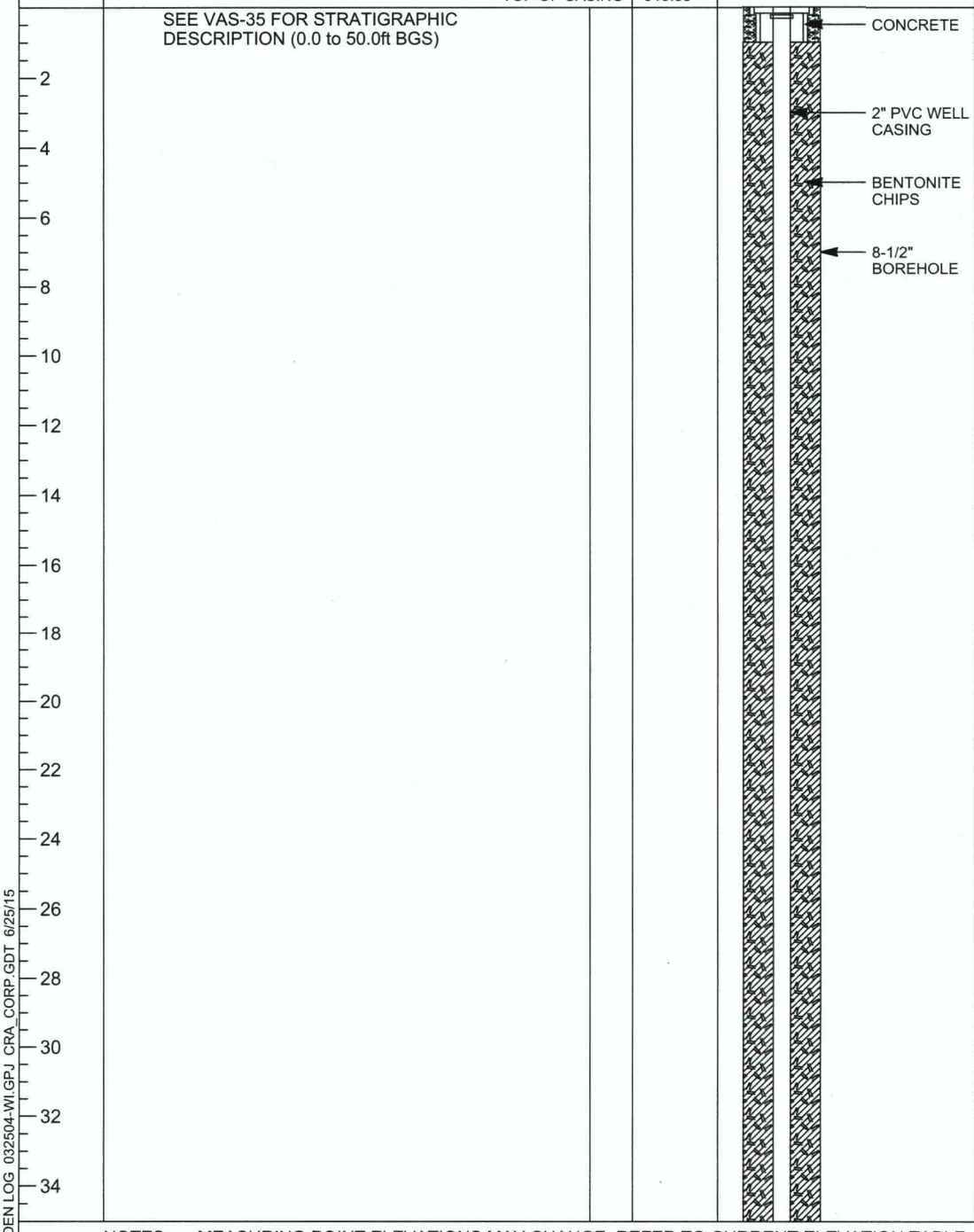
CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: CRA-RA-37
DATE COMPLETED: June 15, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 349258.04 EASTING: 13284494.67	TOP OF RISER 916.48 GROUND SURFACE 916.41 TOP OF CASING 915.85					
	SEE VAS-35 FOR STRATIGRAPHIC DESCRIPTION (0.0 to 50.0ft BGS)		CONCRETE 2" PVC WELL CASING BENTONITE CHIPS 8-1/2" BOREHOLE	1HSA 2HSA 3HSA 4HSA 5HSA 6HSA 7HSA			



NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

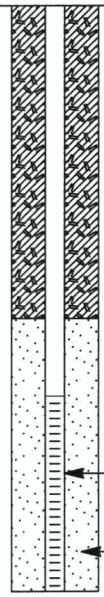
CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: RASMUSSEN LANDFILL
PROJECT NUMBER: 032504-35
CLIENT: HONIGMAN
LOCATION: LIVINGSTON COUNTY, MICHIGAN

HOLE DESIGNATION: CRA-RA-37
DATE COMPLETED: June 15, 2015
DRILLING METHOD: 4-1/4" HSA
FIELD PERSONNEL: E. MICKELSON

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
36							
38				8HSA			
40							
42				9HSA			
44							
46			2" PVC WELL SCREEN	46-48' 10HSA			
48			SAND PACK				
50	END OF BOREHOLE @ 50.0ft BGS	866.41					
52							
54							
56							
58							
60							
62							
64							
66							
68							



WELL DETAILS
Screened interval:
871.41 to 866.41ft
45.00 to 50.00ft BGS
Length: 5ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
915.41 to 873.41ft
1.00 to 43.00ft BGS
Material: 3/8" BAROID BENTONITE CHIPS
Sand Pack:
873.41 to 866.41ft
43.00 to 50.00ft BGS
Material: K&E FILTER SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

Appendix C
Stabilization Parameters

TABLE

SUMMARY OF STABILIZATION PARAMETERS
2015 VAS
RASMUSSEN SITE
LIVINGSTON COUNTY, MICHIGAN

Location	*Sample Depth (feet below ground surface)*	*Sample Elevation (feet above mean sea level)*	*Sample Depth (feet below water table)*	*Sample Number*	*Date*	*Time*	*Depth to Water (feet below top of riser)*	*Temperature (C)*	*Conductivity (mS/cm)*	*Turbidity NTU*	*pH s.u.*	*ORP (mV)*	*Volume Purged (gallons)*
VAS-31	30 - 45	879 64	0 - 5	001	4/21/2015	-	-	-	0 704	567	6 85	206	15
VAS-31	30 - 45	879 64	0 - 5	001	4/21/2015	-	-	11 2	0 739	307	6.90	202	25
VAS-31	30 - 45	879 64	0 - 5	001	4/21/2015	-	-	11.3	0 740	189	6 90	199	30
VAS-31	30 - 45	879.64	0 - 5	001	4/21/2015	-	-	11 2	-	98	7 00	190	40
VAS-31	30 - 45	879 64	0 - 5	001	4/21/2015	-	-	11 2	-	68	6 98	188	45
VAS-31	30 - 45	879 64	0 - 5	001	4/21/2015	14·00	33.1	11.2	0 75	25	-	-	60
VAS-31	35 - 40	874 64	5 - 10	002	4/21/2015	14 47	-	11.3	1 03	523	7 0	-78	25
VAS-31	35 - 40	874 64	5 - 10	002	4/21/2015	14 50	-	11.3	1 05	407	7 1	-78	30
VAS-31	35 - 40	874 64	5 - 10	002	4/21/2015	-	-	11.3	1 05	327	7 1	-75	35
VAS-31	35 - 40	874 64	5 - 10	002	4/21/2015	14 55	-	11 3	1 05	297	7 1	-75	40
VAS-31	42 - 47	867 64	12 - 17	003	4/21/2015	15 50	32 85	10 7	1 21	114	7 1	-107	25
VAS-31	42 - 47	867 64	12 - 17	003	4/21/2015	15·55	-	11.1	1 23	40	7 1	-107	30
VAS-31	42 - 47	867 64	12 - 17	003	4/21/2015	15 57	-	11.2	1 21	59	7 1	-107	35
VAS-31	42 - 47	867 64	12 - 17	003	4/21/2015	16 00	32 85	11 2	1 23	54	7.1	-107	40
VAS-31	42 - 47	867 64	12 - 17	003	4/21/2015	16.03	-	11 1	1.23	76	7 1	-107	45
VAS-31	42 - 47	867 64	12 - 17	003	4/21/2015	16.06	-	11.3	1.23	43	7 1	-107	50
VAS-31	42 - 47	867.64	12 - 17	003	4/21/2015	16·20	-	11 2	1 23	147	7 1	-107	65
VAS-31	42 - 47	867 64	12 - 17	003	4/21/2015	16 24	-	11 2	1 23	108	7 1	-107	70
VAS-31	45 - 50	864 64	15 - 20	004/005	4/22/2015	8 20	-	11 3	1.28	560	7.1	-113	20
VAS-31	45 - 50	864.64	15 - 20	004/005	4/22/2015		-	11 4	1 27	248	7 1	-110	25
VAS-31	45 - 50	864 64	15 - 20	004/005	4/22/2015	8·28	-	11 3	1 28	20	7 0	-109	30
VAS-31	45 - 50	864.64	15 - 20	004/005	4/22/2015		-	11 2	1 28	16	7 0	-109	35
VAS-31	50 - 55	859 64	20 - 25	006	4/22/2015	9 18	-	10 9	1 34	800	7.0	-88	15
VAS-31	50 - 55	859 64	20 - 25	006	4/22/2015	9 21	-	11 0	1 34	722	7.0	-89	20
VAS-31	50 - 55	859 64	20 - 25	006	4/22/2015	-	-	11 0	1 34	126	7 0	-88	25
VAS-31	50 - 55	859 64	20 - 25	006	4/22/2015	-	-	11 1	1 34	47	7 0	-88	30
VAS-31	50 - 55	859 64	20 - 25	006	4/22/2015	9 30	-	11 0	1 33	35	7 0	-89	35
VAS-31	50 - 55	859 64	20 - 25	006	4/22/2015	-	-	11 1	1 34	11	7 0	-88	40
VAS-31	55 - 60	854 64	25 - 30	007	4/22/2015	-	-	11 1	1 36	-	7 0	-79	25
VAS-31	55 - 60	854.64	25 - 30	007	4/22/2015	10·25	-	11 2	1 36	300	7 1	-75	30
VAS-31	55 - 60	854 64	25 - 30	007	4/22/2015	10.27	33 50	11.1	1.36	79	7 0	-74	35
VAS-31	55 - 60	854 64	25 - 30	007	4/22/2015	10 31	-	11 1	1 36	32	7 0	-74	40
VAS-31	55 - 60	854 64	25 - 30	007	4/22/2015	10·40	-	11 1	1 36	13	7 0	-74	45

TABLE

SUMMARY OF STABILIZATION PARAMETERS
2015 VAS
RASMUSSEN SITE
LIVINGSTON COUNTY, MICHIGAN

Location	*Sample Depth (feet below ground surface)*	*Sample Elevation (feet above mean sea level)*	*Sample Depth (feet below water table)*	*Sample Number*	*Date*	*Time*	*Depth to Water (feet below top of riser)*	*Temperature (C)*	*Conductivity (mS/cm)*	*Turbidity NTU*	*pH s.u.*	*ORP (mV)*	*Volume Purged (gallons)*
VAS-31	60 - 65	849 64	30 - 35	008	4/22/2015	11:21	32.53	10 14	1 31	>1000	7 31	-78	5
VAS-31	60 - 65	849.64	30 - 35	008	4/22/2015	11.24	-	11 07	1 32	>1000	7 23	-82	10
VAS-31	60 - 65	849 64	30 - 35	008	4/22/2015	11·27	35 50	11 03	1 32	287	7 15	-83	15
VAS-31	60 - 65	849 64	30 - 35	008	4/22/2015	11·30	-	11 12	1.31	404	7 16	-73	20
VAS-31	60 - 65	849 64	30 - 35	008	4/22/2015	11 33	35 50	11.12	1 30	>1000	7 15	-71	25
VAS-31	60 - 65	849 64	30 - 35	008	4/22/2015	11 36	-	11 12	1 31	152	7.13	-71	30
VAS-31	60 - 65	849.64	30 - 35	008	4/22/2015	11 40	35.50	11 11	1 31	162	7 12	-70	35
VAS-31	65 - 70	844 64	35 - 40	009	4/22/2015	13.47	-	8 46	1 38	>1000	7 32	-55	5
VAS-31	65 - 70	844 64	35 - 40	009	4/22/2015	13 49	34.45	10.72	1 29	>1000	7 29	-86	10
VAS-31	65 - 70	844 64	35 - 40	009	4/22/2015	13.51	-	11 06	1.25	>1000	7 25	-85	15
VAS-31	65 - 70	844.64	35 - 40	009	4/22/2015	13 54	-	10.83	1 25	>1000	7 19	-82	20
VAS-31	65 - 70	844.64	35 - 40	009	4/22/2015	13 57	33.20	10 83	1 24	>1000	7 15	-82	25
VAS-31	65 - 70	844 64	35 - 40	009	4/22/2015	14 00	-	10 93	1 25	240	7 13	-83	30
VAS-31	65 - 70	844.64	35 - 40	009	4/22/2015	14 05	-	10 97	1 25	187	7 17	-85	33
VAS-31	68 - 73	841 64	38 - 43	010	4/22/2015	15 22	-	11.2	1 36	844	7 1	-80	35
VAS-31	68 - 73	841 64	38 - 43	010	4/22/2015	-	-	11 2	1 35	371	-	-83	40
VAS-31	68 - 73	841 64	38 - 43	010	4/22/2015	-	-	11 1	1 37	213	7 1	-92	45
VAS-31	68 - 73	841 64	38 - 43	010	4/22/2015	-	-	11 0	1 37	206	7 1	-89	50
VAS-31	68 - 73	841 64	38 - 43	010	4/22/2015	-	-	11.1	1 38	9	7.0	-90	55
VAS-31	73 5 - 78 5	836.14	43 5 - 48 5	011/012	4/23/2015	7·34	-	11 2	1.79	-	7 0	-100	35
VAS-31	73 5 - 78 5	836 14	43 5 - 48 5	011/012	4/23/2015	7 58	-	11 3	1 79	983	7 0	-99	45
VAS-31	73 5 - 78 5	836 14	43 5 - 48 5	011/012	4/23/2015	-	-	11 2	1 78	530	7 0	-102	50
VAS-31	73 5 - 78 5	836 14	43 5 - 48 5	011/012	4/23/2015	8 00	33.90	11 4	1 79	350	7 0	-98	60
VAS-32	45 - 50	875 06	0 - 5	048	5/5/2015	14.35	-	11 95	0 618	54 2	5 75	102	26
VAS-32	45 - 50	875 06	0 - 5	048	5/5/2015	14:40	-	11.90	0 619	32.8	5.79	109	27
VAS-32	45 - 50	875 06	0 - 5	048	5/5/2015	14 45	-	11 79	0.620	17 2	5 72	107	28
VAS-32	45 - 50	875 06	0 - 5	048	5/5/2015	14 50	-	11 70	0 621	11 1	5 70	106	29
VAS-32	50 - 55	870.06	5 - 10	049/050	5/5/2015	15 50	-	11.80	0 690	578	5 76	136	16
VAS-32	50 - 55	870 06	5 - 10	049/050	5/5/2015	15.55	-	11 71	0 690	510	5 81	138	17
VAS-32	50 - 55	870 06	5 - 10	049/050	5/5/2015	16 00	-	11 68	0 692	485	5 84	139	18
VAS-32	50 - 55	870 06	5 - 10	049/050	5/5/2015	16 05	-	11 59	0 693	470	5 86	140	19

TABLE

SUMMARY OF STABILIZATION PARAMETERS
2015 VAS
RASMUSSEN SITE
LIVINGSTON COUNTY, MICHIGAN

Location	*Sample Depth (feet below ground surface)*	*Sample Elevation (feet above mean sea level)*	*Sample Depth (feet below water table)*	*Sample Number*	*Date*	*Time*	*Depth to Water (feet below top of riser)*	*Temperature (C)*	*Conductivity (mS/cm)*	*Turbidity NTU*	*pH s.u.*	*ORP (mV)*	*Volume Purged (gallons)*
VAS-32	55 - 60	865 06	10 - 15	051	5/5/2015	17:10	-	11 99	0 907	412	5.64	113	17
VAS-32	55 - 60	865 06	10 - 15	051	5/5/2015	17·15	-	11 80	0.905	390	5.67	109	18
VAS-32	55 - 60	865 06	10 - 15	051	5/5/2015	17 20	-	11 64	0 903	362	5.68	107	19
VAS-32	55 - 60	865 06	10 - 15	051	5/5/2015	17·25	-	11 56	0 903	297	5.66	106	20
VAS-32	60 - 65	860 06	15 - 20	052	5/6/2015	9 15	-	13 35	1 06	>1000	5.98	-55	23
VAS-32	60 - 65	860 06	15 - 20	052	5/6/2015	9 20	-	13 32	1.06	>1000	6 06	-60	23.5
VAS-32	60 - 65	860 06	15 - 20	052	5/6/2015	9 25	-	13 50	1 06	>1000	6.09	-64	24
VAS-32	60 - 65	860 06	15 - 20	052	5/6/2015	9 30	-	13 58	1 08	>1000	6.11	-65	24 5
VAS-32	65 - 70	855 06	20 - 25	053	5/6/2015	11 00	-	15.62	1.07	634	6 34	-69	6
VAS-32	65 - 70	855.06	20 - 25	053	5/6/2015	11 05	-	15 59	1 08	601	6 36	-75	-
VAS-32	65 - 70	855 06	20 - 25	053	5/6/2015	11.10	-	15 42	1 07	587	6 42	-76	-
VAS-32	65 - 70	855 06	20 - 25	053	5/6/2015	11 15	-	15 30	1.07	561	6 44	-77	7
VAS-32	70 - 75	850.06	25 - 30	054	5/6/2015	12.35	63.10	19 05	1 06	369	6 24	-89	-
VAS-32	70 - 75	850 06	25 - 30	054	5/6/2015	12 40	63 10	18 69	1 08	321	6 19	-88	-
VAS-32	70 - 75	850.06	25 - 30	054	5/6/2015	12 45	63 10	18 43	1 09	276	6 17	-87	9
VAS-32	75 - 80	845 06	30 - 35	055	5/6/2015	-	-	17 10	1 12	>1000	6 29	-89	3 5
VAS-32	80 - 85	840.06	35 - 40	056	5/6/2015	15 35	74 60	18 04	1 06	>1000	6 62	-107	2
VAS-32	80 - 85	840 06	35 - 40	056	5/6/2015	15 40	74.60	17 00	1 07	>1000	6 31	-84	-
VAS-32	80 - 85	840 06	35 - 40	056	5/6/2015	15 45	74 60	16 07	1.09	>1000	6 24	-86	-
VAS-32	80 - 85	840 06	35 - 40	056	5/6/2015	15 50	74 60	15 70	1 10	>1000	6 20	-86	3
VAS-32	85 - 90	835 06	40 - 45	057	5/6/2015	17 30	72 70	17 00	0.956	>1000	6 34	-114	-
VAS-32	85 - 90	835 06	40 - 45	057	5/6/2015	17 35	72 70	16 62	0.962	>1000	6 31	-115	-
VAS-32	85 - 90	835 06	40 - 45	057	5/6/2015	17·40	72 70	16 48	0 968	>1000	6.28	-116	-
VAS-32	85 - 90	835 06	40 - 45	057	5/6/2015	17:45	72 70	16 39	0 969	>1000	6 27	-116	17
VAS-32	90 - 95	830 06	45 - 50	058	5/7/2015	9 05	-	13 16	0 988	475	6.56	-108	-
VAS-32	90 - 95	830 06	45 - 50	058	5/7/2015	9·10	-	13 13	0.989	417	6 66	-113	-
VAS-32	90 - 95	830 06	45 - 50	058	5/7/2015	9 15	-	13 15	0.987	381	6.74	-117	-
VAS-32	90 - 95	830 06	45 - 50	058	5/7/2015	9 20	-	13 18	0 988	315	6 78	-119	21
VAS-32	95 - 100	825 06	50 - 55	059/060	5/7/2015	11·00	-	13 15	1.08	301	6 78	-96	-
VAS-32	95 - 100	825 06	50 - 55	059/060	5/7/2015	11 05	-	13 04	1 08	269	6 74	-95	-
VAS-32	95 - 100	825 06	50 - 55	059/060	5/7/2015	11·10	-	12 90	1 08	237	6 72	-93	-
VAS-32	95 - 100	825 06	50 - 55	059/060	5/7/2015	11 15	-	12 71	1 09	202	6 71	-93	24

TABLE

SUMMARY OF STABILIZATION PARAMETERS
2015 VAS
RASMUSSEN SITE
LIVINGSTON COUNTY, MICHIGAN

Location	*Sample Depth (feet below ground surface)*	*Sample Elevation (feet above mean sea level)*	*Sample Depth (feet below water table)*	*Sample Number*	*Date*	*Time*	*Depth to Water (feet below top of riser)*	*Temperature (C)*	*Conductivity (mS/cm)*	*Turbidity NTU*	*pH s.u.*	*ORP (mV)*	*Volume Purged (gallons)*
VAS-32	100 - 105	820 06	55 - 60	061	5/7/2015	13 35	-	14 43	1 10	>1000	6 74	-101	-
VAS-32	100 - 105	820 06	55 - 60	061	5/7/2015	13.40	-	14 14	1 10	>1000	6 70	-100	-
VAS-32	100 - 105	820 06	55 - 60	061	5/7/2015	13 45	-	14.22	1.11	>1000	6.68	-100	-
VAS-32	100 - 105	820.06	55 - 60	061	5/7/2015	13·50	-	13.95	1.11	>1000	6.67	-99	27
VAS-33	40 - 45	875 74	0 - 5	013	4/23/2015	12 50	41 15	11 38	0 805	592	6.31	15	15
VAS-33	40 - 45	875 74	0 - 5	013	4/23/2015	12 53	41 15	11 13	0 802	279	6 59	-26	20
VAS-33	40 - 45	875.74	0 - 5	013	4/23/2015	12:58	41.15	11.22	0.803	34 1	6 65	-28	23
VAS-33	40 - 45	875 74	0 - 5	013	4/23/2015	13 00	41 15	11 13	0 798	36.6	6.70	-29	25
VAS-33	40 - 45	875 74	0 - 5	013	4/23/2015	13 03	41 15	11 16	0 800	25 6	6 71	-30	28
VAS-33	40 - 45	875 74	0 - 5	013	4/23/2015	13 05	41 15	11 18	0.800	20.4	6 73	-30	30
VAS-33	45 - 50	870 74	5 - 10	014	4/23/2015	13 35	41 00	11 16	0 779	149	6.81	15	20
VAS-33	45 - 50	870 74	5 - 10	014	4/23/2015	-		11 18	0 778	>1000	6 80	26	23
VAS-33	45 - 50	870 74	5 - 10	014	4/23/2015	-	41 00	11 17	0 779	489	6 79	35	25
VAS-33	45 - 50	870 74	5 - 10	014	4/23/2015	-		11.21	0 777	467	6 79	37	28
VAS-33	45 - 50	870 74	5 - 10	014	4/23/2015	13 45	41 00	11.22	0 777	295	6.79	39	30
VAS-33	50 - 55	865 74	10 - 15	015	4/23/2015	14 23	40 95	11 18	0 778	219	6 87	-59	20
VAS-33	50 - 55	865 74	10 - 15	015	4/23/2015	-	-	11 16	0 784	138	6 84	-62	23
VAS-33	50 - 55	865 74	10 - 15	015	4/23/2015	-	40.95	11.21	0 784	79	6 83	-63	25
VAS-33	50 - 55	865 74	10 - 15	015	4/23/2015	-	-	11 22	0.780	60 2	6 83	-65	28
VAS-33	50 - 55	865 74	10 - 15	015	4/23/2015	14 30	40 95	11 23	0 779	50.4	6.83	-66	30
VAS-33	55 - 60	860.74	15 - 20	016	4/23/2015	15 35	57 00	11 08	0 807	>1000	7.00	-66	6
VAS-33	55 - 60	860.74	15 - 20	016	4/23/2015	15 40	57 00	11 20	0 807	595	6 98	-69	6.5
VAS-33	55 - 60	860 74	15 - 20	016	4/23/2015	15 45	57 00	11 25	0.806	580	6 97	-68	7
VAS-33	55 - 60	860 74	15 - 20	016	4/23/2015	15 50	57 00	11 26	0 806	575	6 95	-65	7 5
VAS-33	60 - 65	855 74	20 - 25	017	4/24/2015	8 53	58 15	10 82	0.832	374	6 94	-97	10
VAS-33	60 - 65	855 74	20 - 25	017	4/24/2015	8 58	-	11 27	0 829	168	6 88	-96	12
VAS-33	60 - 65	855 74	20 - 25	017	4/24/2015	9 03	58.20	11 31	0 829	143	6 86	-94	14
VAS-33	60 - 65	855.74	20 - 25	017	4/24/2015	9 08	-	11 18	0 828	81	6 84	-94	16
VAS-33	60 - 65	855 74	20 - 25	017	4/24/2015	9 13	58 18	11 24	0 828	24 7	6 83	-92	18

TABLE

SUMMARY OF STABILIZATION PARAMETERS
2015 VAS
RASMUSSEN SITE
LIVINGSTON COUNTY, MICHIGAN

Location	*Sample Depth (feet below ground surface)*	*Sample Elevation (feet above mean sea level)*	*Sample Depth (feet below water table)*	*Sample Number*	*Date*	*Time*	*Depth to Water (feet below top of riser)*	*Temperature (C)*	*Conductivity (mS/cm)*	*Turbidity NTU*	*pH s.u.*	*ORP (mV)*	*Volume Purged (gallons)*
VAS-33	65 - 70	850 74	25 - 30	018	4/24/2015	11 09	68 00	14 26	0 887	190	6 89	-71	6
VAS-33	65 - 70	850 74	25 - 30	018	4/24/2015	11 10	68.00	14 18	0.886	66 0	6 82	-71	6 5
VAS-33	65 - 70	850 74	25 - 30	018	4/24/2015	11:15	68 00	14 19	0 886	18 5	6 81	-69	7
VAS-33	65 - 70	850 74	25 - 30	018	4/24/2015	11 20	68 00	14 11	0 886	12 3	6 83	-68	7 5
VAS-33	70 - 75	845.74	30 - 35	019	4/27/2015	10 20	68 15	12 07	0 844	>1000	6 67	-147	10
VAS-33	70 - 75	845 74	30 - 35	019	4/27/2015	-	68 15	12 17	0.852	>1000	6 70	-142	11
VAS-33	70 - 75	845 74	30 - 35	019	4/27/2015	-	68.15	12.15	0 853	>1000	6 72	-138	12
VAS-33	70 - 75	845 74	30 - 35	019	4/27/2015	-	68 15	12 21	0 855	>1000	6 73	-134	13
VAS-33	70 - 75	845 74	30 - 35	019	4/27/2015	-	68 15	12 12	0 857	600	3 74	-131	14
VAS-33	70 - 75	845 74	30 - 35	019	4/27/2015	10 45	68 15	12 27	0 860	373	6 74	-132	15
VAS-33	75 - 80	840 74	35 - 40	020	4/27/2015	13 25	51 65	11 56	0.871	>1000	6 94	-101	10
VAS-33	75 - 80	840.74	35 - 40	020	4/27/2015	-	51 65	11 59	0 767	>1000	6.91	-93	12
VAS-33	75 - 80	840 74	35 - 40	020	4/27/2015	-	51 65	11.48	0.870	>1000	6 89	-93	14
VAS-33	75 - 80	840 74	35 - 40	020	4/27/2015	-	51 65	11 66	0 868	950	6 88	-90	16
VAS-33	75 - 80	840 74	35 - 40	020	4/27/2015	-	51 65	11 64	0 866	930	6 87	-89	18
VAS-33	75 - 80	840 74	35 - 40	020	4/27/2015	13 45	51 65	11 63	0 866	953	6.86	-89	20
VAS-33	80 - 85	835 74	40 - 45	021	4/27/2015	15:00	49 55	11 63	0 868	>1000	7 02	-80	12
VAS-33	80 - 85	835 74	40 - 45	021	4/27/2015	-	49 55	11 59	0.870	>1000	6 96	-75	14
VAS-33	80 - 85	835 74	40 - 45	021	4/27/2015	-	49 55	11 58	0 871	540	6 90	-76	16
VAS-33	80 - 85	835 74	40 - 45	021	4/27/2015	-	49 55	11 61	0 870	600	6.90	-73	18
VAS-33	80 - 85	835.74	40 - 45	021	4/27/2015	15:10	49 55	11 60	0 870	555	6 89	-73	20
VAS-33	85 - 90	830 74	45 - 50	022	4/27/2015	13:38	49 45	11 65	0 874	>1000	6.91	-74	12
VAS-33	85 - 90	830 74	45 - 50	022	4/27/2015	-	49 45	11 60	0 868	>1000	6.87	-72	14
VAS-33	85 - 90	830.74	45 - 50	022	4/27/2015	-	49 45	11 61	0 869	>1000	6 86	-72	16
VAS-33	85 - 90	830 74	45 - 50	022	4/27/2015	-	49 45	11 60	0 870	>1000	6 85	-71	18
VAS-33	85 - 90	830 74	45 - 50	022	4/27/2015	16 50	49 45	11 61	0 872	>1000	6 84	-70	20
VAS-33	90 - 95	825 74	50 - 55	023	4/28/2015	9:03	52 50	11 81	0 865	>1000	6 93	-112	10
VAS-33	90 - 95	825 74	50 - 55	023	4/28/2015	-	52 50	11 84	0 865	>1000	6 91	-114	12
VAS-33	90 - 95	825 74	50 - 55	023	4/28/2015	-	52 50	11 70	0.864	>1000	6 90	-112	14
VAS-33	90 - 95	825 74	50 - 55	023	4/28/2015	9 10	52 50	11 71	0.862	>1000	6 89	-113	16

TABLE

SUMMARY OF STABILIZATION PARAMETERS
2015 VAS
RASMUSSEN SITE
LIVINGSTON COUNTY, MICHIGAN

Location	*Sample Depth (feet below ground surface)*	*Sample Elevation (feet above mean sea level)*	*Sample Depth (feet below water table)*	*Sample Number*	*Date*	*Time*	*Depth to Water (feet below top of riser)*	*Temperature (C)*	*Conductivity (mS/cm)*	*Turbidity NTU*	*pH s.u.*	*ORP (mV)*	*Volume Purged (gallons)*
VAS-34	40 - 45	875 02	0 - 5	024/025	4/28/2015	14 27	40 01	12 20	0 677	175	6 96	-5	15
VAS-34	40 - 45	875 02	0 - 5	024/025	4/28/2015	-	40 01	12 19	0 673	135	6 90	-10	18
VAS-34	40 - 45	875 02	0 - 5	024/025	4/28/2015	-	40 01	11.95	0 669	64	6 86	-12	20
VAS-34	40 - 45	875 02	0 - 5	024/025	4/28/2015	-	40 01	11 93	0 670	49	6 85	-11	23
VAS-34	40 - 45	875 02	0 - 5	024/025	4/28/2015	14 40	40 01	11 91	0.671	34	6 84	-14	25
VAS-34	45 - 50	870.02	5 - 10	026	4/28/2015	15 15	40.10	12 10	0 774	318	6.97	-35	16
VAS-34	45 - 50	870 02	5 - 10	026	4/28/2015	-	40.10	11 89	0 778	233	6.93	-35	18
VAS-34	45 - 50	870 02	5 - 10	026	4/28/2015	-	40 10	11 91	0 780	186	6 90	-38	20
VAS-34	45 - 50	870 02	5 - 10	026	4/28/2015	-	40 10	11 81	0.779	200	6 89	-37	22
VAS-34	45 - 50	870 02	5 - 10	026	4/28/2015	15 25	40 10	11 86	0 778	206	6 87	-39	24
VAS-34	50 - 55	865 02	10 - 15	027	4/28/2015	16 20	40 45	12 31	0 791	693	6.92	-51	16
VAS-34	50 - 55	865 02	10 - 15	027	4/28/2015	-	40 45	12 15	0.789	631	6 92	-49	18
VAS-34	50 - 55	865 02	10 - 15	027	4/28/2015	-	40 45	12 10	0 790	579	6 91	-50	20
VAS-34	50 - 55	865 02	10 - 15	027	4/28/2015	-	40 45	12.09	0 785	490	6 90	-50	22
VAS-34	50 - 55	865 02	10 - 15	027	4/28/2015	16 30	40 45	12 15	0 785	504	6 90	-50	24
VAS-34	55 - 60	860 02	15 - 20	028	4/29/2015	8·05	41 00	11 22	0 792	>1000	6 41	-83	16
VAS-34	55 - 60	860 02	15 - 20	028	4/29/2015	-	41 00	11 29	0 791	>1000	6 43	-81	18
VAS-34	55 - 60	860 02	15 - 20	028	4/29/2015	-	41 00	11 28	0.791	>1000	6 44	-81	20
VAS-34	55 - 60	860 02	15 - 20	028	4/29/2015	-	41 00	11 21	0.793	>1000	6.46	-81	22
VAS-34	55 - 60	860 02	15 - 20	028	4/29/2015	8 15	41.00	11 24	0 792	>1000	6 46	-80	24
VAS-34	60 - 65	855 02	20 - 25	029	4/29/2015	9.30	50 30	12 37	0 824	>1000	6 84	-94	8
VAS-34	60 - 65	855 02	20 - 25	029	4/29/2015	-	50 30	12 18	0 826	>1000	6 83	-95	9
VAS-34	60 - 65	855 02	20 - 25	029	4/29/2015	-	50.30	12 16	0 826	>1000	6 82	-95	10
VAS-34	60 - 65	855 02	20 - 25	029	4/29/2015	-	50 30	12 09	0 825	600	6 82	-93	11
VAS-34	60 - 65	855 02	20 - 25	029	4/29/2015	9 45	50 30	12 13	0 824	635	6.82	-92	12
VAS-34	65 - 70	850 02	25 - 30	030	4/29/2015	11·20	52 10	13 55	0 851	>1000	6 98	-62	8
VAS-34	65 - 70	850.02	25 - 30	030	4/29/2015	-	52 10	13 50	0 852	>1000	6 95	-56	9
VAS-34	65 - 70	850 02	25 - 30	030	4/29/2015	-	52 10	13 60	0.850	950	6 93	-56	10
VAS-34	65 - 70	850 02	25 - 30	030	4/29/2015	-	52 10	13 75	0.854	490	6 95	-55	11
VAS-34	65 - 70	850 02	25 - 30	030	4/29/2015	11 35	52 10	13 76	0 854	330	6 93	-53	12
VAS-34	70 - 75	845 02	30 - 35	031	4/29/2015	13 50	52 45	14 09	0 853	>1000	6 97	-64	5
VAS-34	70 - 75	845 02	30 - 35	031	4/29/2015	-	52 45	14 05	0 854	>1000	6.96	-60	6
VAS-34	70 - 75	845 02	30 - 35	031	4/29/2015	-	52 45	13 72	0 852	>1000	6 97	-58	7
VAS-34	70 - 75	845 02	30 - 35	031	4/29/2015	14 10	52 45	13 88	0 851	>1000	6 95	-56	8

TABLE

SUMMARY OF STABILIZATION PARAMETERS
2015 VAS
RASMUSSEN SITE
LIVINGSTON COUNTY, MICHIGAN

Location	*Sample Depth (feet below ground surface)*	*Sample Elevation (feet above mean sea level)*	*Sample Depth (feet below water table)*	*Sample Number*	*Date*	*Time*	*Depth to Water (feet below top of riser)*	*Temperature (C)*	*Conductivity (mS/cm)*	*Turbidity NTU*	*pH s.u.*	*ORP (mV)*	*Volume Purged (gallons)*
VAS-34	75 - 80	840.02	35 - 40	032	4/29/2015	15 40	66 35	14.07	0 817	>1000	7 06	-45	5
VAS-34	75 - 80	840 02	35 - 40	032	4/29/2015	-	66 50	14 07	0.818	>1000	7 04	-40	6
VAS-34	75 - 80	840 02	35 - 40	032	4/29/2015	-	66 64	14 04	0 818	>1000	7 04	-37	7
VAS-34	75 - 80	840 02	35 - 40	032	4/29/2015	16 00	66 77	14 02	0 819	>1000	7 03	-35	8
VAS-34	80 - 85	835 02	40 - 45	033	4/30/2015	8 20	57 50	12.05	0 789	>1000	6 74	-115	5
VAS-34	80 - 85	835 02	40 - 45	033	4/30/2015	-	57 65	12 12	0 790	>1000	6 75	-136	6
VAS-34	80 - 85	835.02	40 - 45	033	4/30/2015	-	57 81	12.04	0 793	>1000	6 77	-139	7
VAS-34	80 - 85	835 02	40 - 45	033	4/30/2015	8 40	57 95	11 95	0 795	>1000	6.77	-141	8
VAS-34	85 - 90	830 02	45 - 50	034	4/30/2015	10 05	68 30	11 41	0 808	850	6 87	-98	5
VAS-34	85 - 90	830 02	45 - 50	034	4/30/2015	-	68 30	11 61	0 808	900	6 89	-101	6
VAS-34	85 - 90	830 02	45 - 50	034	4/30/2015	-	68 30	11 65	0 807	695	6 89	-99	7
VAS-34	85 - 90	830 02	45 - 50	034	4/30/2015	-	68 30	11 63	0 807	754	6 89	-100	8
VAS-34	85 - 90	830 02	45 - 50	034	4/30/2015	-	68 30	11 65	0.804	791	6 87	-99	9
VAS-34	85 - 90	830 02	45 - 50	034	4/30/2015	10 25	68 30	11 66	0 807	834	6 86	-98	10
VAS-34	90 - 95	825 02	50 - 55	035	4/30/2015	12.05	68 50	12 06	0.798	>1000	7.13	-39	5
VAS-34	90 - 95	825 02	50 - 55	035	4/30/2015	-	68 85	12 11	0 799	>1000	7 11	-48	6
VAS-34	90 - 95	825 02	50 - 55	035	4/30/2015	-	68 92	12 19	0 796	>1000	7 12	-50	7
VAS-34	90 - 95	825 02	50 - 55	035	4/30/2015	12·25	68 95	12 20	0.796	>1000	7 13	-49	8
VAS-35	40 - 45	873.94	0 - 5	036	4/30/2015	16 50	39 90	11.37	0 603	960	6 92	97	16
VAS-35	40 - 45	873 94	0 - 5	036	4/30/2015	-	39 90	11.38	0 603	690	6 90	94	18
VAS-35	40 - 45	873 94	0 - 5	036	4/30/2015	-	39 90	11.32	0.604	488	6 90	92	20
VAS-35	40 - 45	873 94	0 - 5	036	4/30/2015	-	39 90	11 33	0 604	435	6 89	91	22
VAS-35	40 - 45	873 94	0 - 5	036	4/30/2015	17 00	39 90	11 30	0 604	391	6.88	90	24
VAS-35	45 - 50	868 94	5 - 10	037/038	5/1/2015	8 15	38 75	11.08	0 610	615	6 69	55	16
VAS-35	45 - 50	868 94	5 - 10	037/038	5/1/2015	-	38.75	11 09	0 610	556	6 69	50	18
VAS-35	45 - 50	868.94	5 - 10	037/038	5/1/2015	-	38.75	11 15	0 610	500	6 69	38	20
VAS-35	45 - 50	868 94	5 - 10	037/038	5/1/2015	-	38 75	11 19	0 609	468	6 68	36	22
VAS-35	45 - 50	868 94	5 - 10	037/038	5/1/2015	8 25	38 75	11 27	0 609	404	6 68	34	24

TABLE

SUMMARY OF STABILIZATION PARAMETERS
2015 VAS
RASMUSSEN SITE
LIVINGSTON COUNTY, MICHIGAN

Location	*Sample Depth (feet below ground surface)*	*Sample Elevation (feet above mean sea level)*	*Sample Depth (feet below water table)*	*Sample Number*	*Date*	*Time*	*Depth to Water (feet below top of riser)*	*Temperature (C)*	*Conductivity (mS/cm)*	*Turbidity NTU*	*pH s.u.*	*ORP (mV)*	*Volume Purged (gallons)*
VAS-35	50 - 55	863 94	10 - 15	039	5/1/2015	10 00	42 10	12 00	0 663	>1000	6 91	-45	15
VAS-35	50 - 55	863 94	10 - 15	039	5/1/2015	-	42 10	11 93	0 663	>1000	6 88	-42	16
VAS-35	50 - 55	863.94	10 - 15	039	5/1/2015	-	42.10	11.99	0 660	>1000	6 88	-37	17
VAS-35	50 - 55	863 94	10 - 15	039	5/1/2015	-	42.10	11.89	0 663	>1000	6 87	-36	18
VAS-35	50 - 55	863.94	10 - 15	039	5/1/2015	-	42 10	11 98	0.662	>1000	6.85	-35	19
VAS-35	50 - 55	863 94	10 - 15	039	5/1/2015	10 10	42 10	11 95	0 663	>1000	6 85	-36	20
VAS-35	55 - 60	858 94	15 - 20	040	5/1/2015	11 30	40 10	12 08	0 697	592	6 86	-80	25
VAS-35	55 - 60	858 94	15 - 20	040	5/1/2015	-	40.10	12 09	0 705	363	6 84	-79	30
VAS-35	55 - 60	858 94	15 - 20	040	5/1/2015	-	40 10	12.00	0 709	275	6.81	-76	35
VAS-35	55 - 60	858 94	15 - 20	040	5/1/2015	11 45	40 10	12 08	0 709	240	6 81	-77	40
VAS-35	60 - 65	853 94	20 - 25	041	5/1/2015	14·15	54 80	14 77	0 737	>1000	6.89	-82	4
VAS-35	60 - 65	853.94	20 - 25	041	5/1/2015	-	54.95	14 80	0 736	>1000	6 85	-90	4 5
VAS-35	60 - 65	853 94	20 - 25	041	5/1/2015	-	55.09	14 60	0.743	>1000	6 82	-96	5
VAS-35	60 - 65	853 94	20 - 25	041	5/1/2015	-	55 15	14 61	0.740	>1000	6 82	-97	5 5
VAS-35	60 - 65	853 94	20 - 25	041	5/1/2015	14·30	55 20	14 62	0 741	>1000	6.81	-99	6
VAS-35	65 - 70	848 94	25 - 30	042	5/4/2015	11 25	-	11 98	0 760	>1000	6.49	-80	20
VAS-35	65 - 70	848 94	25 - 30	042	5/4/2015	11 30	-	11 96	0 762	445	6 57	-81	21
VAS-35	65 - 70	848 94	25 - 30	042	5/4/2015	11·35	-	11.94	0 763	234	6 60	-82	22
VAS-35	65 - 70	848 94	25 - 30	042	5/4/2015	11.40	-	11 93	0 763	195	6 62	-82	23
VAS-35	70 - 75	843.94	30 - 35	043	5/4/2015	13 35	-	12 30	0 758	201	6 90	-115	12
VAS-35	70 - 75	843 94	30 - 35	043	5/4/2015	13.40	-	12 20	0 757	240	6 84	-115	13
VAS-35	70 - 75	843 94	30 - 35	043	5/4/2015	13 45	-	12 05	0 756	261	6 78	-113	14
VAS-35	70 - 75	843 94	30 - 35	043	5/4/2015	13 50	-	11 96	0 757	215	6 74	-112	15
VAS-35	75 - 80	838 94	35 - 40	044	5/4/2015	15 20	-	12 33	0 769	85 0	6.82	-104	17
VAS-35	75 - 80	838 94	35 - 40	044	5/4/2015	15 25	-	12 48	0 763	61 8	6 81	-107	18
VAS-35	75 - 80	838 94	35 - 40	044	5/4/2015	15 30	-	12 49	0 762	48 2	6.80	-107	19
VAS-35	75 - 80	838 94	35 - 40	044	5/4/2015	15 35	-	12 42	0 766	40 9	6 80	-108	20
VAS-35	80 - 85	833 94	40 - 45	045	5/4/2015	17 05	-	12 82	0 774	821	6.84	-109	26
VAS-35	80 - 85	833 94	40 - 45	045	5/4/2015	17 10	-	12 86	0 775	839	6 81	-109	27
VAS-35	80 - 85	833 94	40 - 45	045	5/4/2015	17·15	-	12 97	0 775	868	6 80	-110	28
VAS-35	80 - 85	833 94	40 - 45	045	5/4/2015	17 20	-	12 99	0 776	879	6 78	-111	29

TABLE

SUMMARY OF STABILIZATION PARAMETERS
2015 VAS
RASMUSSEN SITE
LIVINGSTON COUNTY, MICHIGAN

Location	*Sample Depth (feet below ground surface)*	*Sample Elevation (feet above mean sea level)*	*Sample Depth (feet below water table)*	*Sample Number*	*Date*	*Time*	*Depth to Water (feet below top of riser)*	*Temperature (C)*	*Conductivity (mS/cm)*	*Turbidity NTU*	*pH s.u.*	*ORP (mV)*	*Volume Purged (gallons)*
VAS-35	85 - 90	828.94	45 - 50	046	5/5/2015	8·25	-	11.82	0.863	267	4 95	-119	20
VAS-35	85 - 90	828 94	45 - 50	046	5/5/2015	8 30	-	11.74	0 864	409	5 17	-119	21
VAS-35	85 - 90	828 94	45 - 50	046	5/5/2015	8 35	-	11 71	0 864	536	5 26	-119	23
VAS-35	85 - 90	828.94	45 - 50	046	5/5/2015	8 40	-	11.66	0 865	601	5 32	-119	24
VAS-35	90 - 95	823 94	50 - 55	047	5/5/2015	10.00	-	12 17	0.868	190	5 69	-101	-
VAS-35	90 - 95	823 94	50 - 55	047	5/5/2015	10 05	-	12 19	0 868	179	5 73	-101	-
VAS-35	90 - 95	823 94	50 - 55	047	5/5/2015	10 10	-	12.24	0 869	167	5 77	-108	-
VAS-35	90 - 95	823 94	50 - 55	047	5/5/2015	10 15	-	12 28	0 870	181	5.80	-109	-

Note

- Not listed

Appendix D
Laboratory Reports

CONESTOGA-ROVERS & ASSOCIATES

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MEMORANDUM

TO:	Alan Deal	REF. NO.:	032504-35
FROM:	Nancy Bergstrom/tl/51/Det	DATE:	May 14, 2015

RE: **Analytical Results and Reduced Validation**
2015 Vertical Aquifer Sampling
Rasmussen Landfill Site
Livingston County, Michigan
April 2015

1.0 Introduction

The following document details a reduced validation of analytical results for groundwater samples collected in support of the 2015 Vertical Aquifer Sampling at the Rasmussen Landfill Site during April 2015. Samples were submitted to TestAmerica Laboratories, Inc., located in North Canton, Ohio. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard Conestoga-Rovers & Associates (CRA) report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from surrogate spikes, laboratory control samples (LCS), matrix spikes (MS), and field QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

i) "Groundwater Operation and Maintenance Quality Assurance Project Plan (QAPP)", Revision 3, September 4, 2012

ii) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", United States Environmental Protection Agency (USEPA) 540/R-99-008, October 1999

Item ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2.0 Sample Holding Time and Preservation

The sample holding time criteria and sample preservation requirements for the analyses are summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (4 +/- 2°C).

3.0 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank detections were associated with investigative samples that reported non-detect concentrations.

4.0 Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for volatile organic compounds (VOC) determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the above criteria.

5.0 Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. All LCS were within the laboratory control limits, demonstrating acceptable analytical accuracy.

6.0 Field QA/QC Samples

The field QA/QC consisted of three trip blank samples and two field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, three trip blank samples were submitted to the laboratory for VOC analysis. Methylene chloride was detected in two trip blank samples. Methylene chloride was not detected in the investigative samples and qualification was not required. All remaining results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate samples were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one time the RL value for water samples.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

7.0 Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. No positive analyte detections less than the RL but greater than the MDL were reported. Non-detect results were presented as non-detect at the RL in Table 2.

8.0 Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable without qualification.

TABLE 1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL 2015

						Analysis/Parameters				
Sample Identification	*Location*	*Sample Depth (ft. bgs)*	*Matrix*	*Collection Date (mm/dd/yyyy)*	*Collection Time (hr:min)*	*Select VOC*				*Comments*
TA-NC SDG No.: 240-49680-1										
GW-32504-042115-AJD-001	VAS-31	30 - 45	water	04/21/2015	14:00	X	--	--	--	
GW-32504-042115-AJD-002	VAS-31	35 - 40	water	04/21/2015	15:00	X	--	--	--	
GW-32504-042115-AJD-003	VAS-31	42 - 47	water	04/21/2015	16:30	X	--	--	--	
GW-32504-042215-AJD-004	VAS-31	45 - 50	water	04/22/2015	08:30	X	--	--	--	
GW-32504-042215-AJD-005	VAS-31	45 - 50	water	04/22/2015	08:40	X	--	--	--	Field duplicate of VAS-31, 45-50
GW-32504-042215-AJD-006	VAS-31	50 - 55	water	04/22/2015	09:30	X	--	--	--	
GW-32504-042215-AJD-007	VAS-31	55 - 60	water	04/22/2015	10:40	X	--	--	--	
TRIP BLANK	--	--	water	04/22/2015	--	X	--	--	--	Trip Blank
TA-NC SDG No.: 240-49815-1										
GW-32504-042215-AJD-008	VAS-31	60 - 65	water	04/22/2015	11:40	X	--	--	--	
GW-32504-042215-AJD-009	VAS-31	65 - 70	water	04/22/2015	14:00	X	--	--	--	
GW-32504-042215-AJD-010	VAS-31	68 - 73	water	04/22/2015	15:40	X	--	--	--	
GW-32504-042315-AJD-011	VAS-31	73.5 - 78.5	water	04/23/2015	08:05	X	--	--	--	
GW-32504-042315-AJD-012	VAS-31	73.5 - 78.5	water	04/23/2015	08:30	X	--	--	--	Field duplicate of VAS-31, 73.5-78.5
TRIP BLANK	--	--	water	04/23/2015	--	X	--	--	--	Trip Blank

TABLE 1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL 2015

						Analysis/Parameters				
Sample Identification	***Location***	***Sample Depth*** (ft. bgs)	***Matrix***	***Collection Date*** (mm/dd/yyyy)	***Collection Time*** (hr:min)	***Select VOC***				***Comments***
TA-NC SDG No.: 240-49837-1										
GW-32504-042315-DR-013	VAS-33	40 - 45	water	04/23/2015	13:05	X	--	--	--	
GW-32504-042315-DR-014	VAS-33	45 - 50	water	04/23/2015	13:45	X	--	--	--	
GW-32504-042315-DR-015	VAS-33	50 - 55	water	04/23/2015	14:30	X	--	--	--	
GW-32504-042315-DR-016	VAS-33	55 - 60	water	04/23/2015	15:40	X	--	--	--	
GW-32504-042415-DR-017	VAS-33	60 - 65	water	04/24/2015	09:15	X	--	--	--	
GW-32504-042415-DR-018	VAS-33	65 - 70	water	04/24/2015	11:20	X	--	--	--	
TB-32504-042415	--	--	water	04/24/2015	--	X	--	--	--	Trip Blank

Notes:

VOC	- Volatile Organic Compounds
Select VOC	1,1,1-Trichloroethane; 1,2-Dichloroethene (total); Acetone; Benzene; Chlorobenzene; Ethylbenzene; 2-Butanone; 4-Methyl-2-pentanone; Methylene chloride; Toluene; Trichloroethene; Vinyl chloride; Xylenes, total
ft. bgs	- Feet below ground surface
MS/MSD	- Matrix Spike/Matrix Spike Duplicate
TA-NC	- TestAmerica Laboratories, Inc. - North Canton, Ohio
SDG	- Sample Delivery Group

TABLE 2

2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL 2015

Sample Location:		*VAS-31*	*VAS-31*	*VAS-31*
Sample ID:		*GW-32504-042115-AJD-001*	*GW-32504-042115-AJD-002*	*GW-32504-042115-AJD-003*
Sample Date:		*4/21/2015*	*4/21/2015*	*4/21/2015*
Parameters	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	1.1	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	ND(10)	ND(10)	ND(10)
Acetone	µg/L	ND(10)	ND(10)	ND(10)
Benzene	µg/L	ND(1.0)	3.1	1.8
Chlorobenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	µg/L	ND(1.0)	3.6	3.0
Xylenes (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL 2015

Sample Location:		*VAS-31*	*VAS-31*	*VAS-31*
Sample ID:		*GW-32504-042215-AJD-005*	*GW-32504-042215-AJD-004*	*GW-32504-042215-AJD-006*
Sample Date:		*4/22/2015*	*4/22/2015*	*4/22/2015*
		(Duplicate)		
Parameters	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	ND(10)	ND(10)	ND(10)
Acetone	µg/L	ND(10)	ND(10)	ND(10)
Benzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	µg/L	2.5	2.5	ND(1.0)
Xylenes (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL 2015

Sample Location:		*VAS-31*	*VAS-31*	*VAS-31*
Sample ID:		*GW-32504-042215-AJD-007*	*GW-32504-042215-AJD-008*	*GW-32504-042215-AJD-009*
Sample Date:		*4/22/2015*	*4/22/2015*	*4/22/2015*
Parameters	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	ND(10)	ND(10)	ND(10)
Acetone	µg/L	ND(10)	ND(10)	ND(10)
Benzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL 2015

Sample Location:		*VAS-31*	*VAS-31*	*VAS-31*
Sample ID:		*GW-32504-042215-AJD-010*	*GW-32504-042315-AJD-012*	*GW-32504-042315-AJD-011*
Sample Date:		*4/22/2015*	*4/23/2015*	*4/23/2015*
			(Duplicate)	
Parameters	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	ND(10)	ND(10)	ND(10)
Acetone	µg/L	ND(10)	ND(10)	ND(10)
Benzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL 2015

Sample Location:		*VAS-33*	*VAS-33*	*VAS-33*
Sample ID:		*GW-32504-042315-DR-013*	*GW-32504-042315-DR-014*	*GW-32504-042315-DR-015*
Sample Date:		*4/23/2015*	*4/23/2015*	*4/23/2015*
Parameters	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	ND(10)	ND(10)	ND(10)
Acetone	µg/L	ND(10)	ND(10)	ND(10)
Benzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL 2015

Sample Location:		*VAS-33*	*VAS-33*	*VAS-33*
Sample ID:		*GW-32504-042315-DR-016*	*GW-32504-042415-DR-017*	*GW-32504-042415-DR-018*
Sample Date:		*4/23/2015*	*4/24/2015*	*4/24/2015*
Parameters	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	ND(10)	ND(10)	ND(10)
Acetone	µg/L	ND(10)	ND(10)	ND(10)
Benzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	µg/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	µg/L	ND(1.0)	ND(1.0)	ND(1.0)

Notes:

ND - Not detected at the associated reporting limit.

TABLE 3

ANALYTICAL METHODS AND HOLDING TIME CRITERIA
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL 2015

Parameter	*Method*	*Matrix*	*Preservation*	*Holding Time*	
				Collection to Extraction (Days)	*Collection or Extraction to Analysis (Days)*
Select VOC	SW-846 8260	Water	pH < 2 and Iced, 4 ± 2° C	-	14

Notes

SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions.
VOC - Volatile Organic Compounds
Select VOC 1,1,1-Trichloroethane; 1,2-Dichloroethene (total); Acetone; Benzene; Chlorobenzene; Ethylbenzene; 2-Butanone; 4-Methyl-2-pentanone; Methylene chloride; Toluene; Trichloroethene; Vinyl chloride; Xylenes, total

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MEMORANDUM

TO:	Alan Deal	REF. NO.:	032504-35
FROM:	Nancy Bergstrom/tl/52/Det	DATE:	May 17, 2015

RE: **Analytical Results and Reduced Validation**
2015 Vertical Aquifer Sampling
Rasmussen Landfill Site
Livingston County, Michigan
April and May 2015

1.0 Introduction

The following document details a reduced validation of analytical results for groundwater samples collected in support of the 2015 Vertical Aquifer Sampling at the Rasmussen Landfill Site during April and May 2015. Samples were submitted to TestAmerica Laboratories, Inc., located in North Canton, Ohio. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard Conestoga-Rovers & Associates (CRA) report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from surrogate spikes, laboratory control samples (LCS), matrix spikes (MS), and field QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

i) "Groundwater Operation and Maintenance Quality Assurance Project Plan (QAPP)", Revision 3, September 4, 2012

ii) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", United States Environmental Protection Agency (USEPA) 540/R-99-008, October 1999

Item ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2.0 Sample Holding Time and Preservation

The sample holding time criteria and sample preservation requirements for the analyses are summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (4 +/- 2°C).

3.0 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank detections were associated with investigative samples that reported non-detect concentrations.

4.0 Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for volatile organic compounds (VOC) determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the above criteria.

5.0 Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. Trichloroethene was recovered above the acceptance criteria in two LCS. Trichloroethene was not detected in the associated investigative samples and qualification was

not required. All remaining LCS were within the laboratory control limits, demonstrating acceptable analytical accuracy.

6.0 Field QA/QC Samples

The field QA/QC consisted of six trip blank samples and four field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, six trip blank samples were submitted to the laboratory for VOC analysis. Methylene chloride and acetone were detected in several trip blank samples. Methylene chloride and acetone were not detected in the associated investigative samples and qualification was not required. All remaining results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, four field duplicate samples were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one time the RL value for water samples.

Target analytes were not detected in the field duplicate samples.

7.0 Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. No positive analyte detections less than the RL but greater than the MDL were reported. Non-detect results were presented as non-detect at the RL in Table 2.

8.0 Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable without qualification.

TABLE 1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Identification	*Location*	*Sample Depth (ft. bgs)*	*Matrix*	*Collection Date (mm/dd/yyyy)*	*Collection Time (hr:min)*	*Analysis/Parameters* Select VOC	*Comments*
TA-NC SDG No.: 240-49977-1							
GW-32504-042715-DR-019	VAS-33	70 - 75	water	04/27/2015	10:45	X	
GW-32504-042715-DR-020	VAS-33	75 - 80	water	04/27/2015	13:45	X	
GW-32504-042715-DR-021	VAS-33	80 - 85	water	04/27/2015	15:10	X	
GW-32504-042715-DR-022	VAS-33	85 - 90	water	04/27/2015	16:50	X	
GW-32504-042815-DR-023	VAS-33	90 - 95	water	04/28/2015	09:10	X	
TB-32504-042815	--	--	water	04/28/2015	--	X	Trip Blank
TA-NC SDG No.: 240-50120-1							
GW-32504-042815-DR-024	VAS-34	40 - 45	water	04/28/2015	14:40	X	MS/MSD
GW-32504-042815-DR-025	VAS-34	40 - 45	water	04/28/2015	14:45	X	Field duplicate of VAS-34, 40-45
GW-32504-042815-DR-026	VAS-34	45 - 50	water	04/28/2015	15:25	X	
GW-32504-042815-DR-027	VAS-34	50 - 55	water	04/28/2015	16:30	X	
GW-32504-042915-DR-028	VAS-34	55 - 60	water	04/29/2015	08:15	X	
GW-32504-042915-DR-029	VAS-34	60 - 65	water	04/29/2015	09:45	X	
GW-32504-042915-DR-030	VAS-34	65 - 70	water	04/29/2015	11:35	X	
GW-32504-042915-DR-031	VAS-34	70 - 75	water	04/29/2015	14:10	X	
GW-32504-042915-DR-032	VAS-34	75 - 80	water	04/29/2015	16:00	X	
GW-32504-043015-DR-033	VAS-34	80 - 85	water	04/30/2015	08:40	X	
GW-32504-043015-DR-034	VAS-34	85 - 90	water	04/30/2015	10:25	X	
GW-32504-043015-DR-035	VAS-34	90 - 95	water	04/30/2015	12:25	X	
TB-32504-043015	--	--	water	04/30/2015	--	X	Trip Blank
TA-NC SDG No.: 240-50168-1							
GW-32504-043015-DR-036	VAS-35	40 - 45	water	04/30/2015	17:00	X	
GW-32504-050115-DR-037	VAS-35	45 - 50	water	05/01/2015	08:25	X	
GW-32504-050115-DR-038	VAS-35	45 - 50	water	05/01/2015	08:35	X	Field duplicate of VAS-35, 45-50
GW-32504-050115-DR-039	VAS-35	50 - 55	water	05/01/2015	10:10	X	
GW-32504-050115-DR-040	VAS-35	55 - 60	water	05/01/2015	11:45	X	

TABLE 1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Identification	*Location*	*Sample Depth (ft. bgs)*	*Matrix*	*Collection Date (mm/dd/yyyy)*	*Collection Time (hr:min)*	*Analysis/Parameters* Select VOC	*Comments*
TA-NC SDG No.: 240-50168-1							
GW-32504-050115-DR-041	VAS-35	60 - 65	water	05/01/2015	14:30	X	
TB-32504-050115	--	--	water	05/01/2015	--	X	Trip Blank
TA-NC SDG No.: 240-50274-1							
GW-32504-050415-EM-042	VAS-35	65 - 70	water	05/04/2015	11:40	X	
GW-32504-050415-EM-043	VAS-35	70 - 75	water	05/04/2015	13:50	X	
GW-32504-050415-EM-044	VAS-35	75 - 80	water	05/04/2015	15:35	X	
GW-32504-050415-EM-045	VAS-35	80 - 85	water	05/04/2015	17:20	X	
GW-32504-050515-EM-046	VAS-35	85 - 90	water	05/05/2015	08:40	X	
GW-32504-050515-EM-047	VAS-35	90 - 95	water	05/05/2015	10:15	X	
TB-32505-050515-EM	--	--	water	05/05/2015	--	X	Trip Blank
TA-NC SDG No.: 240-50369-1							
GW-32504-050515-EM-048	VAS-32	45 - 50	water	05/05/2015	14:50	X	
GW-32504-050515-EM-049	VAS-32	50 - 55	water	05/05/2015	16:05	X	
GW-32504-050515-EM-050	VAS-32	50 - 55	water	05/05/2015	16:45	X	Field duplicate of VAS-32, 50-55
GW-32504-050515-EM-051	VAS-32	55 - 60	water	05/05/2015	17:25	X	
GW-32504-050615-EM-052	VAS-32	60 - 65	water	05/06/2015	09:30	X	
GW-32504-050615-EM-053	VAS-32	65 - 70	water	05/06/2015	11:15	X	
GW-32504-050615-EM-054	VAS-32	70 - 75	water	05/06/2015	12:45	X	
TB-32504-050615-EM	--	--	water	05/06/2015	--	X	Trip Blank
TA-NC SDG No.: 240-50436-1							
GW-32504-050615-EM-055	VAS-32	75 - 80	water	05/06/2015	14:15	X	
GW-32504-050615-EM-056	VAS-32	80 - 85	water	05/06/2015	15:50	X	
GW-32504-050615-EM-057	VAS-32	85 - 90	water	05/06/2015	17:45	X	
GW-32504-050715-EM-058	VAS-32	90 - 95	water	05/07/2015	09:20	X	
GW-32504-050715-EM-059	VAS-32	95 - 100	water	05/07/2015	11:15	X	

TABLE 1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Identification	*Location*	*Sample Depth (ft. bgs)*	*Matrix*	*Collection Date (mm/dd/yyyy)*	*Collection Time (hr:min)*	*Analysis/Parameters*	*Comments*
						Select VOC	
TA-NC SDG No.: 240-50436-1							
GW-32504-050715-EM-060	VAS-32	95 - 100	water	05/07/2015	12:00	X	Field duplicate of VAS-32, 95-100
GW-32504-050715-EM-061	VAS-32	100 - 105	water	05/07/2015	13:50	X	
TB-32504-050715-EM	--	--	water	05/07/2015	--	X	Trip Blank

Notes:

VOC - Volatile Organic Compounds
Select VOC - 1,1,1-Trichloroethane; 1,2-Dichloroethene (total); Acetone; Benzene; Chlorobenzene; Ethylbenzene; 2-Butanone; - 4-Methyl-2-pentanone; Methylene chloride; Toluene; Trichloroethene; Vinyl chloride; Xylenes, total
ft. bgs - Feet below ground surface
MS/MSD - Matrix Spike/Matrix Spike Duplicate
TA-NC - TestAmerica Laboratories, Inc. - North Canton, Ohio
SDG - Sample Delivery Group

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-32***	***VAS-32***	***VAS-32***
Sample ID:		***GW-32504-050515-EM-048***	***GW-32504-050515-EM-049***	***GW-32504-050515-EM-050***
Sample Date:		***5/5/2015***	***5/5/2015***	***5/5/2015***
Sample Depth:		***(45-50) ft bgs***	***(50-55) ft bgs***	***(50-55) ft bgs (Duplicate)***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-32***	***VAS-32***	***VAS-32***
Sample ID:		***GW-32504-050515-EM-051***	***GW-32504-050615-EM-052***	***GW-32504-050615-EM-053***
Sample Date:		***5/5/2015***	***5/6/2015***	***5/6/2015***
Sample Depth:		***(55-60) ft bgs***	***(60-65) ft bgs***	***(65-70) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-32***	***VAS-32***	***VAS-32***
Sample ID:		***GW-32504-050615-EM-054***	***GW-32504-050615-EM-055***	***GW-32504-050615-EM-056***
Sample Date:		***5/6/2015***	***5/6/2015***	***5/6/2015***
Sample Depth:		***(70-75) ft bgs***	***(75-80) ft bgs***	***(80-85) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-32***	***VAS-32***	***VAS-32***
Sample ID:		***GW-32504-050615-EM-057***	***GW-32504-050715-EM-058***	***GW-32504-050715-EM-059***
Sample Date:		***5/6/2015***	***5/7/2015***	***5/7/2015***
Sample Depth:		***(85-90) ft bgs***	***(90-95) ft bgs***	***(95-100) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-32***	***VAS-32***	***VAS-33***
Sample ID:		***GW-32504-050715-EM-060***	***GW-32504-050715-EM-061***	***GW-32504-042715-DR-019***
Sample Date:		***5/7/2015***	***5/7/2015***	***4/27/2015***
Sample Depth:		***(95-100) ft bgs (Duplicate)***	***(100-105) ft bgs***	***(70-75) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-33***	***VAS-33***	***VAS-33***
Sample ID:		***GW-32504-042715-DR-020***	***GW-32504-042715-DR-021***	***GW-32504-042715-DR-022***
Sample Date:		***4/27/2015***	***4/27/2015***	***4/27/2015***
Sample Depth:		***(75-80) ft bgs***	***(80-85) ft bgs***	***(85-90) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-33***	***VAS-34***	***VAS-34***
Sample ID:		***GW-32504-042815-DR-023***	***GW-32504-042815-DR-024***	***GW-32504-042815-DR-025***
Sample Date:		***4/28/2015***	***4/28/2015***	***4/28/2015***
Sample Depth:		***(90-95) ft bgs***	***(40-45) ft bgs***	***(45-45) ft bgs (Duplicate)***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-34***	***VAS-34***	***VAS-34***
Sample ID:		***GW-32504-042815-DR-026***	***GW-32504-042815-DR-027***	***GW-32504-042915-DR-028***
Sample Date:		***4/28/2015***	***4/28/2015***	***4/29/2015***
Sample Depth:		***(45-50) ft bgs***	***(50-55) ft bgs***	***(55-60) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-34***	***VAS-34***	***VAS-34***
Sample ID:		***GW-32504-042915-DR-029***	***GW-32504-042915-DR-030***	***GW-32504-042915-DR-031***
Sample Date:		***4/29/2015***	***4/29/2015***	***4/29/2015***
Sample Depth:		***(60-65) ft bgs***	***(65-70) ft bgs***	***(70-75) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-34***	***VAS-34***	***VAS-34***
Sample ID:		***GW-32504-042915-DR-032***	***GW-32504-043015-DR-033***	***GW-32504-043015-DR-034***
Sample Date:		***4/29/2015***	***4/30/2015***	***4/30/2015***
Sample Depth:		***(75-80) ft bgs***	***(80-85) ft bgs***	***(85-90) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-34***	***VAS-35***	***VAS-35***
Sample ID:		***GW-32504-043015-DR-035***	***GW-32504-043015-DR-036***	***GW-32504-050115-DR-037***
Sample Date:		***4/30/2015***	***4/30/2015***	***5/1/2015***
Sample Depth:		***(90-95) ft bgs***	***(40-45) ft bgs***	***(45-50) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-35***	***VAS-35***	***VAS-35***
Sample ID:		***GW-32504-050115-DR-038***	***GW-32504-050115-DR-039***	***GW-32504-050115-DR-040***
Sample Date:		***5/1/2015***	***5/1/2015***	***5/1/2015***
Sample Depth:		***(45-50) ft bgs (Duplicate)***	***(50-55) ft bgs***	***(55-60) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-35***	***VAS-35***	***VAS-35***
Sample ID:		***GW-32504-050115-DR-041***	***GW-32504-050415-EM-042***	***GW-32504-050415-EM-043***
Sample Date:		***5/1/2015***	***5/4/2015***	***5/4/2015***
Sample Depth:		***(60-65) ft bgs***	***(65-70) ft bgs***	***(70-75) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-35***	***VAS-35***	***VAS-35***
Sample ID:		***GW-32504-050415-EM-044***	***GW-32504-050415-EM-045***	***GW-32504-050515-EM-046***
Sample Date:		***5/4/2015***	***5/4/2015***	***5/5/2015***
Sample Depth:		***(75-80) ft bgs***	***(80-85) ft bgs***	***(85-90) ft bgs***
Parameters:	***Units***			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)	ND(10)	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)	ND(10)	ND(10)
Acetone	ug/L	ND(10)	ND(10)	ND(10)
Benzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Methylene chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)	ND(1.0)	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)	ND(1.0)	ND(1.0)

TABLE 2

VALIDATED ANAYLTICA RESULTS SUMMARY
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Sample Location:		***VAS-35***
Sample ID:		***GW-32504-050515-EM-047***
Sample Date:		***5/5/2015***
Sample Depth:		***(90-95) ft bgs***
Parameters:	***Units***	
Volatile Organic Compounds		
1,1,1-Trichloroethane	ug/L	ND(1.0)
1,2-Dichloroethene (total)	ug/L	ND(1.0)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND(10)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND(10)
Acetone	ug/L	ND(10)
Benzene	ug/L	ND(1.0)
Chlorobenzene	ug/L	ND(1.0)
Ethylbenzene	ug/L	ND(1.0)
Methylene chloride	ug/L	ND(1.0)
Toluene	ug/L	ND(1.0)
Trichloroethene	ug/L	ND(1.0)
Vinyl chloride	ug/L	ND(1.0)
Xylenes (total)	ug/L	ND(1.0)

Notes:

ND - Not detected at the associated reporting limit.

TABLE 3

ANALYTICAL METHODS AND HOLDING TIME CRITERIA
2015 VERTICAL AQUIFER SAMPLING
RASMUSSEN LANDFILL SITE
LIVINGSTON COUNTY, MICHIGAN
APRIL AND MAY 2015

Parameter	*Method*	*Matrix*	*Preservation*	*Holding Time*	
				Collection to Extraction (Days)	*Collection or Extraction to Analysis (Days)*
Select VOC	SW-846 8260	Water	pH < 2 and Iced, 4 ± 2° C	-	14

Notes

SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions.
VOC - Volatile Organic Compounds
Select VOC - 1,1,1-Trichloroethane; 1,2-Dichloroethene (total); Acetone; Benzene; Chlorobenzene; Ethylbenzene; 2-Butanone; 4-Methyl-2-pentanone; Methylene chloride; Toluene; Trichloroethene; Vinyl chloride; Xylenes, total

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-49680-1
Client Project/Site: 32504, Rasmussen Landfill

For:
Conestoga-Rovers & Associates, Inc.
14496 Sheldon Road, Suite 200
Plymouth, Michigan 48170

Attn: Rawa Fleisher

Denise D Heckler

Authorized for release by:
4/29/2015 12:50:13 PM

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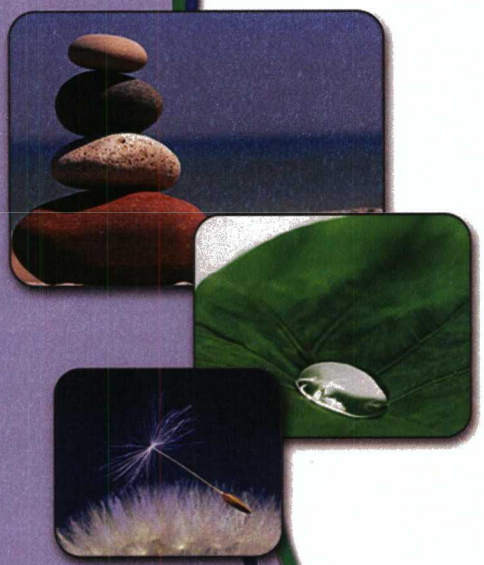

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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›b ID: 240-49680-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Conestoga-Rovers & Associates, Inc.

Project: 32504, Rasmussen Landfill

Report Number: 240-49680-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions IELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written ,roval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 04/23/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.9 C.

Dashes were added to the sample IDs.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples GW-32504-042115-AJD-001 (240-49680-1), GW-32504-042115-AJD-002 (240-49680-2), GW-32504-042115-AJD-003 (240-49680-3), GW-32504-042215-AJD-004 (240-49680-4), GW-32504-042215-AJD-005 (240-49680-5), GW-32504-042215-AJD-006 (240-49680-6), GW-32504-042215-AJD-007 (240-49680-7) and TRIP BLANK (240-49680-8) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/28/2015.

There is no MS/MSD run in batch 178171 due to an instrument error.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-49680-1	GW-32504-042115-AJD-001	Water	04/21/15 14:00	04/23/15 08:50
240-49680-2	GW-32504-042115-AJD-002	Water	04/21/15 15:00	04/23/15 08:50
240-49680-3	GW-32504-042115-AJD-003	Water	04/21/15 16:30	04/23/15 08:50
240-49680-4	GW-32504-042215-AJD-004	Water	04/22/15 08:30	04/23/15 08:50
240-49680-5	GW-32504-042215-AJD-005	Water	04/22/15 08:40	04/23/15 08:50
240-49680-6	GW-32504-042215-AJD-006	Water	04/22/15 09:30	04/23/15 08:50
240-49680-7	GW-32504-042215-AJD-007	Water	04/22/15 10:40	04/23/15 08:50
240-49680-8	TRIP BLANK	Water	04/22/15 00:00	04/23/15 08:50

Detection Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

Client Sample ID: GW-32504-042115-AJD-001 — Lab Sample ID: 240-4968(

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	1.1		1.0	ug/L	1		8260B	Total/NA

Client Sample ID: GW-32504-042115-AJD-002 — Lab Sample ID: 240-49680-2

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Benzene	3.1		1.0	ug/L	1		8260B	Total/NA
Vinyl chloride	3.6		1.0	ug/L	1		8260B	Total/NA

Client Sample ID: GW-32504-042115-AJD-003 — Lab Sample ID: 240-49680-3

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.8		1.0	ug/L	1		8260B	Total/NA
Vinyl chloride	3.0		1.0	ug/L	1		8260B	Total/NA

Client Sample ID: GW-32504-042215-AJD-004 — Lab Sample ID: 240-49680-4

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.5		1.0	ug/L	1		8260B	Total/NA

Client Sample ID: GW-32504-042215-AJD-005 — Lab Sample ID: 240-49680-5

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	2.5		1.0	ug/L	1		8260B	Total/NA

Client Sample ID: GW-32504-042215-AJD-006 — Lab Sample ID: 240-49680

No Detections.

Client Sample ID: GW-32504-042215-AJD-007 — Lab Sample ID: 240-49680-7

No Detections.

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-49680-8

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	1.1		1.0	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042115-AJD-001
Date Collected: 04/21/15 14:00
Date Received: 04/23/15 08:50

Lab Sample ID: 240-49680-1
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**1.1**		1.0	ug/L			04/28/15 14:16	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/28/15 14:16	1
Acetone	10	U	10	ug/L			04/28/15 14:16	1
Benzene	1.0	U	1.0	ug/L			04/28/15 14:16	1
Chlorobenzene	1.0	U	1.0	ug/L			04/28/15 14:16	1
Ethylbenzene	1.0	U	1.0	ug/L			04/28/15 14:16	1
2-Butanone (MEK)	10	U	10	ug/L			04/28/15 14:16	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/28/15 14:16	1
Methylene Chloride	1.0	U	1.0	ug/L			04/28/15 14:16	1
Toluene	1.0	U	1.0	ug/L			04/28/15 14:16	1
Trichloroethene	1.0	U	1.0	ug/L			04/28/15 14:16	1
Vinyl chloride	1.0	U	1.0	ug/L			04/28/15 14:16	1
Xylenes, Total	1.0	U	1.0	ug/L			04/28/15 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 129*		*04/28/15 14:16*	*1*
4-Bromofluorobenzene (Surr)	*77*		*66 - 120*		*04/28/15 14:16*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*04/28/15 14:16*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 121*		*04/28/15 14:16*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042115-AJD-002
Date Collected: 04/21/15 15:00
Date Received: 04/23/15 08:50

Lab Sample ID: 240-49680-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/28/15 08:02	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/28/15 08:02	1
Acetone	10	U	10	ug/L			04/28/15 08:02	1
Benzene	**3.1**		1.0	ug/L			04/28/15 08:02	1
Chlorobenzene	1.0	U	1.0	ug/L			04/28/15 08:02	1
Ethylbenzene	1.0	U	1.0	ug/L			04/28/15 08:02	1
2-Butanone (MEK)	10	U	10	ug/L			04/28/15 08:02	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/28/15 08:02	1
Methylene Chloride	1.0	U	1.0	ug/L			04/28/15 08:02	1
Toluene	1.0	U	1.0	ug/L			04/28/15 08:02	1
Trichloroethene	1.0	U	1.0	ug/L			04/28/15 08:02	1
Vinyl chloride	**3.6**		1.0	ug/L			04/28/15 08:02	1
Xylenes, Total	1.0	U	1.0	ug/L			04/28/15 08:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*63 - 129*		*04/28/15 08:02*	*1*
4-Bromofluorobenzene (Surr)	*79*		*66 - 120*		*04/28/15 08:02*	*1*
Toluene-d8 (Surr)	*91*		*74 - 120*		*04/28/15 08:02*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 121*		*04/28/15 08:02*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042115-AJD-003
Date Collected: 04/21/15 16:30
Date Received: 04/23/15 08:50

Lab Sample ID: 240-49680-3
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/28/15 14:39	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/28/15 14:39	1
Acetone	10	U	10	ug/L			04/28/15 14:39	1
Benzene	**1.8**		1.0	ug/L			04/28/15 14:39	1
Chlorobenzene	1.0	U	1.0	ug/L			04/28/15 14:39	1
Ethylbenzene	1.0	U	1.0	ug/L			04/28/15 14:39	1
2-Butanone (MEK)	10	U	10	ug/L			04/28/15 14:39	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/28/15 14:39	1
Methylene Chloride	1.0	U	1.0	ug/L			04/28/15 14:39	1
Toluene	1.0	U	1.0	ug/L			04/28/15 14:39	1
Trichloroethene	1.0	U	1.0	ug/L			04/28/15 14:39	1
Vinyl chloride	**3.0**		1.0	ug/L			04/28/15 14:39	1
Xylenes, Total	1.0	U	1.0	ug/L			04/28/15 14:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 129*		*04/28/15 14:39*	*1*
4-Bromofluorobenzene (Surr)	*78*		*66 - 120*		*04/28/15 14:39*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*04/28/15 14:39*	*1*
Dibromofluoromethane (Surr)	*95*		*75 - 121*		*04/28/15 14:39*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042215-AJD-004
Date Collected: 04/22/15 08:30
Date Received: 04/23/15 08:50

Lab Sample ID: 240-49680-4
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/28/15 15:01	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/28/15 15:01	1
Acetone	10	U	10	ug/L			04/28/15 15:01	1
Benzene	1.0	U	1.0	ug/L			04/28/15 15:01	1
Chlorobenzene	1.0	U	1.0	ug/L			04/28/15 15:01	1
Ethylbenzene	1.0	U	1.0	ug/L			04/28/15 15:01	1
2-Butanone (MEK)	10	U	10	ug/L			04/28/15 15:01	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/28/15 15:01	1
Methylene Chloride	1.0	U	1.0	ug/L			04/28/15 15:01	1
Toluene	1.0	U	1.0	ug/L			04/28/15 15:01	1
Trichloroethene	1.0	U	1.0	ug/L			04/28/15 15:01	1
Vinyl chloride	**2.5**		1.0	ug/L			04/28/15 15:01	1
Xylenes, Total	1.0	U	1.0	ug/L			04/28/15 15:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 129*		*04/28/15 15:01*	*1*
4-Bromofluorobenzene (Surr)	*78*		*66 - 120*		*04/28/15 15:01*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*04/28/15 15:01*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*04/28/15 15:01*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042215-AJD-005
Date Collected: 04/22/15 08:40
Date Received: 04/23/15 08:50

Lab Sample ID: 240-49680-5
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/28/15 15:24	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/28/15 15:24	1
Acetone	10	U	10	ug/L			04/28/15 15:24	1
Benzene	1.0	U	1.0	ug/L			04/28/15 15:24	1
Chlorobenzene	1.0	U	1.0	ug/L			04/28/15 15:24	1
Ethylbenzene	1.0	U	1.0	ug/L			04/28/15 15:24	1
2-Butanone (MEK)	10	U	10	ug/L			04/28/15 15:24	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/28/15 15:24	1
Methylene Chloride	1.0	U	1.0	ug/L			04/28/15 15:24	1
Toluene	1.0	U	1.0	ug/L			04/28/15 15:24	1
Trichloroethene	1.0	U	1.0	ug/L			04/28/15 15:24	1
Vinyl chloride	**2.5**		1.0	ug/L			04/28/15 15:24	1
Xylenes, Total	1.0	U	1.0	ug/L			04/28/15 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 129*		*04/28/15 15:24*	*1*
4-Bromofluorobenzene (Surr)	*78*		*66 - 120*		*04/28/15 15:24*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*04/28/15 15:24*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*04/28/15 15:24*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042215-AJD-006
Date Collected: 04/22/15 09:30
Date Received: 04/23/15 08:50

Lab Sample ID: 240-49680-6
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/28/15 15:47	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/28/15 15:47	1
Acetone	10	U	10	ug/L			04/28/15 15:47	1
Benzene	1.0	U	1.0	ug/L			04/28/15 15:47	1
Chlorobenzene	1.0	U	1.0	ug/L			04/28/15 15:47	1
Ethylbenzene	1.0	U	1.0	ug/L			04/28/15 15:47	1
2-Butanone (MEK)	10	U	10	ug/L			04/28/15 15:47	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/28/15 15:47	1
Methylene Chloride	1.0	U	1.0	ug/L			04/28/15 15:47	1
Toluene	1.0	U	1.0	ug/L			04/28/15 15:47	1
Trichloroethene	1.0	U	1.0	ug/L			04/28/15 15:47	1
Vinyl chloride	1.0	U	1.0	ug/L			04/28/15 15:47	1
Xylenes, Total	1.0	U	1.0	ug/L			04/28/15 15:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 129*		*04/28/15 15:47*	*1*
4-Bromofluorobenzene (Surr)	*77*		*66 - 120*		*04/28/15 15:47*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*04/28/15 15:47*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 121*		*04/28/15 15:47*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042215-AJD-007
Date Collected: 04/22/15 10:40
Date Received: 04/23/15 08:50

Lab Sample ID: 240-49680-7
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/28/15 16:10	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/28/15 16:10	1
Acetone	10	U	10	ug/L			04/28/15 16:10	1
Benzene	1.0	U	1.0	ug/L			04/28/15 16:10	1
Chlorobenzene	1.0	U	1.0	ug/L			04/28/15 16:10	1
Ethylbenzene	1.0	U	1.0	ug/L			04/28/15 16:10	1
2-Butanone (MEK)	10	U	10	ug/L			04/28/15 16:10	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/28/15 16:10	1
Methylene Chloride	1.0	U	1.0	ug/L			04/28/15 16:10	1
Toluene	1.0	U	1.0	ug/L			04/28/15 16:10	1
Trichloroethene	1.0	U	1.0	ug/L			04/28/15 16:10	1
Vinyl chloride	1.0	U	1.0	ug/L			04/28/15 16:10	1
Xylenes, Total	1.0	U	1.0	ug/L			04/28/15 16:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 129*		*04/28/15 16:10*	*1*
4-Bromofluorobenzene (Surr)	*77*		*66 - 120*		*04/28/15 16:10*	*1*
Toluene-d8 (Surr)	*97*		*74 - 120*		*04/28/15 16:10*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 121*		*04/28/15 16:10*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TRIP BLANK
Date Collected: 04/22/15 00:00
Date Received: 04/23/15 08:50

Lab Sample ID: 240-49680-8
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/28/15 16:32	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/28/15 16:32	1
Acetone	10	U	10	ug/L			04/28/15 16:32	1
Benzene	1.0	U	1.0	ug/L			04/28/15 16:32	1
Chlorobenzene	1.0	U	1.0	ug/L			04/28/15 16:32	1
Ethylbenzene	1.0	U	1.0	ug/L			04/28/15 16:32	1
2-Butanone (MEK)	10	U	10	ug/L			04/28/15 16:32	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/28/15 16:32	1
Methylene Chloride	**1.1**		1.0	ug/L			04/28/15 16:32	1
Toluene	1.0	U	1.0	ug/L			04/28/15 16:32	1
Trichloroethene	1.0	U	1.0	ug/L			04/28/15 16:32	1
Vinyl chloride	1.0	U	1.0	ug/L			04/28/15 16:32	1
Xylenes, Total	1.0	U	1.0	ug/L			04/28/15 16:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 129*		*04/28/15 16:32*	*1*
4-Bromofluorobenzene (Surr)	*78*		*66 - 120*		*04/28/15 16:32*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*04/28/15 16:32*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 121*		*04/28/15 16:32*	*1*

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

GC/MS VOA

Analysis Batch: 178171

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-49680-2	GW-32504-042115-AJD-002	Total/NA	Water	8260B	
LCS 240-178171/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-178171/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 178264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-49680-1	GW-32504-042115-AJD-001	Total/NA	Water	8260B	
240-49680-3	GW-32504-042115-AJD-003	Total/NA	Water	8260B	
240-49680-4	GW-32504-042215-AJD-004	Total/NA	Water	8260B	
240-49680-5	GW-32504-042215-AJD-005	Total/NA	Water	8260B	
240-49680-6	GW-32504-042215-AJD-006	Total/NA	Water	8260B	
240-49680-7	GW-32504-042215-AJD-007	Total/NA	Water	8260B	
240-49680-8	TRIP BLANK	Total/NA	Water	8260B	
LCS 240-178264/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-178264/6	Method Blank	Total/NA	Water	8260B	

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

;thod: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-178171/6
Matrix: Water
Analysis Batch: 178171

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/28/15 00:50	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/28/15 00:50	1
Acetone	10	U	10	ug/L			04/28/15 00:50	1
Benzene	1.0	U	1.0	ug/L			04/28/15 00:50	1
Chlorobenzene	1.0	U	1.0	ug/L			04/28/15 00:50	1
Ethylbenzene	1.0	U	1.0	ug/L			04/28/15 00:50	1
2-Butanone (MEK)	10	U	10	ug/L			04/28/15 00:50	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/28/15 00:50	1
Methylene Chloride	1.0	U	1.0	ug/L			04/28/15 00:50	1
Toluene	1.0	U	1.0	ug/L			04/28/15 00:50	1
Trichloroethene	1.0	U	1.0	ug/L			04/28/15 00:50	1
Vinyl chloride	1.0	U	1.0	ug/L			04/28/15 00:50	1
Xylenes, Total	1.0	U	1.0	ug/L			04/28/15 00:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 129*		*04/28/15 00:50*	*1*
4-Bromofluorobenzene (Surr)	*77*		*66 - 120*		*04/28/15 00:50*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*04/28/15 00:50*	*1*
'ibromofluoromethane (Surr)	*99*		*75 - 121*		*04/28/15 00:50*	*1*

Lab Sample ID: LCS 240-178171/4
Matrix: Water
Analysis Batch: 178171

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	9.29		ug/L		93	74 - 120
1,2-Dichloroethene, Total	20.0	19.4		ug/L		97	80 - 120
Acetone	20.0	16.6		ug/L		83	43 - 136
Benzene	10.0	10.4		ug/L		104	80 - 120
Chlorobenzene	10.0	9.98		ug/L		100	80 - 120
cis-1,2-Dichloroethene	10.0	9.57		ug/L		96	80 - 120
Ethylbenzene	10.0	9.91		ug/L		99	80 - 120
m-Xylene & p-Xylene	10.0	10.2		ug/L		102	80 - 120
2-Butanone (MEK)	20.0	19.2		ug/L		96	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	20.4		ug/L		102	63 - 128
Methylene Chloride	10.0	10.5		ug/L		105	66 - 131
o-Xylene	10.0	10.0		ug/L		100	80 - 120
Toluene	10.0	10.8		ug/L		108	80 - 120
trans-1,2-Dichloroethene	10.0	9.81		ug/L		98	80 - 120
Trichloroethene	10.0	9.60		ug/L		96	76 - 120
Vinyl chloride	10.0	8.86		ug/L		89	53 - 127
Xylenes, Total	20.0	20.2		ug/L		101	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
'.2-Dichloroethane-d4 (Surr)	*92*		*63 - 129*
-Bromofluorobenzene (Surr)	*91*		*66 - 120*
Toluene-d8 (Surr)	*101*		*74 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-178171/4
Matrix: Water
Analysis Batch: 178171

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	*89*		*75 - 121*

Lab Sample ID: MB 240-178264/6
Matrix: Water
Analysis Batch: 178264

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/28/15 12:13	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/28/15 12:13	1
Acetone	10	U	10	ug/L			04/28/15 12:13	1
Benzene	1.0	U	1.0	ug/L			04/28/15 12:13	1
Chlorobenzene	1.0	U	1.0	ug/L			04/28/15 12:13	1
Ethylbenzene	1.0	U	1.0	ug/L			04/28/15 12:13	1
2-Butanone (MEK)	10	U	10	ug/L			04/28/15 12:13	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/28/15 12:13	1
Methylene Chloride	1.0	U	1.0	ug/L			04/28/15 12:13	1
Toluene	1.0	U	1.0	ug/L			04/28/15 12:13	1
Trichloroethene	1.0	U	1.0	ug/L			04/28/15 12:13	1
Vinyl chloride	1.0	U	1.0	ug/L			04/28/15 12:13	1
Xylenes, Total	1.0	U	1.0	ug/L			04/28/15 12:13	

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 129*		*04/28/15 12:13*	*1*
4-Bromofluorobenzene (Surr)	*78*		*66 - 120*		*04/28/15 12:13*	*1*
Toluene-d8 (Surr)	*97*		*74 - 120*		*04/28/15 12:13*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 121*		*04/28/15 12:13*	*1*

Lab Sample ID: LCS 240-178264/4
Matrix: Water
Analysis Batch: 178264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	8.95		ug/L		89	74 - 120
1,2-Dichloroethene, Total	20.0	19.7		ug/L		99	80 - 120
Acetone	20.0	22.3		ug/L		111	43 - 136
Benzene	10.0	10.6		ug/L		106	80 - 120
Chlorobenzene	10.0	10.5		ug/L		105	80 - 120
cis-1,2-Dichloroethene	10.0	9.72		ug/L		97	80 - 120
Ethylbenzene	10.0	10.9		ug/L		109	80 - 120
m-Xylene & p-Xylene	10.0	10.9		ug/L		109	80 - 120
2-Butanone (MEK)	20.0	22.7		ug/L		114	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	21.9		ug/L		110	63 - 128
Methylene Chloride	10.0	10.2		ug/L		102	66 - 131
o-Xylene	10.0	10.5		ug/L		105	80 - 120
Toluene	10.0	11.5		ug/L		115	80 - 120
trans-1,2-Dichloroethene	10.0	10.0		ug/L		100	80 - 120
Trichloroethene	10.0	9.96		ug/L		100	76 - 120
Vinyl chloride	10.0	7.47		ug/L		75	53 - 127

ethod: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-178264/4
Matrix: Water
Analysis Batch: 178264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Xylenes, Total	20.0	21.4		ug/L		107	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 129*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*
Toluene-d8 (Surr)	*106*		*74 - 120*
Dibromofluoromethane (Surr)	*92*		*75 - 121*

Surrogate Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/N...

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	**(63-129)**	**(66-120)**	**(74-120)**	**(75-121)**
240-49680-1	GW-32504-042115-AJD-001	107	77	95	96
240-49680-2	GW-32504-042115-AJD-002	110	79	91	109
240-49680-3	GW-32504-042115-AJD-003	106	78	94	95
240-49680-4	GW-32504-042215-AJD-004	108	78	96	99
240-49680-5	GW-32504-042215-AJD-005	108	78	95	99
240-49680-6	GW-32504-042215-AJD-006	106	77	96	96
240-49680-7	GW-32504-042215-AJD-007	107	77	97	97
240-49680-8	TRIP BLANK	113	78	96	103
LCS 240-178171/4	Lab Control Sample	92	91	101	89
LCS 240-178264/4	Lab Control Sample	97	93	106	92
MB 240-178171/6	Method Blank	105	77	94	99
MB 240-178264/6	Method Blank	112	78	97	103

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

ient Sample ID: GW-32504-042115-AJD-001

Lab Sample ID: 240-49680-1
Date Collected: 04/21/15 14:00
Matrix: Water
Date Received: 04/23/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178264	04/28/15 14:16	LEE	TAL CAN

Client Sample ID: GW-32504-042115-AJD-002

Lab Sample ID: 240-49680-2
Date Collected: 04/21/15 15:00
Matrix: Water
Date Received: 04/23/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178171	04/28/15 08:02	LRW	TAL CAN

Client Sample ID: GW-32504-042115-AJD-003

Lab Sample ID: 240-49680-3
Date Collected: 04/21/15 16:30
Matrix: Water
Date Received: 04/23/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178264	04/28/15 14:39	LEE	TAL CAN

Client Sample ID: GW-32504-042215-AJD-004

Lab Sample ID: 240-49680-4
e Collected: 04/22/15 08:30
Matrix: Water
ate Received: 04/23/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178264	04/28/15 15:01	LEE	TAL CAN

Client Sample ID: GW-32504-042215-AJD-005

Lab Sample ID: 240-49680-5
Date Collected: 04/22/15 08:40
Matrix: Water
Date Received: 04/23/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178264	04/28/15 15:24	LEE	TAL CAN

Client Sample ID: GW-32504-042215-AJD-006

Lab Sample ID: 240-49680-6
Date Collected: 04/22/15 09:30
Matrix: Water
Date Received: 04/23/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178264	04/28/15 15:47	LEE	TAL CAN

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

Client Sample ID: GW-32504-042215-AJD-007

Lab Sample ID: 240-4968

Date Collected: 04/22/15 10:40

Matrix: Wa

Date Received: 04/23/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178264	04/28/15 16:10	LEE	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-49680-8

Date Collected: 04/22/15 00:00

Matrix: Water

Date Received: 04/23/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178264	04/28/15 16:32	LEE	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49680-1

ıboratory: TestAmerica Canton

certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-15 *
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15 *
Georgia	State Program	4	N/A	06-30-15 *
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	04-30-15 *
Kentucky (UST)	State Program	4	58	06-30-15 *
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15 *
New York	NELAP	2	10975	03-31-16 *
Ohio VAP	State Program	5	CL0024	10-31-15
Oregon	NELAP	10	4062	02-23-16
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
'Visconsin	State Program	5	999518190	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

240-49680 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 tel 330.497.9396 fax 330.497.0772 www.testamericainc.com

S.4/C 3.4

CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170
Phone: (734) 453-5123 Fax: (734) 453-5201

COC NO.: P 10695
PAGE ___ OF ___
(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 32504-35
Laboratory Name: TEST AMERICA
Lab Location:
SSOW ID:
Project Name: RASMUSSEN
Lab Contact:
Lab Quote No: #24008783
Cooler No:
Project Location: LIVINGSTONE COUNTY
Carrier:
Chemistry Contact: RAWA FLIESHER
Airbill No:
Sampler(s): ALAN DEAL
Date Shipped:

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO_3)	Sulfuric Acid (H_2SO_4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	VOC	MS/MSD Request	Comments/ Special Instructions:
1	GW32504042115AJD001	4/21/15	1400	WG	G		✓							3	✓		
2	GW32504042115AJD002	↓	1500	↓	↓		✓							3	✓		
3	GW32504042115AJD003	↓	1630	↓	↓		✓							3	✓		
4	GW32504042215AJD004	4/22/15	830	↓	↓		✓							3	✓		
5	GW32504042215AJD005	↓	840	↓	↓		✓							3	✓		
6	GW32504042215AJD006	↓	930	↓	↓		✓							3	✓		
7	GW32504042215AJD007	↓	1040	↓	↓		✓							3	✓		
8	~~GW32504042215~~ Trip Blank	"												1	✓		
9																	
10																	
11																	
12																	
13																	
14																	
15																	

Analysis Requested (See Back of COC for Definitions)

Michigan
190

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Week ☐ Other:

Total Number of Containers:
All Samples in Cooler must be on COC

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. Alan Deal	CRA	4/22/15	1200	1. Jeri Harlin	TA	4-22-15	1200
2. Jeri Harlin	TA	4/22/15	1202	2. [illegible]	TA	4-23-15	850
				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

CRA Form: COC-10A (20110804)

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 49480**
Canton Facility

Client CRA Site Name _____ Cooler unpacked by:

Cooler Received on 4-23-15 Opened on 4-23-15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.9 °C ☐ See Multiple Cooler Form
   ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC432654**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-49815-1
Client Project/Site: 32504, Rasmussen Landfill

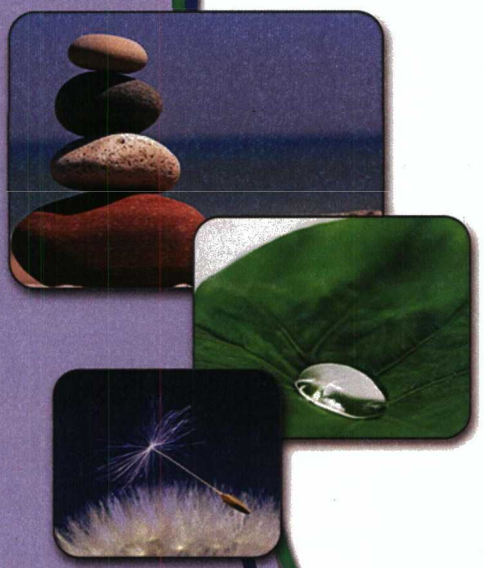
For:
Conestoga-Rovers & Associates, Inc.
14496 Sheldon Road, Suite 200
Plymouth, Michigan 48170

Attn: Rawa Fleisher

Denise D Heckler

Authorized for release by:
5/6/2015 9:25:02 AM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com



LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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›b ID: 240-49815-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Conestoga-Rovers & Associates, Inc.

Project: 32504, Rasmussen Landfill

Report Number: 240-49815-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

ɜ test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 04/24/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.3 C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples GW-32504-042215-AJD-008 (240-49815-1), GW-32504-042215-AJD-009 (240-49815-2), GW-32504-042215-AJD-010 (240-49815-3), GW-32504-042315-AJD-011 (240-49815-4), GW-32504-042315-AJD-012 (240-49815-5) and TRIP BLANK (240-49815-6) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/01/2015 and 05/04/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-49815-1	GW-32504-042215-AJD-008	Water	04/22/15 11:40	04/24/15 08:45
240-49815-2	GW-32504-042215-AJD-009	Water	04/22/15 14:00	04/24/15 08:45
240-49815-3	GW-32504-042215-AJD-010	Water	04/22/15 15:40	04/24/15 08:45
240-49815-4	GW-32504-042315-AJD-011	Water	04/23/15 08:05	04/24/15 08:45
240-49815-5	GW-32504-042315-AJD-012	Water	04/23/15 08:30	04/24/15 08:45
240-49815-6	TRIP BLANK	Water	04/23/15 00:00	04/24/15 08:45

Detection Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

Client Sample ID: GW-32504-042215-AJD-008 **Lab Sample ID: 240-4981**

No Detections.

Client Sample ID: GW-32504-042215-AJD-009 **Lab Sample ID: 240-49815-2**

No Detections.

Client Sample ID: GW-32504-042215-AJD-010 **Lab Sample ID: 240-49815-3**

No Detections.

Client Sample ID: GW-32504-042315-AJD-011 **Lab Sample ID: 240-49815-4**

No Detections.

Client Sample ID: GW-32504-042315-AJD-012 **Lab Sample ID: 240-49815-5**

No Detections.

Client Sample ID: TRIP BLANK **Lab Sample ID: 240-49815-6**

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042215-AJD-008
Date Collected: 04/22/15 11:40
Date Received: 04/24/15 08:45

Lab Sample ID: 240-49815-1
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/01/15 17:08	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/01/15 17:08	1
Acetone	10	U	10	ug/L			05/01/15 17:08	1
Benzene	1.0	U	1.0	ug/L			05/01/15 17:08	1
Chlorobenzene	1.0	U	1.0	ug/L			05/01/15 17:08	1
Ethylbenzene	1.0	U	1.0	ug/L			05/01/15 17:08	1
2-Butanone (MEK)	10	U	10	ug/L			05/01/15 17:08	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/01/15 17:08	1
Methylene Chloride	1.0	U	1.0	ug/L			05/01/15 17:08	1
Toluene	1.0	U	1.0	ug/L			05/01/15 17:08	1
Trichloroethene	1.0	U	1.0	ug/L			05/01/15 17:08	1
Vinyl chloride	1.0	U	1.0	ug/L			05/01/15 17:08	1
Xylenes, Total	1.0	U	1.0	ug/L			05/01/15 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 129*		*05/01/15 17:08*	*1*
4-Bromofluorobenzene (Surr)	*94*		*66 - 120*		*05/01/15 17:08*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/01/15 17:08*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*05/01/15 17:08*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042215-AJD-009
Date Collected: 04/22/15 14:00
Date Received: 04/24/15 08:45

Lab Sample ID: 240-49815-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/01/15 17:30	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/01/15 17:30	1
Acetone	10	U	10	ug/L			05/01/15 17:30	1
Benzene	1.0	U	1.0	ug/L			05/01/15 17:30	1
Chlorobenzene	1.0	U	1.0	ug/L			05/01/15 17:30	1
Ethylbenzene	1.0	U	1.0	ug/L			05/01/15 17:30	1
2-Butanone (MEK)	10	U	10	ug/L			05/01/15 17:30	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/01/15 17:30	1
Methylene Chloride	1.0	U	1.0	ug/L			05/01/15 17:30	1
Toluene	1.0	U	1.0	ug/L			05/01/15 17:30	1
Trichloroethene	1.0	U	1.0	ug/L			05/01/15 17:30	1
Vinyl chloride	1.0	U	1.0	ug/L			05/01/15 17:30	1
Xylenes, Total	1.0	U	1.0	ug/L			05/01/15 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 129*		*05/01/15 17:30*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/01/15 17:30*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/01/15 17:30*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*05/01/15 17:30*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042215-AJD-010
Date Collected: 04/22/15 15:40
Date Received: 04/24/15 08:45

Lab Sample ID: 240-49815-3
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/01/15 17:53	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/01/15 17:53	1
Acetone	10	U	10	ug/L			05/01/15 17:53	1
Benzene	1.0	U	1.0	ug/L			05/01/15 17:53	1
Chlorobenzene	1.0	U	1.0	ug/L			05/01/15 17:53	1
Ethylbenzene	1.0	U	1.0	ug/L			05/01/15 17:53	1
2-Butanone (MEK)	10	U	10	ug/L			05/01/15 17:53	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/01/15 17:53	1
Methylene Chloride	1.0	U	1.0	ug/L			05/01/15 17:53	1
Toluene	1.0	U	1.0	ug/L			05/01/15 17:53	1
Trichloroethene	1.0	U	1.0	ug/L			05/01/15 17:53	1
Vinyl chloride	1.0	U	1.0	ug/L			05/01/15 17:53	1
Xylenes, Total	1.0	U	1.0	ug/L			05/01/15 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 129*		*05/01/15 17:53*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/01/15 17:53*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*05/01/15 17:53*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 121*		*05/01/15 17:53*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042315-AJD-011
Date Collected: 04/23/15 08:05
Date Received: 04/24/15 08:45

Lab Sample ID: 240-49815-4
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/01/15 18:16	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/01/15 18:16	1
Acetone	10	U	10	ug/L			05/01/15 18:16	1
Benzene	1.0	U	1.0	ug/L			05/01/15 18:16	1
Chlorobenzene	1.0	U	1.0	ug/L			05/01/15 18:16	1
Ethylbenzene	1.0	U	1.0	ug/L			05/01/15 18:16	1
2-Butanone (MEK)	10	U	10	ug/L			05/01/15 18:16	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/01/15 18:16	1
Methylene Chloride	1.0	U	1.0	ug/L			05/01/15 18:16	1
Toluene	1.0	U	1.0	ug/L			05/01/15 18:16	1
Trichloroethene	1.0	U	1.0	ug/L			05/01/15 18:16	1
Vinyl chloride	1.0	U	1.0	ug/L			05/01/15 18:16	1
Xylenes, Total	1.0	U	1.0	ug/L			05/01/15 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*63 - 129*		*05/01/15 18:16*	*1*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*		*05/01/15 18:16*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/01/15 18:16*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/01/15 18:16*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042315-AJD-012
Date Collected: 04/23/15 08:30
Date Received: 04/24/15 08:45

Lab Sample ID: 240-49815-5
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/01/15 18:39	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/01/15 18:39	1
Acetone	10	U	10	ug/L			05/01/15 18:39	1
Benzene	1.0	U	1.0	ug/L			05/01/15 18:39	1
Chlorobenzene	1.0	U	1.0	ug/L			05/01/15 18:39	1
Ethylbenzene	1.0	U	1.0	ug/L			05/01/15 18:39	1
2-Butanone (MEK)	10	U	10	ug/L			05/01/15 18:39	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/01/15 18:39	1
Methylene Chloride	1.0	U	1.0	ug/L			05/01/15 18:39	1
Toluene	1.0	U	1.0	ug/L			05/01/15 18:39	1
Trichloroethene	1.0	U	1.0	ug/L			05/01/15 18:39	1
Vinyl chloride	1.0	U	1.0	ug/L			05/01/15 18:39	1
Xylenes, Total	1.0	U	1.0	ug/L			05/01/15 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*		*05/01/15 18:39*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/01/15 18:39*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/01/15 18:39*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 121*		*05/01/15 18:39*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TRIP BLANK
Date Collected: 04/23/15 00:00
Date Received: 04/24/15 08:45

Lab Sample ID: 240-49815-6
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/04/15 14:34	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/04/15 14:34	1
Acetone	10	U	10	ug/L			05/04/15 14:34	1
Benzene	1.0	U	1.0	ug/L			05/04/15 14:34	1
Chlorobenzene	1.0	U	1.0	ug/L			05/04/15 14:34	1
Ethylbenzene	1.0	U	1.0	ug/L			05/04/15 14:34	1
2-Butanone (MEK)	10	U	10	ug/L			05/04/15 14:34	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/04/15 14:34	1
Methylene Chloride	1.0	U	1.0	ug/L			05/04/15 14:34	1
Toluene	1.0	U	1.0	ug/L			05/04/15 14:34	1
Trichloroethene	1.0	U	1.0	ug/L			05/04/15 14:34	1
Vinyl chloride	1.0	U	1.0	ug/L			05/04/15 14:34	1
Xylenes, Total	1.0	U	1.0	ug/L			05/04/15 14:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 129*		*05/04/15 14:34*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/04/15 14:34*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/04/15 14:34*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 121*		*05/04/15 14:34*	*1*

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

GC/MS VOA

Analysis Batch: 178885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-49815-1	GW-32504-042215-AJD-008	Total/NA	Water	8260B	
240-49815-2	GW-32504-042215-AJD-009	Total/NA	Water	8260B	
240-49815-3	GW-32504-042215-AJD-010	Total/NA	Water	8260B	
240-49815-4	GW-32504-042315-AJD-011	Total/NA	Water	8260B	
240-49815-5	GW-32504-042315-AJD-012	Total/NA	Water	8260B	
LCS 240-178885/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-178885/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 179158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-49815-6	TRIP BLANK	Total/NA	Water	8260B	
LCS 240-179158/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-179158/6	Method Blank	Total/NA	Water	8260B	

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-178885/6
Matrix: Water
Analysis Batch: 178885

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/01/15 12:56	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/01/15 12:56	1
Acetone	10	U	10	ug/L			05/01/15 12:56	1
Benzene	1.0	U	1.0	ug/L			05/01/15 12:56	1
Chlorobenzene	1.0	U	1.0	ug/L			05/01/15 12:56	1
Ethylbenzene	1.0	U	1.0	ug/L			05/01/15 12:56	1
2-Butanone (MEK)	10	U	10	ug/L			05/01/15 12:56	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/01/15 12:56	1
Methylene Chloride	1.0	U	1.0	ug/L			05/01/15 12:56	1
Toluene	1.0	U	1.0	ug/L			05/01/15 12:56	1
Trichloroethene	1.0	U	1.0	ug/L			05/01/15 12:56	1
Vinyl chloride	1.0	U	1.0	ug/L			05/01/15 12:56	1
Xylenes, Total	1.0	U	1.0	ug/L			05/01/15 12:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*05/01/15 12:56*	*1*
4-Bromofluorobenzene (Surr)	*90*		*66 - 120*		*05/01/15 12:56*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/01/15 12:56*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 121*		*05/01/15 12:56*	*1*

Lab Sample ID: LCS 240-178885/4
Matrix: Water
Analysis Batch: 178885

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	11.0		ug/L		110	74 - 120
1,2-Dichloroethene, Total	20.0	20.6		ug/L		103	80 - 120
Acetone	20.0	16.2		ug/L		81	43 - 136
Benzene	10.0	9.97		ug/L		100	80 - 120
Chlorobenzene	10.0	9.69		ug/L		97	80 - 120
cis-1,2-Dichloroethene	10.0	10.2		ug/L		102	80 - 120
Ethylbenzene	10.0	10.1		ug/L		101	80 - 120
m-Xylene & p-Xylene	10.0	10.0		ug/L		100	80 - 120
2-Butanone (MEK)	20.0	17.5		ug/L		88	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	17.7		ug/L		89	63 - 128
Methylene Chloride	10.0	9.98		ug/L		100	66 - 131
o-Xylene	10.0	10.1		ug/L		101	80 - 120
Toluene	10.0	9.80		ug/L		98	80 - 120
trans-1,2-Dichloroethene	10.0	10.4		ug/L		104	80 - 120
Trichloroethene	10.0	10.6		ug/L		106	76 - 120
Vinyl chloride	10.0	9.22		ug/L		92	53 - 127
Xylenes, Total	20.0	20.1		ug/L		101	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*
Bromofluorobenzene (Surr)	*94*		*66 - 120*
Toluene-d8 (Surr)	*95*		*74 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-178885/4
Matrix: Water
Analysis Batch: 178885

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*75 - 121*

Lab Sample ID: MB 240-179158/6
Matrix: Water
Analysis Batch: 179158

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/04/15 13:55	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/04/15 13:55	1
Acetone	10	U	10	ug/L			05/04/15 13:55	1
Benzene	1.0	U	1.0	ug/L			05/04/15 13:55	1
Chlorobenzene	1.0	U	1.0	ug/L			05/04/15 13:55	1
Ethylbenzene	1.0	U	1.0	ug/L			05/04/15 13:55	1
2-Butanone (MEK)	10	U	10	ug/L			05/04/15 13:55	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/04/15 13:55	1
Methylene Chloride	1.0	U	1.0	ug/L			05/04/15 13:55	1
Toluene	1.0	U	1.0	ug/L			05/04/15 13:55	1
Trichloroethene	1.0	U	1.0	ug/L			05/04/15 13:55	1
Vinyl chloride	1.0	U	1.0	ug/L			05/04/15 13:55	1
Xylenes, Total	1.0	U	1.0	ug/L			05/04/15 13:55	

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*		*05/04/15 13:55*	*1*
4-Bromofluorobenzene (Surr)	*91*		*66 - 120*		*05/04/15 13:55*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/04/15 13:55*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/04/15 13:55*	*1*

Lab Sample ID: LCS 240-179158/4
Matrix: Water
Analysis Batch: 179158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	11.2		ug/L		112	74 - 120
1,2-Dichloroethene, Total	20.0	20.6		ug/L		103	80 - 120
Acetone	20.0	17.4		ug/L		87	43 - 136
Benzene	10.0	10.0		ug/L		100	80 - 120
Chlorobenzene	10.0	9.61		ug/L		96	80 - 120
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	80 - 120
Ethylbenzene	10.0	10.2		ug/L		102	80 - 120
m-Xylene & p-Xylene	10.0	9.72		ug/L		97	80 - 120
2-Butanone (MEK)	20.0	18.9		ug/L		95	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	19.5		ug/L		97	63 - 128
Methylene Chloride	10.0	10.1		ug/L		101	66 - 131
o-Xylene	10.0	9.97		ug/L		100	80 - 120
Toluene	10.0	10.0		ug/L		100	80 - 120
trans-1,2-Dichloroethene	10.0	10.3		ug/L		103	80 - 120
Trichloroethene	10.0	10.9		ug/L		109	76 - 120
Vinyl chloride	10.0	8.85		ug/L		89	53 - 127

ethod: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-179158/4
Matrix: Water
Analysis Batch: 179158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Xylenes, Total	20.0	19.7		ug/L		98	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*
4-Bromofluorobenzene (Surr)	*97*		*66 - 120*
Toluene-d8 (Surr)	*96*		*74 - 120*
Dibromofluoromethane (Surr)	*102*		*75 - 121*

Surrogate Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/N...

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	(63-129)	(66-120)	(74-120)	(75-121)
240-49815-1	GW-32504-042215-AJD-008	107	94	95	100
240-49815-2	GW-32504-042215-AJD-009	105	92	95	100
240-49815-3	GW-32504-042215-AJD-010	102	92	96	96
240-49815-4	GW-32504-042315-AJD-011	109	93	95	99
240-49815-5	GW-32504-042315-AJD-012	104	92	95	101
240-49815-6	TRIP BLANK	107	92	95	101
LCS 240-178885/4	Lab Control Sample	100	94	95	99
LCS 240-179158/4	Lab Control Sample	104	97	96	102
MB 240-178885/6	Method Blank	103	90	94	98
MB 240-179158/6	Method Blank	100	91	94	99

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

ient Sample ID: GW-32504-042215-AJD-008 — Lab Sample ID: 240-49815-1

Date Collected: 04/22/15 11:40 — **Matrix: Water**
Date Received: 04/24/15 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178885	05/01/15 17:08	LRW	TAL CAN

Client Sample ID: GW-32504-042215-AJD-009 — Lab Sample ID: 240-49815-2

Date Collected: 04/22/15 14:00 — **Matrix: Water**
Date Received: 04/24/15 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178885	05/01/15 17:30	LRW	TAL CAN

Client Sample ID: GW-32504-042215-AJD-010 — Lab Sample ID: 240-49815-3

Date Collected: 04/22/15 15:40 — **Matrix: Water**
Date Received: 04/24/15 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178885	05/01/15 17:53	LRW	TAL CAN

Client Sample ID: GW-32504-042315-AJD-011 — Lab Sample ID: 240-49815-4

e Collected: 04/23/15 08:05 — **Matrix: Water**
ate Received: 04/24/15 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178885	05/01/15 18:16	LRW	TAL CAN

Client Sample ID: GW-32504-042315-AJD-012 — Lab Sample ID: 240-49815-5

Date Collected: 04/23/15 08:30 — **Matrix: Water**
Date Received: 04/24/15 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178885	05/01/15 18:39	LRW	TAL CAN

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-49815-6

Date Collected: 04/23/15 00:00 — **Matrix: Water**
Date Received: 04/24/15 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179158	05/04/15 14:34	LRW	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49815-1

Laboratory: TestAmerica Canton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-15 *
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15 *
Georgia	State Program	4	N/A	06-30-15 *
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	05-31-15 *
Kentucky (UST)	State Program	4	58	06-30-15 *
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15 *
New York	NELAP	2	10975	03-31-16 *
Ohio VAP	State Program	5	CL0024	10-31-15
Oregon	NELAP	10	4062	02-23-16
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
Wisconsin	State Program	5	999518190	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica

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TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

240-49815 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

CHAIN OF CUSTODY RECORD

CONESTOGA-ROVERS & ASSOCIATES

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170
Phone: (734) 453-5123 Fax: (734) 453-5201

08/C1.3

COC NO.: PL- 10925
PAGE ___ OF ___
(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 32504 -35	Laboratory Name: Test America	Lab Location:	SSOW ID:
Project Name: Rasmussen	Lab Contact:	Lab Quote No: 24008783	Cooler No:
Project Location: Livingstone County			Carrier:
Chemistry Contact: Rana Fliesher			Airbill No:
Sampler(s): Alan Deal			Date Shipped:

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO_3)	Sulfuric Acid (H_2SO_4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	VOCs									MS/MSD Request	Comments/ Special Instructions:
1	GW 32504 04 22 15 AJD 008	4/22/15	1140	WG	G		✓							3	✓										
2	GW 32504 04 22 15 AJD 009	4/22/15	1400				✓							3	✓										
3	GW 32504 04 22 15 AJD 010	4/22/15	1540				✓							3	✓										
4	GW 32504 04 23 15 AJD 011	4/23/15	0805				✓							3	✓										
5	GW 32504 04 23 15 AJD 012	4/23/15	0830				✓							3	✓										
6	TRIP BLANK			W										1	✓										
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Week ☐ Other:

Total Number of Containers: 16

All Samples in Cooler must be on COC

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. Alan Deal	CRA	4/23/15	0920	1. [signature]	TestAmerica	4/23/15	0920
2. [signature]	TestAmerica	4/23/15	0930	2. [signature]	TA	4-24-15	845
				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

CRA Form -10A (20110804)

Michigan
190

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 49815
Canton Facility

Client CRA Site Name _____ Cooler unpacked by:

Cooler Received on 4-24-15 Opened on 4-24-15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. 0.8 °C Corrected Cooler Temp. 1.3 °C ☐ See Multiple Cooler Form
   ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC432654**
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-49837-1
Client Project/Site: 32504, Rasmussen Landfill

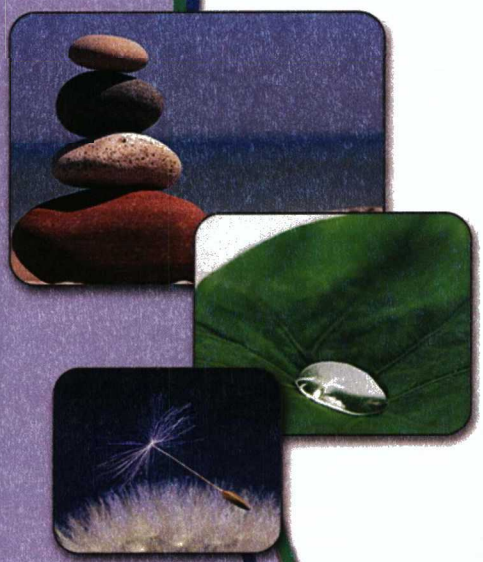
For:
Conestoga-Rovers & Associates, Inc.
14496 Sheldon Road, Suite 200
Plymouth, Michigan 48170

Attn: Rawa Fleisher

Denise D Heckler

Authorized for release by:
4/29/2015 1:17:24 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com



LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 240-49837-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Conestoga-Rovers & Associates, Inc.

Project: 32504, Rasmussen Landfill

Report Number: 240-49837-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 04/25/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 4.5 C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples GW-32504-042315-DR-013 (240-49837-1), GW-32504-042315-DR-014 (240-49837-2), GW-32504-042315-DR-015 (240-49837-3), GW-32504-042315-DR-016 (240-49837-4), GW-32504-042415-DR-017 (240-49837-5), GW-32504-042415-DR-018 (240-49837-6) and TB-32504-042415 (240-49837-7) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/29/2015.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

ualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
R	Relative error ratio
	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-49837-1	GW-32504-042315-DR-013	Water	04/23/15 13:05	04/25/15 11:30
240-49837-2	GW-32504-042315-DR-014	Water	04/23/15 13:45	04/25/15 11:30
240-49837-3	GW-32504-042315-DR-015	Water	04/23/15 14:30	04/25/15 11:30
240-49837-4	GW-32504-042315-DR-016	Water	04/23/15 15:40	04/25/15 11:30
240-49837-5	GW-32504-042415-DR-017	Water	04/24/15 09:15	04/25/15 11:30
240-49837-6	GW-32504-042415-DR-018	Water	04/24/15 11:20	04/25/15 11:30
240-49837-7	TB-32504-042415	Water	04/23/15 00:00	04/25/15 11:30

Detection Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

ient Sample ID: GW-32504-042315-DR-013 — Lab Sample ID: 240-49837-1

No Detections.

Client Sample ID: GW-32504-042315-DR-014 — Lab Sample ID: 240-49837-2

No Detections.

Client Sample ID: GW-32504-042315-DR-015 — Lab Sample ID: 240-49837-3

No Detections.

Client Sample ID: GW-32504-042315-DR-016 — Lab Sample ID: 240-49837-4

No Detections.

Client Sample ID: GW-32504-042415-DR-017 — Lab Sample ID: 240-49837-5

No Detections.

Client Sample ID: GW-32504-042415-DR-018 — Lab Sample ID: 240-49837-6

No Detections.

Client Sample ID: TB-32504-042415 — Lab Sample ID: 240-49837-7

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	1.3		1.0	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042315-DR-013
Date Collected: 04/23/15 13:05
Date Received: 04/25/15 11:30

Lab Sample ID: 240-49837-1
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/29/15 04:14	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/29/15 04:14	1
Acetone	10	U	10	ug/L			04/29/15 04:14	1
Benzene	1.0	U	1.0	ug/L			04/29/15 04:14	1
Chlorobenzene	1.0	U	1.0	ug/L			04/29/15 04:14	1
Ethylbenzene	1.0	U	1.0	ug/L			04/29/15 04:14	1
2-Butanone (MEK)	10	U	10	ug/L			04/29/15 04:14	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/29/15 04:14	1
Methylene Chloride	1.0	U	1.0	ug/L			04/29/15 04:14	1
Toluene	1.0	U	1.0	ug/L			04/29/15 04:14	1
Trichloroethene	1.0	U	1.0	ug/L			04/29/15 04:14	1
Vinyl chloride	1.0	U	1.0	ug/L			04/29/15 04:14	1
Xylenes, Total	1.0	U	1.0	ug/L			04/29/15 04:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*		*04/29/15 04:14*	*1*
4-Bromofluorobenzene (Surr)	*94*		*66 - 120*		*04/29/15 04:14*	*1*
Toluene-d8 (Surr)	*92*		*74 - 120*		*04/29/15 04:14*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 121*		*04/29/15 04:14*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042315-DR-014
Date Collected: 04/23/15 13:45
Date Received: 04/25/15 11:30

Lab Sample ID: 240-49837-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/29/15 04:36	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/29/15 04:36	1
Acetone	10	U	10	ug/L			04/29/15 04:36	1
Benzene	1.0	U	1.0	ug/L			04/29/15 04:36	1
Chlorobenzene	1.0	U	1.0	ug/L			04/29/15 04:36	1
Ethylbenzene	1.0	U	1.0	ug/L			04/29/15 04:36	1
2-Butanone (MEK)	10	U	10	ug/L			04/29/15 04:36	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/29/15 04:36	1
Methylene Chloride	1.0	U	1.0	ug/L			04/29/15 04:36	1
Toluene	1.0	U	1.0	ug/L			04/29/15 04:36	1
Trichloroethene	1.0	U	1.0	ug/L			04/29/15 04:36	1
Vinyl chloride	1.0	U	1.0	ug/L			04/29/15 04:36	1
Xylenes, Total	1.0	U	1.0	ug/L			04/29/15 04:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*04/29/15 04:36*	*1*
4-Bromofluorobenzene (Surr)	*94*		*66 - 120*		*04/29/15 04:36*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*04/29/15 04:36*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*04/29/15 04:36*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042315-DR-015
Date Collected: 04/23/15 14:30
Date Received: 04/25/15 11:30

Lab Sample ID: 240-49837-3
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/29/15 04:59	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/29/15 04:59	1
Acetone	10	U	10	ug/L			04/29/15 04:59	1
Benzene	1.0	U	1.0	ug/L			04/29/15 04:59	1
Chlorobenzene	1.0	U	1.0	ug/L			04/29/15 04:59	1
Ethylbenzene	1.0	U	1.0	ug/L			04/29/15 04:59	1
2-Butanone (MEK)	10	U	10	ug/L			04/29/15 04:59	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/29/15 04:59	1
Methylene Chloride	1.0	U	1.0	ug/L			04/29/15 04:59	1
Toluene	1.0	U	1.0	ug/L			04/29/15 04:59	1
Trichloroethene	1.0	U	1.0	ug/L			04/29/15 04:59	1
Vinyl chloride	1.0	U	1.0	ug/L			04/29/15 04:59	1
Xylenes, Total	1.0	U	1.0	ug/L			04/29/15 04:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 129*		*04/29/15 04:59*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*04/29/15 04:59*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*04/29/15 04:59*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*04/29/15 04:59*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042315-DR-016
Date Collected: 04/23/15 15:40
Date Received: 04/25/15 11:30

Lab Sample ID: 240-49837-4
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/29/15 05:21	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/29/15 05:21	1
Acetone	10	U	10	ug/L			04/29/15 05:21	1
Benzene	1.0	U	1.0	ug/L			04/29/15 05:21	1
Chlorobenzene	1.0	U	1.0	ug/L			04/29/15 05:21	1
Ethylbenzene	1.0	U	1.0	ug/L			04/29/15 05:21	1
2-Butanone (MEK)	10	U	10	ug/L			04/29/15 05:21	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/29/15 05:21	1
Methylene Chloride	1.0	U	1.0	ug/L			04/29/15 05:21	1
Toluene	1.0	U	1.0	ug/L			04/29/15 05:21	1
Trichloroethene	1.0	U	1.0	ug/L			04/29/15 05:21	1
Vinyl chloride	1.0	U	1.0	ug/L			04/29/15 05:21	1
Xylenes, Total	1.0	U	1.0	ug/L			04/29/15 05:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*04/29/15 05:21*	*1*
4-Bromofluorobenzene (Surr)	*94*		*66 - 120*		*04/29/15 05:21*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*04/29/15 05:21*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 121*		*04/29/15 05:21*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042415-DR-017
Date Collected: 04/24/15 09:15
Date Received: 04/25/15 11:30

Lab Sample ID: 240-49837-5
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/29/15 05:43	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/29/15 05:43	1
Acetone	10	U	10	ug/L			04/29/15 05:43	1
Benzene	1.0	U	1.0	ug/L			04/29/15 05:43	1
Chlorobenzene	1.0	U	1.0	ug/L			04/29/15 05:43	1
Ethylbenzene	1.0	U	1.0	ug/L			04/29/15 05:43	1
2-Butanone (MEK)	10	U	10	ug/L			04/29/15 05:43	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/29/15 05:43	1
Methylene Chloride	1.0	U	1.0	ug/L			04/29/15 05:43	1
Toluene	1.0	U	1.0	ug/L			04/29/15 05:43	1
Trichloroethene	1.0	U	1.0	ug/L			04/29/15 05:43	1
Vinyl chloride	1.0	U	1.0	ug/L			04/29/15 05:43	1
Xylenes, Total	1.0	U	1.0	ug/L			04/29/15 05:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*04/29/15 05:43*	*1*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*		*04/29/15 05:43*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*04/29/15 05:43*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*04/29/15 05:43*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042415-DR-018
Date Collected: 04/24/15 11:20
Date Received: 04/25/15 11:30

Lab Sample ID: 240-49837-6
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/29/15 06:05	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/29/15 06:05	1
Acetone	10	U	10	ug/L			04/29/15 06:05	1
Benzene	1.0	U	1.0	ug/L			04/29/15 06:05	1
Chlorobenzene	1.0	U	1.0	ug/L			04/29/15 06:05	1
Ethylbenzene	1.0	U	1.0	ug/L			04/29/15 06:05	1
2-Butanone (MEK)	10	U	10	ug/L			04/29/15 06:05	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/29/15 06:05	1
Methylene Chloride	1.0	U	1.0	ug/L			04/29/15 06:05	1
Toluene	1.0	U	1.0	ug/L			04/29/15 06:05	1
Trichloroethene	1.0	U	1.0	ug/L			04/29/15 06:05	1
Vinyl chloride	1.0	U	1.0	ug/L			04/29/15 06:05	1
Xylenes, Total	1.0	U	1.0	ug/L			04/29/15 06:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 129*		*04/29/15 06:05*	*1*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*		*04/29/15 06:05*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*04/29/15 06:05*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 121*		*04/29/15 06:05*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-32504-042415
Date Collected: 04/23/15 00:00
Date Received: 04/25/15 11:30

Lab Sample ID: 240-49837-7
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/29/15 06:28	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/29/15 06:28	1
Acetone	10	U	10	ug/L			04/29/15 06:28	1
Benzene	1.0	U	1.0	ug/L			04/29/15 06:28	1
Chlorobenzene	1.0	U	1.0	ug/L			04/29/15 06:28	1
Ethylbenzene	1.0	U	1.0	ug/L			04/29/15 06:28	1
2-Butanone (MEK)	10	U	10	ug/L			04/29/15 06:28	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/29/15 06:28	1
Methylene Chloride	**1.3**		1.0	ug/L			04/29/15 06:28	1
Toluene	1.0	U	1.0	ug/L			04/29/15 06:28	1
Trichloroethene	1.0	U	1.0	ug/L			04/29/15 06:28	1
Vinyl chloride	1.0	U	1.0	ug/L			04/29/15 06:28	1
Xylenes, Total	1.0	U	1.0	ug/L			04/29/15 06:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*		*04/29/15 06:28*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*04/29/15 06:28*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*04/29/15 06:28*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 121*		*04/29/15 06:28*	*1*

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

GC/MS VOA

Analysis Batch: 178373

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-49837-1	GW-32504-042315-DR-013	Total/NA	Water	8260B	
240-49837-2	GW-32504-042315-DR-014	Total/NA	Water	8260B	
240-49837-3	GW-32504-042315-DR-015	Total/NA	Water	8260B	
240-49837-4	GW-32504-042315-DR-016	Total/NA	Water	8260B	
240-49837-5	GW-32504-042415-DR-017	Total/NA	Water	8260B	
240-49837-6	GW-32504-042415-DR-018	Total/NA	Water	8260B	
240-49837-7	TB-32504-042415	Total/NA	Water	8260B	
LCS 240-178373/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-178373/6	Method Blank	Total/NA	Water	8260B	

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-178373/6
Matrix: Water
Analysis Batch: 178373

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			04/29/15 00:26	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			04/29/15 00:26	1
Acetone	10	U	10	ug/L			04/29/15 00:26	1
Benzene	1.0	U	1.0	ug/L			04/29/15 00:26	1
Chlorobenzene	1.0	U	1.0	ug/L			04/29/15 00:26	1
Ethylbenzene	1.0	U	1.0	ug/L			04/29/15 00:26	1
2-Butanone (MEK)	10	U	10	ug/L			04/29/15 00:26	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			04/29/15 00:26	1
Methylene Chloride	1.0	U	1.0	ug/L			04/29/15 00:26	1
Toluene	1.0	U	1.0	ug/L			04/29/15 00:26	1
Trichloroethene	1.0	U	1.0	ug/L			04/29/15 00:26	1
Vinyl chloride	1.0	U	1.0	ug/L			04/29/15 00:26	1
Xylenes, Total	1.0	U	1.0	ug/L			04/29/15 00:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*04/29/15 00:26*	*1*
4-Bromofluorobenzene (Surr)	*95*		*66 - 120*		*04/29/15 00:26*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*04/29/15 00:26*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*04/29/15 00:26*	*1*

Lab Sample ID: LCS 240-178373/4
Matrix: Water
Analysis Batch: 178373

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	11.3		ug/L		113	74 - 120
1,2-Dichloroethene, Total	20.0	21.1		ug/L		106	80 - 120
Acetone	20.0	18.2		ug/L		91	43 - 136
Benzene	10.0	10.2		ug/L		102	80 - 120
Chlorobenzene	10.0	9.78		ug/L		98	80 - 120
cis-1,2-Dichloroethene	10.0	10.4		ug/L		104	80 - 120
Ethylbenzene	10.0	9.79		ug/L		98	80 - 120
m-Xylene & p-Xylene	10.0	9.81		ug/L		98	80 - 120
2-Butanone (MEK)	20.0	18.3		ug/L		91	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	19.2		ug/L		96	63 - 128
Methylene Chloride	10.0	10.6		ug/L		106	66 - 131
o-Xylene	10.0	10.0		ug/L		100	80 - 120
Toluene	10.0	9.94		ug/L		99	80 - 120
trans-1,2-Dichloroethene	10.0	10.7		ug/L		107	80 - 120
Trichloroethene	10.0	10.7		ug/L		107	76 - 120
Vinyl chloride	10.0	8.18		ug/L		82	53 - 127
Xylenes, Total	20.0	19.8		ug/L		99	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 129*
4-Bromofluorobenzene (Surr)	*99*		*66 - 120*
Toluene-d8 (Surr)	*99*		*74 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-178373/4
Matrix: Water
Analysis Batch: 178373

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*75 - 121*

Surrogate Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

thod: 8260B - Volatile Organic Compounds (GC/MS)

..atrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	**(63-129)**	**(66-120)**	**(74-120)**	**(75-121)**
240-49837-1	GW-32504-042315-DR-013	100	94	92	97
240-49837-2	GW-32504-042315-DR-014	103	94	94	100
240-49837-3	GW-32504-042315-DR-015	105	92	94	99
240-49837-4	GW-32504-042315-DR-016	103	94	94	101
240-49837-5	GW-32504-042415-DR-017	103	93	94	100
240-49837-6	GW-32504-042415-DR-018	107	93	93	102
240-49837-7	TB-32504-042415	104	92	93	98
LCS 240-178373/4	Lab Control Sample	101	99	99	99
MB 240-178373/6	Method Blank	103	95	94	99

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

Client Sample ID: GW-32504-042315-DR-013

Lab Sample ID: 240-4983
Matrix: Water

Date Collected: 04/23/15 13:05
Date Received: 04/25/15 11:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178373	04/29/15 04:14	RJQ	TAL CAN

Client Sample ID: GW-32504-042315-DR-014

Lab Sample ID: 240-49837-2
Matrix: Water

Date Collected: 04/23/15 13:45
Date Received: 04/25/15 11:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178373	04/29/15 04:36	RJQ	TAL CAN

Client Sample ID: GW-32504-042315-DR-015

Lab Sample ID: 240-49837-3
Matrix: Water

Date Collected: 04/23/15 14:30
Date Received: 04/25/15 11:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178373	04/29/15 04:59	RJQ	TAL CAN

Client Sample ID: GW-32504-042315-DR-016

Lab Sample ID: 240-49837-4
Matrix: W

Date Collected: 04/23/15 15:40
Date Received: 04/25/15 11:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178373	04/29/15 05:21	RJQ	TAL CAN

Client Sample ID: GW-32504-042415-DR-017

Lab Sample ID: 240-49837-5
Matrix: Water

Date Collected: 04/24/15 09:15
Date Received: 04/25/15 11:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178373	04/29/15 05:43	RJQ	TAL CAN

Client Sample ID: GW-32504-042415-DR-018

Lab Sample ID: 240-49837-6
Matrix: Water

Date Collected: 04/24/15 11:20
Date Received: 04/25/15 11:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178373	04/29/15 06:05	RJQ	TAL CAN

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

ent Sample ID: TB-32504-042415

Lab Sample ID: 240-49837-7

ate Collected: 04/23/15 00:00

Matrix: Water

Date Received: 04/25/15 11:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	178373	04/29/15 06:28	RJQ	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49837-1

Laboratory: TestAmerica Canton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-15 *
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15 *
Georgia	State Program	4	N/A	06-30-15 *
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	04-30-15 *
Kentucky (UST)	State Program	4	58	06-30-15 *
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15 *
New York	NELAP	2	10975	03-31-16 *
Ohio VAP	State Program	5	CL0024	10-31-15
Oregon	NELAP	10	4062	02-23-16
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
Wisconsin	State Program	5	999518190	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

240-49837 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

4.0 / C4.5

CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170
Phone: (734) 453-5123 Fax: (734) 453-5201

COC NO.: PL- 14500
PAGE 1 OF 1
(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 032504-35	Laboratory Name: Test America	Lab Location: North Canton	SSOW ID: 32504-014
Project Name: Rasmussen Landfill -VAS	Lab Contact: D. Heckler	Lab Quote No:	Cooler No: 1 cooler
Project Location: Livingston County, MI			Carrier: FEDEX
Chemistry Contact: R Fleisher			Airbill No:
Sampler(s): D. Rivers			Date Shipped: 4/24/15

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO_3)	Sulfuric Acid (H_2SO_4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	Select VOCs	MS/MSD Request	Comments/ Special Instructions:
1	GW-32504-042315-DR-013	4/23/15	1305	WG	G		3							3	X		
2	-014		1345				3							3	X		
3	-015		1430				3							3	X		
4	-016		1540				3							3	X		
5	-042415- -017	4/24/15	915				3							3	X		
6	-018		1120				3							3	X		
7	TB-32504-042415		—	WQ	—		1							1	X		
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

Run

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☒ 2 Week ☐ Other:

Total Number of Containers:

All Samples in Cooler must be on COC

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. D. Rivers	CRA	4/24/15	1900	1. Jessie Bond	TA Canton	4/25/15	11:30
				2.			
				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

CRA F-10A (20110804)

4/29/2015

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 498371
Canton Facility

Client CRA Site Name Rasmussen Landfill Cooler unpacked by: Jessie Bonot

Cooler Received on 4/25/15 Opened on 4/25/15

FedEx: 1st Grd (Exp) UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # Foam Box (Client Cooler) Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   - ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   - IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.5 °C
   - ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   - IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

☐ See Multiple Cooler Form

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity Yes (No)
   - -Were custody seals on the outside of the cooler(s) signed & dated? Yes No (NA)
   - -Were custody seals on the bottle(s)? Yes (No)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the sampler(s) clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Were sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# **HC432654**
12. Were VOAs on the COC? (Yes) No
13. Were air bubbles >6 mm in any VOA vials? Yes (No) NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # N/A (Yes) No

Contacted PM Date by via Verbal Voice Mail Other

Concerning

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

Ref: SOP NC-SC-0005, Sample Receiving
X:\X-Drive Document Control\SOPs\Work Instructions\Word Version Work Instructions\WI-NC-099P-042315 Cooler Receipt Form.doc djl

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-49977-1
Client Project/Site: 32504, Rasmussen Landfill

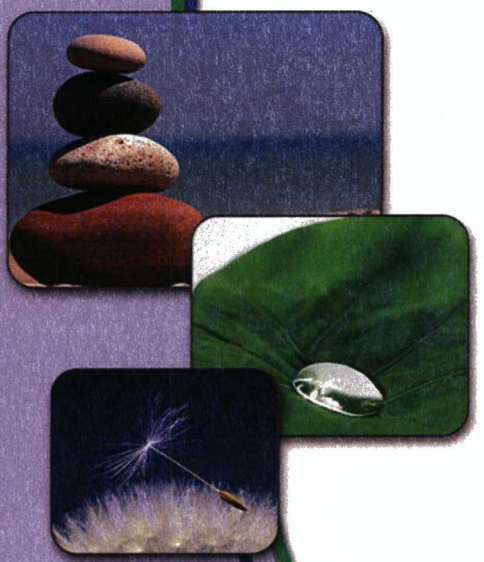
For:
Conestoga-Rovers & Associates, Inc.
14496 Sheldon Road, Suite 200
Plymouth, Michigan 48170

Attn: Rawa Fleisher

Denise D Heckler

Authorized for release by:
5/6/2015 1:44:06 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com



LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 240-49977-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Conestoga-Rovers & Associates, Inc.

Project: 32504, Rasmussen Landfill

Report Number: 240-49977-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 04/29/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.9 C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples GW-32504-042715-DR-019 (240-49977-1), GW-32504-042715-DR-020 (240-49977-2), GW-32504-042715-DR-021 (240-49977-3), GW-32504-042715-DR-022 (240-49977-4), GW-32504-042815-DR-023 (240-49977-5) and TB-32504-042815 (240-49977-6) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/04/2015 and 05/05/2015.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

ıalifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
R	Relative error ratio
	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-49977-1	GW-32504-042715-DR-019	Water	04/27/15 10:45	04/29/15 08:45
240-49977-2	GW-32504-042715-DR-020	Water	04/27/15 13:45	04/29/15 08:45
240-49977-3	GW-32504-042715-DR-021	Water	04/27/15 15:10	04/29/15 08:45
240-49977-4	GW-32504-042715-DR-022	Water	04/27/15 16:50	04/29/15 08:45
240-49977-5	GW-32504-042815-DR-023	Water	04/28/15 09:10	04/29/15 08:45
240-49977-6	TB-32504-042815	Water	04/28/15 00:00	04/29/15 08:45

Detection Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

ient Sample ID: GW-32504-042715-DR-019 — Lab Sample ID: 240-49977-1

No Detections.

Client Sample ID: GW-32504-042715-DR-020 — Lab Sample ID: 240-49977-2

No Detections.

Client Sample ID: GW-32504-042715-DR-021 — Lab Sample ID: 240-49977-3

No Detections.

Client Sample ID: GW-32504-042715-DR-022 — Lab Sample ID: 240-49977-4

No Detections.

Client Sample ID: GW-32504-042815-DR-023 — Lab Sample ID: 240-49977-5

No Detections.

Client Sample ID: TB-32504-042815 — Lab Sample ID: 240-49977-6

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	1.4		1.0	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042715-DR-019
Date Collected: 04/27/15 10:45
Date Received: 04/29/15 08:45

Lab Sample ID: 240-49977-1
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/04/15 20:19	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/04/15 20:19	1
Acetone	10	U	10	ug/L			05/04/15 20:19	1
Benzene	1.0	U	1.0	ug/L			05/04/15 20:19	1
Chlorobenzene	1.0	U	1.0	ug/L			05/04/15 20:19	1
Ethylbenzene	1.0	U	1.0	ug/L			05/04/15 20:19	1
2-Butanone (MEK)	10	U	10	ug/L			05/04/15 20:19	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/04/15 20:19	1
Methylene Chloride	1.0	U	1.0	ug/L			05/04/15 20:19	1
Toluene	1.0	U	1.0	ug/L			05/04/15 20:19	1
Trichloroethene	1.0	U	1.0	ug/L			05/04/15 20:19	1
Vinyl chloride	1.0	U	1.0	ug/L			05/04/15 20:19	1
Xylenes, Total	1.0	U	1.0	ug/L			05/04/15 20:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 129*		*05/04/15 20:19*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/04/15 20:19*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/04/15 20:19*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/04/15 20:19*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042715-DR-020
Date Collected: 04/27/15 13:45
Date Received: 04/29/15 08:45

Lab Sample ID: 240-49977-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/04/15 20:42	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/04/15 20:42	1
Acetone	10	U	10	ug/L			05/04/15 20:42	1
Benzene	1.0	U	1.0	ug/L			05/04/15 20:42	1
Chlorobenzene	1.0	U	1.0	ug/L			05/04/15 20:42	1
Ethylbenzene	1.0	U	1.0	ug/L			05/04/15 20:42	1
2-Butanone (MEK)	10	U	10	ug/L			05/04/15 20:42	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/04/15 20:42	1
Methylene Chloride	1.0	U	1.0	ug/L			05/04/15 20:42	1
Toluene	1.0	U	1.0	ug/L			05/04/15 20:42	1
Trichloroethene	1.0	U	1.0	ug/L			05/04/15 20:42	1
Vinyl chloride	1.0	U	1.0	ug/L			05/04/15 20:42	1
Xylenes, Total	1.0	U	1.0	ug/L			05/04/15 20:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 129*		*05/04/15 20:42*	*1*
4-Bromofluorobenzene (Surr)	*91*		*66 - 120*		*05/04/15 20:42*	*1*
Toluene-d8 (Surr)	*92*		*74 - 120*		*05/04/15 20:42*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 121*		*05/04/15 20:42*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042715-DR-021
Date Collected: 04/27/15 15:10
Date Received: 04/29/15 08:45

Lab Sample ID: 240-49977-3
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/04/15 21:05	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/04/15 21:05	1
Acetone	10	U	10	ug/L			05/04/15 21:05	1
Benzene	1.0	U	1.0	ug/L			05/04/15 21:05	1
Chlorobenzene	1.0	U	1.0	ug/L			05/04/15 21:05	1
Ethylbenzene	1.0	U	1.0	ug/L			05/04/15 21:05	1
2-Butanone (MEK)	10	U	10	ug/L			05/04/15 21:05	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/04/15 21:05	1
Methylene Chloride	1.0	U	1.0	ug/L			05/04/15 21:05	1
Toluene	1.0	U	1.0	ug/L			05/04/15 21:05	1
Trichloroethene	1.0	U	1.0	ug/L			05/04/15 21:05	1
Vinyl chloride	1.0	U	1.0	ug/L			05/04/15 21:05	1
Xylenes, Total	1.0	U	1.0	ug/L			05/04/15 21:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 129*		*05/04/15 21:05*	*1*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*		*05/04/15 21:05*	*1*
Toluene-d8 (Surr)	*92*		*74 - 120*		*05/04/15 21:05*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*05/04/15 21:05*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042715-DR-022
Date Collected: 04/27/15 16:50
Date Received: 04/29/15 08:45

Lab Sample ID: 240-49977-4
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/04/15 21:27	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/04/15 21:27	1
Acetone	10	U	10	ug/L			05/04/15 21:27	1
Benzene	1.0	U	1.0	ug/L			05/04/15 21:27	1
Chlorobenzene	1.0	U	1.0	ug/L			05/04/15 21:27	1
Ethylbenzene	1.0	U	1.0	ug/L			05/04/15 21:27	1
2-Butanone (MEK)	10	U	10	ug/L			05/04/15 21:27	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/04/15 21:27	1
Methylene Chloride	1.0	U	1.0	ug/L			05/04/15 21:27	1
Toluene	1.0	U	1.0	ug/L			05/04/15 21:27	1
Trichloroethene	1.0	U	1.0	ug/L			05/04/15 21:27	1
Vinyl chloride	1.0	U	1.0	ug/L			05/04/15 21:27	1
Xylenes, Total	1.0	U	1.0	ug/L			05/04/15 21:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 129*		*05/04/15 21:27*	*1*
4-Bromofluorobenzene (Surr)	*94*		*66 - 120*		*05/04/15 21:27*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/04/15 21:27*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/04/15 21:27*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042815-DR-023
Date Collected: 04/28/15 09:10
Date Received: 04/29/15 08:45

Lab Sample ID: 240-49977-5
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/04/15 21:50	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/04/15 21:50	1
Acetone	10	U	10	ug/L			05/04/15 21:50	1
Benzene	1.0	U	1.0	ug/L			05/04/15 21:50	1
Chlorobenzene	1.0	U	1.0	ug/L			05/04/15 21:50	1
Ethylbenzene	1.0	U	1.0	ug/L			05/04/15 21:50	1
2-Butanone (MEK)	10	U	10	ug/L			05/04/15 21:50	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/04/15 21:50	1
Methylene Chloride	1.0	U	1.0	ug/L			05/04/15 21:50	1
Toluene	1.0	U	1.0	ug/L			05/04/15 21:50	1
Trichloroethene	1.0	U	1.0	ug/L			05/04/15 21:50	1
Vinyl chloride	1.0	U	1.0	ug/L			05/04/15 21:50	1
Xylenes, Total	1.0	U	1.0	ug/L			05/04/15 21:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*		*05/04/15 21:50*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/04/15 21:50*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*05/04/15 21:50*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 121*		*05/04/15 21:50*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-32504-042815
Date Collected: 04/28/15 00:00
Date Received: 04/29/15 08:45

Lab Sample ID: 240-49977-6
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/05/15 18:57	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/05/15 18:57	1
Acetone	10	U	10	ug/L			05/05/15 18:57	1
Benzene	1.0	U	1.0	ug/L			05/05/15 18:57	1
Chlorobenzene	1.0	U	1.0	ug/L			05/05/15 18:57	1
Ethylbenzene	1.0	U	1.0	ug/L			05/05/15 18:57	1
2-Butanone (MEK)	10	U	10	ug/L			05/05/15 18:57	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/05/15 18:57	1
Methylene Chloride	**1.4**		1.0	ug/L			05/05/15 18:57	1
Toluene	1.0	U	1.0	ug/L			05/05/15 18:57	1
Trichloroethene	1.0	U	1.0	ug/L			05/05/15 18:57	1
Vinyl chloride	1.0	U	1.0	ug/L			05/05/15 18:57	1
Xylenes, Total	1.0	U	1.0	ug/L			05/05/15 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 129*		*05/05/15 18:57*	*1*
4-Bromofluorobenzene (Surr)	*82*		*66 - 120*		*05/05/15 18:57*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*05/05/15 18:57*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 121*		*05/05/15 18:57*	*1*

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

C/MS VOA

Analysis Batch: 179158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-49977-1	GW-32504-042715-DR-019	Total/NA	Water	8260B	
240-49977-2	GW-32504-042715-DR-020	Total/NA	Water	8260B	
240-49977-3	GW-32504-042715-DR-021	Total/NA	Water	8260B	
240-49977-4	GW-32504-042715-DR-022	Total/NA	Water	8260B	
240-49977-5	GW-32504-042815-DR-023	Total/NA	Water	8260B	
LCS 240-179158/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-179158/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 179353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-49977-6	TB-32504-042815	Total/NA	Water	8260B	
LCS 240-179353/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-179353/6	Method Blank	Total/NA	Water	8260B	

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-179158/6
Matrix: Water
Analysis Batch: 179158

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/04/15 13:55	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/04/15 13:55	1
Acetone	10	U	10	ug/L			05/04/15 13:55	1
Benzene	1.0	U	1.0	ug/L			05/04/15 13:55	1
Chlorobenzene	1.0	U	1.0	ug/L			05/04/15 13:55	1
Ethylbenzene	1.0	U	1.0	ug/L			05/04/15 13:55	1
2-Butanone (MEK)	10	U	10	ug/L			05/04/15 13:55	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/04/15 13:55	1
Methylene Chloride	1.0	U	1.0	ug/L			05/04/15 13:55	1
Toluene	1.0	U	1.0	ug/L			05/04/15 13:55	1
Trichloroethene	1.0	U	1.0	ug/L			05/04/15 13:55	1
Vinyl chloride	1.0	U	1.0	ug/L			05/04/15 13:55	1
Xylenes, Total	1.0	U	1.0	ug/L			05/04/15 13:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*		*05/04/15 13:55*	*1*
4-Bromofluorobenzene (Surr)	*91*		*66 - 120*		*05/04/15 13:55*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/04/15 13:55*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/04/15 13:55*	

Lab Sample ID: LCS 240-179158/4
Matrix: Water
Analysis Batch: 179158

Client Sample ID: Lab Control Samp...
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	11.2		ug/L		112	74 - 120
1,2-Dichloroethene, Total	20.0	20.6		ug/L		103	80 - 120
Acetone	20.0	17.4		ug/L		87	43 - 136
Benzene	10.0	10.0		ug/L		100	80 - 120
Chlorobenzene	10.0	9.61		ug/L		96	80 - 120
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	80 - 120
Ethylbenzene	10.0	10.2		ug/L		102	80 - 120
m-Xylene & p-Xylene	10.0	9.72		ug/L		97	80 - 120
2-Butanone (MEK)	20.0	18.9		ug/L		95	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	19.5		ug/L		97	63 - 128
Methylene Chloride	10.0	10.1		ug/L		101	66 - 131
o-Xylene	10.0	9.97		ug/L		100	80 - 120
Toluene	10.0	10.0		ug/L		100	80 - 120
trans-1,2-Dichloroethene	10.0	10.3		ug/L		103	80 - 120
Trichloroethene	10.0	10.9		ug/L		109	76 - 120
Vinyl chloride	10.0	8.85		ug/L		89	53 - 127
Xylenes, Total	20.0	19.7		ug/L		98	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*
4-Bromofluorobenzene (Surr)	*97*		*66 - 120*
Toluene-d8 (Surr)	*96*		*74 - 120*

ethod: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-179158/4
Matrix: Water
Analysis Batch: 179158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*75 - 121*

Lab Sample ID: MB 240-179353/6
Matrix: Water
Analysis Batch: 179353

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/05/15 13:39	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/05/15 13:39	1
Acetone	10	U	10	ug/L			05/05/15 13:39	1
Benzene	1.0	U	1.0	ug/L			05/05/15 13:39	1
Chlorobenzene	1.0	U	1.0	ug/L			05/05/15 13:39	1
Ethylbenzene	1.0	U	1.0	ug/L			05/05/15 13:39	1
2-Butanone (MEK)	10	U	10	ug/L			05/05/15 13:39	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/05/15 13:39	1
Methylene Chloride	1.0	U	1.0	ug/L			05/05/15 13:39	1
Toluene	1.0	U	1.0	ug/L			05/05/15 13:39	1
Trichloroethene	1.0	U	1.0	ug/L			05/05/15 13:39	1
Vinyl chloride	1.0	U	1.0	ug/L			05/05/15 13:39	1
ylenes, Total	1.0	U	1.0	ug/L			05/05/15 13:39	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 129*		*05/05/15 13:39*	*1*
4-Bromofluorobenzene (Surr)	*81*		*66 - 120*		*05/05/15 13:39*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/05/15 13:39*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 121*		*05/05/15 13:39*	*1*

Lab Sample ID: LCS 240-179353/4
Matrix: Water
Analysis Batch: 179353

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	9.36		ug/L		94	74 - 120
1,2-Dichloroethene, Total	20.0	20.0		ug/L		100	80 - 120
Acetone	20.0	21.3		ug/L		107	43 - 136
Benzene	10.0	10.6		ug/L		106	80 - 120
Chlorobenzene	10.0	10.7		ug/L		107	80 - 120
cis-1,2-Dichloroethene	10.0	9.82		ug/L		98	80 - 120
Ethylbenzene	10.0	10.5		ug/L		105	80 - 120
m-Xylene & p-Xylene	10.0	10.6		ug/L		106	80 - 120
2-Butanone (MEK)	20.0	22.9		ug/L		114	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	24.6		ug/L		123	63 - 128
Methylene Chloride	10.0	10.4		ug/L		104	66 - 131
o-Xylene	10.0	10.2		ug/L		102	80 - 120
Toluene	10.0	10.9		ug/L		109	80 - 120
ns-1,2-Dichloroethene	10.0	10.2		ug/L		102	80 - 120
ichloroethene	10.0	10.5		ug/L		105	76 - 120
Vinyl chloride	10.0	8.51		ug/L		85	53 - 127

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-179353/4
Matrix: Water
Analysis Batch: 179353

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Xylenes, Total			20.0	20.8		ug/L		104	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 129*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*
Toluene-d8 (Surr)	*102*		*74 - 120*
Dibromofluoromethane (Surr)	*92*		*75 - 121*

Surrogate Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	**(63-129)**	**(66-120)**	**(74-120)**	**(75-121)**
240-49977-1	GW-32504-042715-DR-019	105	92	94	99
240-49977-2	GW-32504-042715-DR-020	106	91	92	102
240-49977-3	GW-32504-042715-DR-021	106	93	92	100
240-49977-4	GW-32504-042715-DR-022	105	94	94	99
240-49977-5	GW-32504-042815-DR-023	104	92	93	98
240-49977-6	TB-32504-042815	106	82	93	96
LCS 240-179158/4	Lab Control Sample	104	97	96	102
LCS 240-179353/4	Lab Control Sample	95	93	102	92
MB 240-179158/6	Method Blank	100	91	94	99
MB 240-179353/6	Method Blank	106	81	95	96

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

Client Sample ID: GW-32504-042715-DR-019

Lab Sample ID: 240-4997

Date Collected: 04/27/15 10:45
Date Received: 04/29/15 08:45

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179158	05/04/15 20:19	LRW	TAL CAN

Client Sample ID: GW-32504-042715-DR-020

Lab Sample ID: 240-49977-2

Date Collected: 04/27/15 13:45
Date Received: 04/29/15 08:45

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179158	05/04/15 20:42	LRW	TAL CAN

Client Sample ID: GW-32504-042715-DR-021

Lab Sample ID: 240-49977-3

Date Collected: 04/27/15 15:10
Date Received: 04/29/15 08:45

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179158	05/04/15 21:05	LRW	TAL CAN

Client Sample ID: GW-32504-042715-DR-022

Lab Sample ID: 240-49977-4

Date Collected: 04/27/15 16:50
Date Received: 04/29/15 08:45

Matrix: W

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179158	05/04/15 21:27	LRW	TAL CAN

Client Sample ID: GW-32504-042815-DR-023

Lab Sample ID: 240-49977-5

Date Collected: 04/28/15 09:10
Date Received: 04/29/15 08:45

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179158	05/04/15 21:50	LRW	TAL CAN

Client Sample ID: TB-32504-042815

Lab Sample ID: 240-49977-6

Date Collected: 04/28/15 00:00
Date Received: 04/29/15 08:45

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179353	05/05/15 18:57	LRW	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-49977-1

ıboratory: TestAmerica Canton

certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15 *
Georgia	State Program	4	N/A	06-30-15 *
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	05-31-15 *
Kentucky (UST)	State Program	4	58	06-30-15 *
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15 *
New York	NELAP	2	10975	03-31-16 *
Ohio VAP	State Program	5	CL0024	10-31-15
Oregon	NELAP	10	4062	02-23-16
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
Wisconsin	State Program	5	999518190	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

240-49977 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170
Phone: (734) 453-5123 Fax: (734) 453-5201

0.4/C0.9

COC NO.: PL-11797
PAGE ___ OF ___
(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 032504-35	Laboratory Name: Test America	Lab Location: North Canton	SSOW ID: 32504-014
Project Name: Rasmussen Landfill	Lab Contact:	Lab Quote No: 24008783	Cooler No:
Project Location: Livingston County, MI			Carrier: Dropoff
Chemistry Contact: R. Fleisher			Airbill No:
Sampler(s): D. Rivers			Date Shipped: 4/28/15

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd//yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO_3)	Sulfuric Acid (H_2SO_4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	Select VOCs	MS/MSD Request	Comments/ Special Instructions:
1	GW-32504-042715-DR-019	4/27/15	1045	WG	G		3							3	X		
2	-020		1345				3							3	X		
3	-021		1510				3							3	X		
4	-022		1650				3							3	X		
5	-042815-DR-023	4/28/15	910				3							3	X		
6	TB-32504-042815		—	WQ	—		1							1	X		
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

Michigan
190

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☒ 2 Week ☐ Other:

Total Number of Containers: 16

All Samples in Cooler must be on COC

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. D. Rivers	CRA	4/28/15	1025	1. Jeni Haulin	TAL	4-28-15	1025
2. J. Haulin	TAL	4-28-15	1028	2. [signature]	T/A	4-29-15	8:45
3.				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT — ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE — Fully Executed Copy (CRA) YELLOW — Receiving Laboratory Copy PINK — Shipper GOLDENROD — Sampling Crew

CRA Form: COC-10A (20110804)

TestAmerica Canton Sample Receipt Form/Narrative Login # : 09077
Canton Facility

Client CRA Site Name Rasmussen Landfill Cooler unpacked by: Jackson

Cooler Received on 4-29-15 Opened on 4-29-15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # 1 ~~Foam Box~~ ~~Client Cooler~~ Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. 4 °C Corrected Cooler Temp. 4.9 °C ☐ See Multiple Cooler Form
   ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC432654
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # Yes No

Contacted PM Date by via Verbal Voice Mail Other

Concerning

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

Michigan

190

15. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

Ref: SOP NC-SC-0005, Sample Receiving
X:\X-Drive Document Control\SOPs\Work Instructions\Word Version Work Instructions\WI-NC-099P-042315 Cooler Receipt Form.doc djl

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-50120-1
Client Project/Site: 32504, Rasmussen Landfill

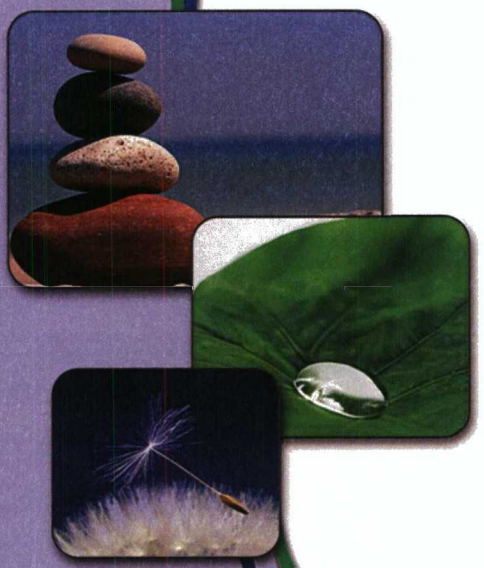
For:
Conestoga-Rovers & Associates, Inc.
14496 Sheldon Road, Suite 200
Plymouth, Michigan 48170

Attn: Rawa Fleisher

Denise D Heckler

Authorized for release by:
5/7/2015 12:31:01 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com



LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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›b ID: 240-50120-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Conestoga-Rovers & Associates, Inc.

Project: 32504, Rasmussen Landfill

Report Number: 240-50120-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions \NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written proval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 05/01/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.3 C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples GW-32504-042815-DR-024 (240-50120-1), GW-32504-042815-DR-025 (240-50120-2), GW-32504-042815-DR-026 (240-50120-3), GW-32504-042815-DR-027 (240-50120-4), GW-32504-042915-DR-028 (240-50120-5), GW-32504-042915-DR-029 (240-50120-6), GW-32504-042915-DR-030 (240-50120-7), GW-32504-042915-DR-031 (240-50120-8), GW-32504-042915-DR-032 (240-50120-9), GW-32504-043015-DR-033 (240-50120-10), GW-32504-043015-DR-034 (240-50120-11), GW-32504-043015-DR-035 (240-50120-12) and TB-32504-043015 (240-50120-13) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/06/2015.

The pH of the following samples was greater than 2: GW-32504-042915-DR-031 (240-50120-8), GW-32504-043015-DR-033 (240-50120-10) and GW-32504-043015-DR-035 (240-50120-12).

analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-50120-1	GW-32504-042815-DR-024	Water	04/28/15 14:40	05/01/15 09:30
240-50120-2	GW-32504-042815-DR-025	Water	04/28/15 14:45	05/01/15 09:30
240-50120-3	GW-32504-042815-DR-026	Water	04/28/15 15:25	05/01/15 09:30
240-50120-4	GW-32504-042815-DR-027	Water	04/28/15 16:30	05/01/15 09:30
240-50120-5	GW-32504-042915-DR-028	Water	04/29/15 08:15	05/01/15 09:30
240-50120-6	GW-32504-042915-DR-029	Water	04/29/15 09:45	05/01/15 09:30
240-50120-7	GW-32504-042915-DR-030	Water	04/29/15 11:35	05/01/15 09:30
240-50120-8	GW-32504-042915-DR-031	Water	04/29/15 14:10	05/01/15 09:30
240-50120-9	GW-32504-042915-DR-032	Water	04/29/15 16:00	05/01/15 09:30
240-50120-10	GW-32504-043015-DR-033	Water	04/30/15 08:40	05/01/15 09:30
240-50120-11	GW-32504-043015-DR-034	Water	04/30/15 10:25	05/01/15 09:30
240-50120-12	GW-32504-043015-DR-035	Water	04/30/15 12:25	05/01/15 09:30
240-50120-13	TB-32504-043015	Water	04/30/15 00:00	05/01/15 09:30

Detection Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Client Sample ID: GW-32504-042815-DR-024 — Lab Sample ID: 240-5012(

No Detections.

Client Sample ID: GW-32504-042815-DR-025 — Lab Sample ID: 240-50120-2

No Detections.

Client Sample ID: GW-32504-042815-DR-026 — Lab Sample ID: 240-50120-3

No Detections.

Client Sample ID: GW-32504-042815-DR-027 — Lab Sample ID: 240-50120-4

No Detections.

Client Sample ID: GW-32504-042915-DR-028 — Lab Sample ID: 240-50120-5

No Detections.

Client Sample ID: GW-32504-042915-DR-029 — Lab Sample ID: 240-50120-6

No Detections.

Client Sample ID: GW-32504-042915-DR-030 — Lab Sample ID: 240-50120-7

No Detections.

Client Sample ID: GW-32504-042915-DR-031 — Lab Sample ID: 240-5012(

No Detections.

Client Sample ID: GW-32504-042915-DR-032 — Lab Sample ID: 240-50120-9

No Detections.

Client Sample ID: GW-32504-043015-DR-033 — Lab Sample ID: 240-50120-10

No Detections.

Client Sample ID: GW-32504-043015-DR-034 — Lab Sample ID: 240-50120-11

No Detections.

Client Sample ID: GW-32504-043015-DR-035 — Lab Sample ID: 240-50120-12

No Detections.

Client Sample ID: TB-32504-043015 — Lab Sample ID: 240-50120-13

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Acetone	12		10	ug/L	1		8260B	Total/NA
Methylene Chloride	5.7		1.0	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042815-DR-024
Date Collected: 04/28/15 14:40
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-1
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 14:10	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 14:10	1
Acetone	10	U	10	ug/L			05/06/15 14:10	1
Benzene	1.0	U	1.0	ug/L			05/06/15 14:10	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 14:10	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 14:10	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 14:10	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 14:10	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 14:10	1
Toluene	1.0	U	1.0	ug/L			05/06/15 14:10	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 14:10	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 14:10	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 14:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*		*05/06/15 14:10*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/06/15 14:10*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/06/15 14:10*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 121*		*05/06/15 14:10*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042815-DR-025
Date Collected: 04/28/15 14:45
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 16:48	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 16:48	1
Acetone	10	U	10	ug/L			05/06/15 16:48	1
Benzene	1.0	U	1.0	ug/L			05/06/15 16:48	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 16:48	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 16:48	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 16:48	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 16:48	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 16:48	1
Toluene	1.0	U	1.0	ug/L			05/06/15 16:48	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 16:48	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 16:48	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 16:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*05/06/15 16:48*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/06/15 16:48*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*05/06/15 16:48*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 121*		*05/06/15 16:48*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042815-DR-026
Date Collected: 04/28/15 15:25
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-3
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 17:11	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 17:11	1
Acetone	10	U	10	ug/L			05/06/15 17:11	1
Benzene	1.0	U	1.0	ug/L			05/06/15 17:11	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 17:11	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 17:11	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 17:11	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 17:11	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 17:11	1
Toluene	1.0	U	1.0	ug/L			05/06/15 17:11	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 17:11	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 17:11	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 129*		*05/06/15 17:11*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/06/15 17:11*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*05/06/15 17:11*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 121*		*05/06/15 17:11*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

`ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042815-DR-027
Date Collected: 04/28/15 16:30
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-4
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 17:34	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 17:34	1
Acetone	10	U	10	ug/L			05/06/15 17:34	1
Benzene	1.0	U	1.0	ug/L			05/06/15 17:34	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 17:34	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 17:34	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 17:34	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 17:34	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 17:34	1
Toluene	1.0	U	1.0	ug/L			05/06/15 17:34	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 17:34	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 17:34	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 17:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 129*		*05/06/15 17:34*	*1*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*		*05/06/15 17:34*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/06/15 17:34*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/06/15 17:34*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042915-DR-028
Date Collected: 04/29/15 08:15
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-5
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 17:57	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 17:57	1
Acetone	10	U	10	ug/L			05/06/15 17:57	1
Benzene	1.0	U	1.0	ug/L			05/06/15 17:57	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 17:57	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 17:57	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 17:57	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 17:57	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 17:57	1
Toluene	1.0	U	1.0	ug/L			05/06/15 17:57	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 17:57	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 17:57	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*		*05/06/15 17:57*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/06/15 17:57*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*05/06/15 17:57*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*05/06/15 17:57*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042915-DR-029
Date Collected: 04/29/15 09:45
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-6
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 18:20	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 18:20	1
Acetone	10	U	10	ug/L			05/06/15 18:20	1
Benzene	1.0	U	1.0	ug/L			05/06/15 18:20	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 18:20	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 18:20	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 18:20	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 18:20	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 18:20	1
Toluene	1.0	U	1.0	ug/L			05/06/15 18:20	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 18:20	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 18:20	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 18:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 129*		*05/06/15 18:20*	*1*
4-Bromofluorobenzene (Surr)	*91*		*66 - 120*		*05/06/15 18:20*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/06/15 18:20*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*05/06/15 18:20*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042915-DR-030
Date Collected: 04/29/15 11:35
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-7
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 18:43	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 18:43	1
Acetone	10	U	10	ug/L			05/06/15 18:43	1
Benzene	1.0	U	1.0	ug/L			05/06/15 18:43	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 18:43	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 18:43	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 18:43	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 18:43	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 18:43	1
Toluene	1.0	U	1.0	ug/L			05/06/15 18:43	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 18:43	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 18:43	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 18:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 129*		*05/06/15 18:43*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/06/15 18:43*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*05/06/15 18:43*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 121*		*05/06/15 18:43*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042915-DR-031
Date Collected: 04/29/15 14:10
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-8
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 14:32	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 14:32	1
Acetone	10	U	10	ug/L			05/06/15 14:32	1
Benzene	1.0	U	1.0	ug/L			05/06/15 14:32	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 14:32	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 14:32	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 14:32	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 14:32	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 14:32	1
Toluene	1.0	U	1.0	ug/L			05/06/15 14:32	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 14:32	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 14:32	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 14:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*05/06/15 14:32*	*1*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*		*05/06/15 14:32*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*05/06/15 14:32*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 121*		*05/06/15 14:32*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-042915-DR-032
Date Collected: 04/29/15 16:00
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-9
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 19:05	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 19:05	1
Acetone	10	U	10	ug/L			05/06/15 19:05	1
Benzene	1.0	U	1.0	ug/L			05/06/15 19:05	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 19:05	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 19:05	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 19:05	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 19:05	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 19:05	1
Toluene	1.0	U	1.0	ug/L			05/06/15 19:05	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 19:05	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 19:05	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 19:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*		*05/06/15 19:05*	*1*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*		*05/06/15 19:05*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/06/15 19:05*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 121*		*05/06/15 19:05*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-043015-DR-033
Date Collected: 04/30/15 08:40
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-10
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 14:55	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 14:55	1
Acetone	10	U	10	ug/L			05/06/15 14:55	1
Benzene	1.0	U	1.0	ug/L			05/06/15 14:55	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 14:55	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 14:55	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 14:55	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 14:55	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 14:55	1
Toluene	1.0	U	1.0	ug/L			05/06/15 14:55	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 14:55	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 14:55	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 14:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 129*		*05/06/15 14:55*	*1*
4-Bromofluorobenzene (Surr)	*90*		*66 - 120*		*05/06/15 14:55*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*05/06/15 14:55*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 121*		*05/06/15 14:55*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-043015-DR-034
Date Collected: 04/30/15 10:25
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-11
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 19:28	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 19:28	1
Acetone	10	U	10	ug/L			05/06/15 19:28	1
Benzene	1.0	U	1.0	ug/L			05/06/15 19:28	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 19:28	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 19:28	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 19:28	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 19:28	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 19:28	1
Toluene	1.0	U	1.0	ug/L			05/06/15 19:28	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 19:28	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 19:28	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*05/06/15 19:28*	*1*
4-Bromofluorobenzene (Surr)	*91*		*66 - 120*		*05/06/15 19:28*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*05/06/15 19:28*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*05/06/15 19:28*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-043015-DR-035
Date Collected: 04/30/15 12:25
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-12
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 15:17	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 15:17	1
Acetone	10	U	10	ug/L			05/06/15 15:17	1
Benzene	1.0	U	1.0	ug/L			05/06/15 15:17	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 15:17	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 15:17	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 15:17	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 15:17	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 15:17	1
Toluene	1.0	U	1.0	ug/L			05/06/15 15:17	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 15:17	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 15:17	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 15:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*05/06/15 15:17*	*1*
4-Bromofluorobenzene (Surr)	*90*		*66 - 120*		*05/06/15 15:17*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/06/15 15:17*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/06/15 15:17*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-32504-043015
Date Collected: 04/30/15 00:00
Date Received: 05/01/15 09:30

Lab Sample ID: 240-50120-13
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 19:51	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 19:51	1
Acetone	**12**		10	ug/L			05/06/15 19:51	1
Benzene	1.0	U	1.0	ug/L			05/06/15 19:51	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 19:51	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 19:51	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 19:51	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 19:51	1
Methylene Chloride	**5.7**		1.0	ug/L			05/06/15 19:51	1
Toluene	1.0	U	1.0	ug/L			05/06/15 19:51	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 19:51	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 19:51	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 129*		*05/06/15 19:51*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/06/15 19:51*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/06/15 19:51*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*05/06/15 19:51*	*1*

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

C/MS VOA

Analysis Batch: 179568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-50120-1	GW-32504-042815-DR-024	Total/NA	Water	8260B	
240-50120-1 MS	GW-32504-042815-DR-024	Total/NA	Water	8260B	
240-50120-1 MSD	GW-32504-042815-DR-024	Total/NA	Water	8260B	
240-50120-2	GW-32504-042815-DR-025	Total/NA	Water	8260B	
240-50120-3	GW-32504-042815-DR-026	Total/NA	Water	8260B	
240-50120-4	GW-32504-042815-DR-027	Total/NA	Water	8260B	
240-50120-5	GW-32504-042915-DR-028	Total/NA	Water	8260B	
240-50120-6	GW-32504-042915-DR-029	Total/NA	Water	8260B	
240-50120-7	GW-32504-042915-DR-030	Total/NA	Water	8260B	
240-50120-8	GW-32504-042915-DR-031	Total/NA	Water	8260B	
240-50120-9	GW-32504-042915-DR-032	Total/NA	Water	8260B	
240-50120-10	GW-32504-043015-DR-033	Total/NA	Water	8260B	
240-50120-11	GW-32504-043015-DR-034	Total/NA	Water	8260B	
240-50120-12	GW-32504-043015-DR-035	Total/NA	Water	8260B	
240-50120-13	TB-32504-043015	Total/NA	Water	8260B	
LCS 240-179568/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-179568/6	Method Blank	Total/NA	Water	8260B	

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-179568/6
Matrix: Water
Analysis Batch: 179568

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/06/15 13:47	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/06/15 13:47	1
Acetone	10	U	10	ug/L			05/06/15 13:47	1
Benzene	1.0	U	1.0	ug/L			05/06/15 13:47	1
Chlorobenzene	1.0	U	1.0	ug/L			05/06/15 13:47	1
Ethylbenzene	1.0	U	1.0	ug/L			05/06/15 13:47	1
2-Butanone (MEK)	10	U	10	ug/L			05/06/15 13:47	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/06/15 13:47	1
Methylene Chloride	1.0	U	1.0	ug/L			05/06/15 13:47	1
Toluene	1.0	U	1.0	ug/L			05/06/15 13:47	1
Trichloroethene	1.0	U	1.0	ug/L			05/06/15 13:47	1
Vinyl chloride	1.0	U	1.0	ug/L			05/06/15 13:47	1
Xylenes, Total	1.0	U	1.0	ug/L			05/06/15 13:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*		*05/06/15 13:47*	*1*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*		*05/06/15 13:47*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/06/15 13:47*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/06/15 13:47*	

Lab Sample ID: LCS 240-179568/4
Matrix: Water
Analysis Batch: 179568

Client Sample ID: Lab Control Samp...
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	11.0		ug/L		110	74 - 120
1,2-Dichloroethene, Total	20.0	20.8		ug/L		104	80 - 120
Acetone	20.0	16.7		ug/L		83	43 - 136
Benzene	10.0	9.98		ug/L		100	80 - 120
Chlorobenzene	10.0	9.90		ug/L		99	80 - 120
cis-1,2-Dichloroethene	10.0	10.5		ug/L		105	80 - 120
Ethylbenzene	10.0	10.1		ug/L		101	80 - 120
m-Xylene & p-Xylene	10.0	9.97		ug/L		100	80 - 120
2-Butanone (MEK)	20.0	18.7		ug/L		93	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	19.4		ug/L		97	63 - 128
Methylene Chloride	10.0	10.0		ug/L		100	66 - 131
o-Xylene	10.0	10.3		ug/L		103	80 - 120
Toluene	10.0	9.93		ug/L		99	80 - 120
trans-1,2-Dichloroethene	10.0	10.3		ug/L		103	80 - 120
Trichloroethene	10.0	10.6		ug/L		106	76 - 120
Vinyl chloride	10.0	8.13		ug/L		81	53 - 127
Xylenes, Total	20.0	20.3		ug/L		101	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*
4-Bromofluorobenzene (Surr)	*95*		*66 - 120*
Toluene-d8 (Surr)	*97*		*74 - 120*

ethod: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-179568/4
Matrix: Water
Analysis Batch: 179568

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*100*		*75 - 121*

Lab Sample ID: 240-50120-1 MS
Matrix: Water
Analysis Batch: 179568

Client Sample ID: GW-32504-042815-DR-024
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	1.0	U	10.0	10.9		ug/L		109	68 - 121
1,2-Dichloroethene, Total	1.0	U	20.0	20.4		ug/L		102	75 - 120
Acetone	10	U	20.0	14.0		ug/L		70	33 - 145
Benzene	1.0	U	10.0	9.87		ug/L		99	72 - 121
Chlorobenzene	1.0	U	10.0	9.98		ug/L		100	80 - 120
cis-1,2-Dichloroethene	1.0	U	10.0	9.99		ug/L		100	70 - 120
Ethylbenzene	1.0	U	10.0	10.1		ug/L		101	75 - 120
m-Xylene & p-Xylene	1.0	U	10.0	10.0		ug/L		100	75 - 120
2-Butanone (MEK)	10	U	20.0	16.2		ug/L		81	54 - 129
4-Methyl-2-pentanone (MIBK)	10	U	20.0	17.5		ug/L		87	56 - 131
Methylene Chloride	1.0	U	10.0	9.55		ug/L		96	63 - 128
o-Xylene	1.0	U	10.0	10.4		ug/L		104	76 - 120
oluene	1.0	U	10.0	9.97		ug/L		100	78 - 120
ans-1,2-Dichloroethene	1.0	U	10.0	10.4		ug/L		104	80 - 120
Trichloroethene	1.0	U	10.0	10.3		ug/L		103	66 - 120
Vinyl chloride	1.0	U	10.0	8.56		ug/L		86	49 - 130
Xylenes, Total	1.0	U	20.0	20.4		ug/L		102	76 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 129*
4-Bromofluorobenzene (Surr)	*98*		*66 - 120*
Toluene-d8 (Surr)	*97*		*74 - 120*
Dibromofluoromethane (Surr)	*96*		*75 - 121*

Lab Sample ID: 240-50120-1 MSD
Matrix: Water
Analysis Batch: 179568

Client Sample ID: GW-32504-042815-DR-024
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	1.0	U	10.0	10.5		ug/L		105	68 - 121	3	30
1,2-Dichloroethene, Total	1.0	U	20.0	19.9		ug/L		100	75 - 120	2	30
Acetone	10	U	20.0	13.8		ug/L		69	33 - 145	1	30
Benzene	1.0	U	10.0	9.63		ug/L		96	72 - 121	2	30
Chlorobenzene	1.0	U	10.0	9.89		ug/L		99	80 - 120	1	30
cis-1,2-Dichloroethene	1.0	U	10.0	9.92		ug/L		99	70 - 120	1	30
Ethylbenzene	1.0	U	10.0	9.86		ug/L		99	75 - 120	2	30
m-Xylene & p-Xylene	1.0	U	10.0	9.82		ug/L		98	75 - 120	2	30
2-Butanone (MEK)	10	U	20.0	16.3		ug/L		81	54 - 129	1	30
Methyl-2-pentanone (MIBK)	10	U	20.0	17.3		ug/L		87	56 - 131	1	30
Methylene Chloride	1.0	U	10.0	9.58		ug/L		96	63 - 128	0	30
o-Xylene	1.0	U	10.0	10.1		ug/L		101	76 - 120	3	30

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-50120-1 MSD
Matrix: Water
Analysis Batch: 179568

Client Sample ID: GW-32504-042815-DR-024
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Toluene	1.0	U	10.0	9.77		ug/L		98	78 - 120	2	30
trans-1,2-Dichloroethene	1.0	U	10.0	10.0		ug/L		100	80 - 120	3	30
Trichloroethene	1.0	U	10.0	10.2		ug/L		102	66 - 120	1	30
Vinyl chloride	1.0	U	10.0	8.51		ug/L		85	49 - 130	1	30
Xylenes, Total	1.0	U	20.0	19.9		ug/L		100	76 - 120	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*
4-Bromofluorobenzene (Surr)	*99*		*66 - 120*
Toluene-d8 (Surr)	*98*		*74 - 120*
Dibromofluoromethane (Surr)	*97*		*75 - 121*

Surrogate Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	(63-129)	(66-120)	(74-120)	(75-121)
240-50120-1	GW-32504-042815-DR-024	104	92	94	96
240-50120-1 MS	GW-32504-042815-DR-024	99	98	97	96
240-50120-1 MSD	GW-32504-042815-DR-024	100	99	98	97
240-50120-2	GW-32504-042815-DR-025	103	92	93	97
240-50120-3	GW-32504-042815-DR-026	105	92	96	98
240-50120-4	GW-32504-042815-DR-027	102	93	95	99
240-50120-5	GW-32504-042915-DR-028	104	92	96	100
240-50120-6	GW-32504-042915-DR-029	105	91	95	100
240-50120-7	GW-32504-042915-DR-030	105	92	96	102
240-50120-8	GW-32504-042915-DR-031	103	93	96	98
240-50120-9	GW-32504-042915-DR-032	104	93	94	98
240-50120-10	GW-32504-043015-DR-033	105	90	96	98
240-50120-11	GW-32504-043015-DR-034	103	91	93	100
240-50120-12	GW-32504-043015-DR-035	103	90	95	99
240-50120-13	TB-32504-043015	108	92	95	100
LCS 240-179568/4	Lab Control Sample	100	95	97	100
MB 240-179568/6	Method Blank	104	93	95	99

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Client Sample ID: GW-32504-042815-DR-024

Lab Sample ID: 240-5012(

Date Collected: 04/28/15 14:40

Matrix: Water

Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 14:10	RJQ	TAL CAN

Client Sample ID: GW-32504-042815-DR-025

Lab Sample ID: 240-50120-2

Date Collected: 04/28/15 14:45

Matrix: Water

Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 16:48	RJQ	TAL CAN

Client Sample ID: GW-32504-042815-DR-026

Lab Sample ID: 240-50120-3

Date Collected: 04/28/15 15:25

Matrix: Water

Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 17:11	RJQ	TAL CAN

Client Sample ID: GW-32504-042815-DR-027

Lab Sample ID: 240-50120-4

Date Collected: 04/28/15 16:30

Matrix: Wa

Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 17:34	RJQ	TAL CAN

Client Sample ID: GW-32504-042915-DR-028

Lab Sample ID: 240-50120-5

Date Collected: 04/29/15 08:15

Matrix: Water

Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 17:57	RJQ	TAL CAN

Client Sample ID: GW-32504-042915-DR-029

Lab Sample ID: 240-50120-6

Date Collected: 04/29/15 09:45

Matrix: Water

Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 18:20	RJQ	TAL CAN

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

ient Sample ID: GW-32504-042915-DR-030

Lab Sample ID: 240-50120-7
Matrix: Water

Date Collected: 04/29/15 11:35
Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 18:43	RJQ	TAL CAN

Client Sample ID: GW-32504-042915-DR-031

Lab Sample ID: 240-50120-8
Matrix: Water

Date Collected: 04/29/15 14:10
Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 14:32	RJQ	TAL CAN

Client Sample ID: GW-32504-042915-DR-032

Lab Sample ID: 240-50120-9
Matrix: Water

Date Collected: 04/29/15 16:00
Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 19:05	RJQ	TAL CAN

Client Sample ID: GW-32504-043015-DR-033

Lab Sample ID: 240-50120-10
Matrix: Water

te Collected: 04/30/15 08:40
te Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 14:55	RJQ	TAL CAN

Client Sample ID: GW-32504-043015-DR-034

Lab Sample ID: 240-50120-11
Matrix: Water

Date Collected: 04/30/15 10:25
Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 19:28	RJQ	TAL CAN

Client Sample ID: GW-32504-043015-DR-035

Lab Sample ID: 240-50120-12
Matrix: Water

Date Collected: 04/30/15 12:25
Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 15:17	RJQ	TAL CAN

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

Client Sample ID: TB-32504-043015

Lab Sample ID: 240-50120

Date Collected: 04/30/15 00:00

Matrix: Wat.

Date Received: 05/01/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179568	05/06/15 19:51	RJQ	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50120-1

ıboratory: TestAmerica Canton

certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15 *
Georgia	State Program	4	N/A	06-30-15 *
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	05-31-15 *
Kentucky (UST)	State Program	4	58	06-30-15 *
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15 *
New York	NELAP	2	10975	03-31-16 *
Ohio VAP	State Program	5	CL0024	10-31-15
Oregon	NELAP	10	4062	02-23-16
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
Wisconsin	State Program	5	999518190	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica

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TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

240-50120 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

28/C3.3

CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170
Phone: (734) 453-5123 Fax: (734) 453-5201

COC NO.: 11796
PAGE 1 OF __
(See Reverse Side for Instructions)

Project No/ Phase/Task Code: ~~08~~ 032504-35
Project Name: Rasmussen Landfill - VAS
Project Location: Livingston County, MI
Chemistry Contact: R. Fleisher
Sampler(s): D. Rivers

Laboratory Name: Test America
Lab Contact: D. Heckler
Lab Location: North Canton, OH
Lab Quote No: 240 08783

SSOW ID: 32504-014
Cooler No:
Carrier: Drop off in Brighton Ctr
Airbill No:
Date Shipped: 4/30/15

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO_3)	Sulfuric Acid (H_2SO_4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	Select VOCs	MS/MSD Request	Comments/ Special Instructions:
1	GW-32504-042815-DR-024	4/28/15	1440	WG	G		3							3	X		
2	025		1445				3							3	X		
3	026		1525				3							3	X		
4	027		1630				3							3	X		
5	042915-DR-028	4/29/15	815				3							3	X		
6	029		945				3							3	X		
7	030		1135				3							3	X		
8	031		1410				3							3	X		
9	032		1600				3							3	X		
10	043015-DR-033	4/30/15	840				3							3	X		
11	-034		1025				3							3	X		
12	-035		1225				3							3	X		
13	TB-32504-043015		—	WQ	—		1							1	X		
14																	
15																	

Michigan
190

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☒ 2 Week ☐ Other:

Total Number of Containers: 37
All Samples in Cooler must be on COC

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. D. Rivers	CRA	4/30/15	1410	1. [signature]	TESTAMERICA	4/30/15	1410
2. [signature]	TESTAMERICA	4/30/15	14:17	2. [signature]	TA	5.1.15	930
3.				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

CRA Form: COC-10A (20110804)

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 50120**
Canton Facility

Client CRA Site Name _____ Cooler unpacked by:

Cooler Received on 5-1-15 Opened on 5-1-15

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   - ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   - IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. 2.9 °C Corrected Cooler Temp. 3.3 °C
   - ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   - IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

☐ See Multiple Cooler Form

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   - -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   - -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC432654
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____.

Ref: SOP NC-SC-0005, Sample Receiving
X:\X-Drive Document Control\SOPs\Work Instructions\Word Version Work Instructions\WI-NC-099P-042315 Cooler Receipt Form.doc djl

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-50168-1
Client Project/Site: 32504, Rasmussen Landfill

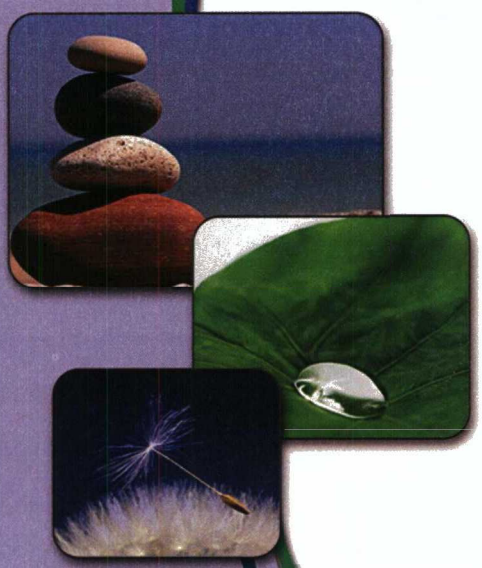
For:
Conestoga-Rovers & Associates, Inc.
14496 Sheldon Road, Suite 200
Plymouth, Michigan 48170

Attn: Rawa Fleisher

Denise D Heckler

Authorized for release by:
5/7/2015 1:36:22 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com



LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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›b ID: 240-50168-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Conestoga-Rovers & Associates, Inc.

Project: 32504, Rasmussen Landfill

Report Number: 240-50168-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

› test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions › NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 05/02/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 4.3 C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples GW-32504-043015-DR-036 (240-50168-1), GW-32504-050115-DR-037 (240-50168-2), GW-32504-050115-DR-038 (240-50168-3), GW-32504-050115-DR-039 (240-50168-4), GW-32504-050115-DR-040 (240-50168-5), GW-32504-050115-DR-041 (240-50168-6) and TB-32504-050115 (240-50168-7) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/07/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-50168-1	GW-32504-043015-DR-036	Water	04/30/15 17:00	05/02/15 09:30
240-50168-2	GW-32504-050115-DR-037	Water	05/01/15 08:25	05/02/15 09:30
240-50168-3	GW-32504-050115-DR-038	Water	05/01/15 08:35	05/02/15 09:30
240-50168-4	GW-32504-050115-DR-039	Water	05/01/15 10:10	05/02/15 09:30
240-50168-5	GW-32504-050115-DR-040	Water	05/01/15 11:45	05/02/15 09:30
240-50168-6	GW-32504-050115-DR-041	Water	05/01/15 14:30	05/02/15 09:30
240-50168-7	TB-32504-050115	Water	05/01/15 00:00	05/02/15 09:30

Detection Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

Client Sample ID: GW-32504-043015-DR-036 **Lab Sample ID: 240-5016(**

No Detections.

Client Sample ID: GW-32504-050115-DR-037 **Lab Sample ID: 240-50168-2**

No Detections.

Client Sample ID: GW-32504-050115-DR-038 **Lab Sample ID: 240-50168-3**

No Detections.

Client Sample ID: GW-32504-050115-DR-039 **Lab Sample ID: 240-50168-4**

No Detections.

Client Sample ID: GW-32504-050115-DR-040 **Lab Sample ID: 240-50168-5**

No Detections.

Client Sample ID: GW-32504-050115-DR-041 **Lab Sample ID: 240-50168-6**

No Detections.

Client Sample ID: TB-32504-050115 **Lab Sample ID: 240-50168-7**

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-043015-DR-036
Date Collected: 04/30/15 17:00
Date Received: 05/02/15 09:30

Lab Sample ID: 240-50168-1
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/07/15 03:39	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/07/15 03:39	1
Acetone	10	U	10	ug/L			05/07/15 03:39	1
Benzene	1.0	U	1.0	ug/L			05/07/15 03:39	1
Chlorobenzene	1.0	U	1.0	ug/L			05/07/15 03:39	1
Ethylbenzene	1.0	U	1.0	ug/L			05/07/15 03:39	1
2-Butanone (MEK)	10	U	10	ug/L			05/07/15 03:39	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/07/15 03:39	1
Methylene Chloride	1.0	U	1.0	ug/L			05/07/15 03:39	1
Toluene	1.0	U	1.0	ug/L			05/07/15 03:39	1
Trichloroethene	1.0	U	1.0	ug/L			05/07/15 03:39	1
Vinyl chloride	1.0	U	1.0	ug/L			05/07/15 03:39	1
Xylenes, Total	1.0	U	1.0	ug/L			05/07/15 03:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*		*05/07/15 03:39*	*1*
4-Bromofluorobenzene (Surr)	*95*		*66 - 120*		*05/07/15 03:39*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*05/07/15 03:39*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/07/15 03:39*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050115-DR-037
Date Collected: 05/01/15 08:25
Date Received: 05/02/15 09:30

Lab Sample ID: 240-50168-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/07/15 04:01	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/07/15 04:01	1
Acetone	10	U	10	ug/L			05/07/15 04:01	1
Benzene	1.0	U	1.0	ug/L			05/07/15 04:01	1
Chlorobenzene	1.0	U	1.0	ug/L			05/07/15 04:01	1
Ethylbenzene	1.0	U	1.0	ug/L			05/07/15 04:01	1
2-Butanone (MEK)	10	U	10	ug/L			05/07/15 04:01	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/07/15 04:01	1
Methylene Chloride	1.0	U	1.0	ug/L			05/07/15 04:01	1
Toluene	1.0	U	1.0	ug/L			05/07/15 04:01	1
Trichloroethene	1.0	U	1.0	ug/L			05/07/15 04:01	1
Vinyl chloride	1.0	U	1.0	ug/L			05/07/15 04:01	1
Xylenes, Total	1.0	U	1.0	ug/L			05/07/15 04:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*		*05/07/15 04:01*	*1*
4-Bromofluorobenzene (Surr)	*96*		*66 - 120*		*05/07/15 04:01*	*1*
Toluene-d8 (Surr)	*92*		*74 - 120*		*05/07/15 04:01*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/07/15 04:01*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050115-DR-038
Date Collected: 05/01/15 08:35
Date Received: 05/02/15 09:30

Lab Sample ID: 240-50168-3
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/07/15 04:23	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/07/15 04:23	1
Acetone	10	U	10	ug/L			05/07/15 04:23	1
Benzene	1.0	U	1.0	ug/L			05/07/15 04:23	1
Chlorobenzene	1.0	U	1.0	ug/L			05/07/15 04:23	1
Ethylbenzene	1.0	U	1.0	ug/L			05/07/15 04:23	1
2-Butanone (MEK)	10	U	10	ug/L			05/07/15 04:23	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/07/15 04:23	1
Methylene Chloride	1.0	U	1.0	ug/L			05/07/15 04:23	1
Toluene	1.0	U	1.0	ug/L			05/07/15 04:23	1
Trichloroethene	1.0	U	1.0	ug/L			05/07/15 04:23	1
Vinyl chloride	1.0	U	1.0	ug/L			05/07/15 04:23	1
Xylenes, Total	1.0	U	1.0	ug/L			05/07/15 04:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 129*		*05/07/15 04:23*	*1*
4-Bromofluorobenzene (Surr)	*94*		*66 - 120*		*05/07/15 04:23*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/07/15 04:23*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*05/07/15 04:23*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050115-DR-039
Date Collected: 05/01/15 10:10
Date Received: 05/02/15 09:30

Lab Sample ID: 240-50168-4
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/07/15 04:45	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/07/15 04:45	1
Acetone	10	U	10	ug/L			05/07/15 04:45	1
Benzene	1.0	U	1.0	ug/L			05/07/15 04:45	1
Chlorobenzene	1.0	U	1.0	ug/L			05/07/15 04:45	1
Ethylbenzene	1.0	U	1.0	ug/L			05/07/15 04:45	1
2-Butanone (MEK)	10	U	10	ug/L			05/07/15 04:45	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/07/15 04:45	1
Methylene Chloride	1.0	U	1.0	ug/L			05/07/15 04:45	1
Toluene	1.0	U	1.0	ug/L			05/07/15 04:45	1
Trichloroethene	1.0	U	1.0	ug/L			05/07/15 04:45	1
Vinyl chloride	1.0	U	1.0	ug/L			05/07/15 04:45	1
Xylenes, Total	1.0	U	1.0	ug/L			05/07/15 04:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 129*		*05/07/15 04:45*	*1*
4-Bromofluorobenzene (Surr)	*95*		*66 - 120*		*05/07/15 04:45*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/07/15 04:45*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*05/07/15 04:45*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050115-DR-040
Date Collected: 05/01/15 11:45
Date Received: 05/02/15 09:30

Lab Sample ID: 240-50168-5
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/07/15 05:08	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/07/15 05:08	1
Acetone	10	U	10	ug/L			05/07/15 05:08	1
Benzene	1.0	U	1.0	ug/L			05/07/15 05:08	1
Chlorobenzene	1.0	U	1.0	ug/L			05/07/15 05:08	1
Ethylbenzene	1.0	U	1.0	ug/L			05/07/15 05:08	1
2-Butanone (MEK)	10	U	10	ug/L			05/07/15 05:08	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/07/15 05:08	1
Methylene Chloride	1.0	U	1.0	ug/L			05/07/15 05:08	1
Toluene	1.0	U	1.0	ug/L			05/07/15 05:08	1
Trichloroethene	1.0	U	1.0	ug/L			05/07/15 05:08	1
Vinyl chloride	1.0	U	1.0	ug/L			05/07/15 05:08	1
Xylenes, Total	1.0	U	1.0	ug/L			05/07/15 05:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 129*		*05/07/15 05:08*	*1*
4-Bromofluorobenzene (Surr)	*96*		*66 - 120*		*05/07/15 05:08*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/07/15 05:08*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/07/15 05:08*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050115-DR-041
Date Collected: 05/01/15 14:30
Date Received: 05/02/15 09:30

Lab Sample ID: 240-50168-6
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/07/15 05:30	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/07/15 05:30	1
Acetone	10	U	10	ug/L			05/07/15 05:30	1
Benzene	1.0	U	1.0	ug/L			05/07/15 05:30	1
Chlorobenzene	1.0	U	1.0	ug/L			05/07/15 05:30	1
Ethylbenzene	1.0	U	1.0	ug/L			05/07/15 05:30	1
2-Butanone (MEK)	10	U	10	ug/L			05/07/15 05:30	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/07/15 05:30	1
Methylene Chloride	1.0	U	1.0	ug/L			05/07/15 05:30	1
Toluene	1.0	U	1.0	ug/L			05/07/15 05:30	1
Trichloroethene	1.0	U	1.0	ug/L			05/07/15 05:30	1
Vinyl chloride	1.0	U	1.0	ug/L			05/07/15 05:30	1
Xylenes, Total	1.0	U	1.0	ug/L			05/07/15 05:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 129*		*05/07/15 05:30*	*1*
4-Bromofluorobenzene (Surr)	*94*		*66 - 120*		*05/07/15 05:30*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/07/15 05:30*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*05/07/15 05:30*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-32504-050115
Date Collected: 05/01/15 00:00
Date Received: 05/02/15 09:30

Lab Sample ID: 240-50168-7
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/07/15 05:52	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/07/15 05:52	1
Acetone	10	U	10	ug/L			05/07/15 05:52	1
Benzene	1.0	U	1.0	ug/L			05/07/15 05:52	1
Chlorobenzene	1.0	U	1.0	ug/L			05/07/15 05:52	1
Ethylbenzene	1.0	U	1.0	ug/L			05/07/15 05:52	1
2-Butanone (MEK)	10	U	10	ug/L			05/07/15 05:52	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/07/15 05:52	1
Methylene Chloride	1.0	U	1.0	ug/L			05/07/15 05:52	1
Toluene	1.0	U	1.0	ug/L			05/07/15 05:52	1
Trichloroethene	1.0	U	1.0	ug/L			05/07/15 05:52	1
Vinyl chloride	1.0	U	1.0	ug/L			05/07/15 05:52	1
Xylenes, Total	1.0	U	1.0	ug/L			05/07/15 05:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 129*		*05/07/15 05:52*	*1*
4-Bromofluorobenzene (Surr)	*98*		*66 - 120*		*05/07/15 05:52*	*1*
Toluene-d8 (Surr)	*97*		*74 - 120*		*05/07/15 05:52*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 121*		*05/07/15 05:52*	*1*

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

C/MS VOA

Analysis Batch: 179627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-50168-1	GW-32504-043015-DR-036	Total/NA	Water	8260B	
240-50168-2	GW-32504-050115-DR-037	Total/NA	Water	8260B	
240-50168-3	GW-32504-050115-DR-038	Total/NA	Water	8260B	
240-50168-4	GW-32504-050115-DR-039	Total/NA	Water	8260B	
240-50168-5	GW-32504-050115-DR-040	Total/NA	Water	8260B	
240-50168-6	GW-32504-050115-DR-041	Total/NA	Water	8260B	
240-50168-7	TB-32504-050115	Total/NA	Water	8260B	
LCS 240-179627/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-179627/5	Method Blank	Total/NA	Water	8260B	

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-179627/5
Matrix: Water
Analysis Batch: 179627

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/07/15 00:41	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/07/15 00:41	1
Acetone	10	U	10	ug/L			05/07/15 00:41	1
Benzene	1.0	U	1.0	ug/L			05/07/15 00:41	1
Chlorobenzene	1.0	U	1.0	ug/L			05/07/15 00:41	1
Ethylbenzene	1.0	U	1.0	ug/L			05/07/15 00:41	1
2-Butanone (MEK)	10	U	10	ug/L			05/07/15 00:41	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/07/15 00:41	1
Methylene Chloride	1.0	U	1.0	ug/L			05/07/15 00:41	1
Toluene	1.0	U	1.0	ug/L			05/07/15 00:41	1
Trichloroethene	1.0	U	1.0	ug/L			05/07/15 00:41	1
Vinyl chloride	1.0	U	1.0	ug/L			05/07/15 00:41	1
Xylenes, Total	1.0	U	1.0	ug/L			05/07/15 00:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 129*		*05/07/15 00:41*	*1*
4-Bromofluorobenzene (Surr)	*98*		*66 - 120*		*05/07/15 00:41*	*1*
Toluene-d8 (Surr)	*98*		*74 - 120*		*05/07/15 00:41*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 121*		*05/07/15 00:41*	

Lab Sample ID: LCS 240-179627/4
Matrix: Water
Analysis Batch: 179627

Client Sample ID: Lab Control Samp..
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	10.0		ug/L		100	74 - 120
1,2-Dichloroethene, Total	20.0	20.5		ug/L		103	80 - 120
Acetone	20.0	15.0		ug/L		75	43 - 136
Benzene	10.0	10.2		ug/L		102	80 - 120
Chlorobenzene	10.0	9.27		ug/L		93	80 - 120
cis-1,2-Dichloroethene	10.0	10.0		ug/L		100	80 - 120
Ethylbenzene	10.0	9.36		ug/L		94	80 - 120
m-Xylene & p-Xylene	10.0	9.41		ug/L		94	80 - 120
2-Butanone (MEK)	20.0	18.0		ug/L		90	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	19.8		ug/L		99	63 - 128
Methylene Chloride	10.0	10.5		ug/L		105	66 - 131
o-Xylene	10.0	9.36		ug/L		94	80 - 120
Toluene	10.0	9.75		ug/L		98	80 - 120
trans-1,2-Dichloroethene	10.0	10.5		ug/L		105	80 - 120
Trichloroethene	10.0	9.50		ug/L		95	76 - 120
Vinyl chloride	10.0	8.40		ug/L		84	53 - 127
Xylenes, Total	20.0	18.8		ug/L		94	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*63 - 129*
4-Bromofluorobenzene (Surr)	*103*		*66 - 120*
Toluene-d8 (Surr)	*99*		*74 - 120*

ethod: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-179627/4
Matrix: Water
Analysis Batch: 179627

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*98*		*75 - 121*

Surrogate Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/N

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	**(63-129)**	**(66-120)**	**(74-120)**	**(75-121)**
240-50168-1	GW-32504-043015-DR-036	100	95	93	99
240-50168-2	GW-32504-050115-DR-037	100	96	92	99
240-50168-3	GW-32504-050115-DR-038	102	94	94	100
240-50168-4	GW-32504-050115-DR-039	102	95	94	100
240-50168-5	GW-32504-050115-DR-040	101	96	94	99
240-50168-6	GW-32504-050115-DR-041	102	94	94	99
240-50168-7	TB-32504-050115	102	98	97	101
LCS 240-179627/4	Lab Control Sample	94	103	99	98
MB 240-179627/5	Method Blank	101	98	98	96

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

ient Sample ID: GW-32504-043015-DR-036

Lab Sample ID: 240-50168-1
Matrix: Water

Date Collected: 04/30/15 17:00
Date Received: 05/02/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179627	05/07/15 03:39	LEE	TAL CAN

Client Sample ID: GW-32504-050115-DR-037

Lab Sample ID: 240-50168-2
Matrix: Water

Date Collected: 05/01/15 08:25
Date Received: 05/02/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179627	05/07/15 04:01	LEE	TAL CAN

Client Sample ID: GW-32504-050115-DR-038

Lab Sample ID: 240-50168-3
Matrix: Water

Date Collected: 05/01/15 08:35
Date Received: 05/02/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179627	05/07/15 04:23	LEE	TAL CAN

Client Sample ID: GW-32504-050115-DR-039

Lab Sample ID: 240-50168-4
Matrix: Water

e Collected: 05/01/15 10:10
ate Received: 05/02/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179627	05/07/15 04:45	LEE	TAL CAN

Client Sample ID: GW-32504-050115-DR-040

Lab Sample ID: 240-50168-5
Matrix: Water

Date Collected: 05/01/15 11:45
Date Received: 05/02/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179627	05/07/15 05:08	LEE	TAL CAN

Client Sample ID: GW-32504-050115-DR-041

Lab Sample ID: 240-50168-6
Matrix: Water

Date Collected: 05/01/15 14:30
Date Received: 05/02/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179627	05/07/15 05:30	LEE	TAL CAN

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

Client Sample ID: TB-32504-050115

Lab Sample ID: 240-5016

Date Collected: 05/01/15 00:00

Matrix: Wa

Date Received: 05/02/15 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179627	05/07/15 05:52	LEE	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50168-1

aboratory: TestAmerica Canton

certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15 *
Georgia	State Program	4	N/A	06-30-15 *
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	05-31-15 *
Kentucky (UST)	State Program	4	58	06-30-15 *
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15 *
New York	NELAP	2	10975	03-31-16 *
Ohio VAP	State Program	5	CL0024	10-31-15
Oregon	NELAP	10	4062	02-23-16
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
Wisconsin	State Program	5	999518190	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica

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TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

240-50168 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

3.8 / C4.3

CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170
Phone: (734) 453-5123 Fax: (734) 453-5201

COC NO.: P 14883

PAGE 1 OF 1

(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 032504-35

Project Name: Rasmussen Land fill (VAS)

Project Location: Livingston County, MI

Chemistry Contact: R. Fleisher

Sampler(s): D. Rivers / E. Mickelson

Laboratory Name: Test America

Lab Contact: D. Heckler

Lab Location: North Canton, OH

Lab Quote No: 240 008783

SSOW ID: 32504-014

Cooler No:

Carrier:

Airbill No:

Date Shipped:

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO_3)	Sulfuric Acid (H_2SO_4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	Select VOCs									MS/MSD Request	Comments/ Special Instructions:
1	GW-32504-043015-DR-036	4/30/15	1700	WG	G		3							3	X										
2	-050115-DR-037	5/1/15	825				3							3	X										
3	-038		835				3							3	X										
	-039		1010				3							3	X										
	-040		1145				3							3	X										
	-041		1430				3							3	X										
	TB-32504-050115		—	WQ	—		1							1	X										
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									

Michigan 190

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☒ 2 Week ☐ Other:

Total Number of Containers: 19

All Samples in Cooler must be on COC

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. Eric Mickelson	CRA	5-1-15	1545	1. [illegible]	TestAmerica	5/1/15	15:45
2. [illegible]	TestAmerica	5/1/15	15:47	2. Jessie Bonvi	TA Canton	5/2/15	9:30
				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

CRA Form: COC-10A (20110804)

5/7/2015

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 50168
Canton Facility

Client CRA Site Name RASMUSSEN LF Cooler unpacked by: Jessie Bonvi

Cooler Received on 5/2/15 Opened on 5/2/15

FedEx: 1st Grd (Exp) UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ ~~Foam~~ Box (Client Cooler) Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. 3.8 °C Corrected Cooler Temp. 4.3 °C ☐ See Multiple Cooler Form
   ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were custody seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were custody seals on the bottle(s)? Yes (No)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the sampler(s) clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Were sample(s) at the correct pH upon receipt? Yes No (NA) pH Strip Lot# HC432654
12. Were VOAs on the COC? (Yes) No
13. Were air bubbles >6 mm in any VOA vials? Yes (No) NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # B505501VB (Yes) No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____.

Ref: SOP NC-SC-0005, Sample Receiving
X:\X-Drive Document Control\SOPs\Work Instructions\Word Version Work Instructions\WI-NC-099P-042315 Cooler Receipt Form.doc djl

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-50274-1
Client Project/Site: 32504, Rasmussen Landfill

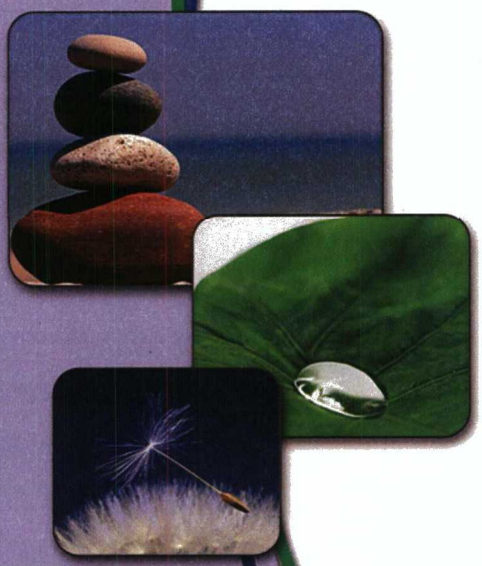
For:
Conestoga-Rovers & Associates, Inc.
14496 Sheldon Road, Suite 200
Plymouth, Michigan 48170

Attn: Rawa Fleisher

Denise D Heckler

Authorized for release by:
5/14/2015 2:32:41 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com



LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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›b ID: 240-50274-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Conestoga-Rovers & Associates, Inc.

Project: 32504, Rasmussen Landfill

Report Number: 240-50274-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions ·NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written proval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 05/06/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.5 C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples GW-32504-050415-EM-042 (240-50274-1), GW-32504-050415-EM-043 (240-50274-2), GW-32504-050415-EM-044 (240-50274-3), GW-32504-050415-EM-045 (240-50274-4), GW-32504-050515-EM-046 (240-50274-5), GW-32504-050515-EM-047 (240-50274-6) and TB-32505-050515-EM (240-50274-7) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/08/2015, 05/11/2015 and 05/12/2015.

Trichloroethene failed the recovery criteria high for LCS 240-180371/4. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
*	LCS or LCSD is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-50274-1	GW-32504-050415-EM-042	Water	05/04/15 11:40	05/06/15 08:50
240-50274-2	GW-32504-050415-EM-043	Water	05/04/15 13:50	05/06/15 08:50
240-50274-3	GW-32504-050415-EM-044	Water	05/04/15 15:35	05/06/15 08:50
240-50274-4	GW-32504-050415-EM-045	Water	05/04/15 17:20	05/06/15 08:50
240-50274-5	GW-32504-050515-EM-046	Water	05/05/15 08:40	05/06/15 08:50
240-50274-6	GW-32504-050515-EM-047	Water	05/05/15 10:15	05/06/15 08:50
240-50274-7	TB-32505-050515-EM	Water	05/05/15 00:00	05/06/15 08:50

Detection Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Client Sample ID: GW-32504-050415-EM-042 — Lab Sample ID: 240-50274

No Detections.

Client Sample ID: GW-32504-050415-EM-043 — Lab Sample ID: 240-50274-2

No Detections.

Client Sample ID: GW-32504-050415-EM-044 — Lab Sample ID: 240-50274-3

No Detections.

Client Sample ID: GW-32504-050415-EM-045 — Lab Sample ID: 240-50274-4

No Detections.

Client Sample ID: GW-32504-050515-EM-046 — Lab Sample ID: 240-50274-5

No Detections.

Client Sample ID: GW-32504-050515-EM-047 — Lab Sample ID: 240-50274-6

No Detections.

Client Sample ID: TB-32505-050515-EM — Lab Sample ID: 240-50274-7

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050415-EM-042
Date Collected: 05/04/15 11:40
Date Received: 05/06/15 08:50

Lab Sample ID: 240-50274-1
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/11/15 14:28	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/11/15 14:28	1
Acetone	10	U	10	ug/L			05/11/15 14:28	1
Benzene	1.0	U	1.0	ug/L			05/11/15 14:28	1
Chlorobenzene	1.0	U	1.0	ug/L			05/11/15 14:28	1
Ethylbenzene	1.0	U	1.0	ug/L			05/11/15 14:28	1
2-Butanone (MEK)	10	U	10	ug/L			05/11/15 14:28	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/11/15 14:28	1
Methylene Chloride	1.0	U	1.0	ug/L			05/11/15 14:28	1
Toluene	1.0	U	1.0	ug/L			05/11/15 14:28	1
Trichloroethene	1.0	U	1.0	ug/L			05/11/15 14:28	1
Vinyl chloride	1.0	U	1.0	ug/L			05/11/15 14:28	1
Xylenes, Total	1.0	U	1.0	ug/L			05/11/15 14:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 129*		*05/11/15 14:28*	*1*
4-Bromofluorobenzene (Surr)	*89*		*66 - 120*		*05/11/15 14:28*	*1*
Toluene-d8 (Surr)	*98*		*74 - 120*		*05/11/15 14:28*	*1*
Dibromofluoromethane (Surr)	*113*		*75 - 121*		*05/11/15 14:28*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050415-EM-043
Date Collected: 05/04/15 13:50
Date Received: 05/06/15 08:50

Lab Sample ID: 240-50274-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/12/15 13:34	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/12/15 13:34	1
Acetone	10	U	10	ug/L			05/12/15 13:34	1
Benzene	1.0	U	1.0	ug/L			05/12/15 13:34	1
Chlorobenzene	1.0	U	1.0	ug/L			05/12/15 13:34	1
Ethylbenzene	1.0	U	1.0	ug/L			05/12/15 13:34	1
2-Butanone (MEK)	10	U	10	ug/L			05/12/15 13:34	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/12/15 13:34	1
Methylene Chloride	1.0	U	1.0	ug/L			05/12/15 13:34	1
Toluene	1.0	U	1.0	ug/L			05/12/15 13:34	1
Trichloroethene	1.0	U *	1.0	ug/L			05/12/15 13:34	1
Vinyl chloride	1.0	U	1.0	ug/L			05/12/15 13:34	1
Xylenes, Total	1.0	U	1.0	ug/L			05/12/15 13:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 129*		*05/12/15 13:34*	*1*
4-Bromofluorobenzene (Surr)	*85*		*66 - 120*		*05/12/15 13:34*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/12/15 13:34*	*1*
Dibromofluoromethane (Surr)	*111*		*75 - 121*		*05/12/15 13:34*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050415-EM-044
Date Collected: 05/04/15 15:35
Date Received: 05/06/15 08:50

Lab Sample ID: 240-50274-5
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/11/15 15:13	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/11/15 15:13	1
Acetone	10	U	10	ug/L			05/11/15 15:13	1
Benzene	1.0	U	1.0	ug/L			05/11/15 15:13	1
Chlorobenzene	1.0	U	1.0	ug/L			05/11/15 15:13	1
Ethylbenzene	1.0	U	1.0	ug/L			05/11/15 15:13	1
2-Butanone (MEK)	10	U	10	ug/L			05/11/15 15:13	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/11/15 15:13	1
Methylene Chloride	1.0	U	1.0	ug/L			05/11/15 15:13	1
Toluene	1.0	U	1.0	ug/L			05/11/15 15:13	1
Trichloroethene	1.0	U	1.0	ug/L			05/11/15 15:13	1
Vinyl chloride	1.0	U	1.0	ug/L			05/11/15 15:13	1
Xylenes, Total	1.0	U	1.0	ug/L			05/11/15 15:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*05/11/15 15:13*	*1*
4-Bromofluorobenzene (Surr)	*85*		*66 - 120*		*05/11/15 15:13*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/11/15 15:13*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 121*		*05/11/15 15:13*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050415-EM-045
Date Collected: 05/04/15 17:20
Date Received: 05/06/15 08:50

Lab Sample ID: 240-50274-4
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/11/15 15:35	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/11/15 15:35	1
Acetone	10	U	10	ug/L			05/11/15 15:35	1
Benzene	1.0	U	1.0	ug/L			05/11/15 15:35	1
Chlorobenzene	1.0	U	1.0	ug/L			05/11/15 15:35	1
Ethylbenzene	1.0	U	1.0	ug/L			05/11/15 15:35	1
2-Butanone (MEK)	10	U	10	ug/L			05/11/15 15:35	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/11/15 15:35	1
Methylene Chloride	1.0	U	1.0	ug/L			05/11/15 15:35	1
Toluene	1.0	U	1.0	ug/L			05/11/15 15:35	1
Trichloroethene	1.0	U	1.0	ug/L			05/11/15 15:35	1
Vinyl chloride	1.0	U	1.0	ug/L			05/11/15 15:35	1
Xylenes, Total	1.0	U	1.0	ug/L			05/11/15 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 129*		*05/11/15 15:35*	*1*
4-Bromofluorobenzene (Surr)	*84*		*66 - 120*		*05/11/15 15:35*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*05/11/15 15:35*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 121*		*05/11/15 15:35*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050515-EM-046
Date Collected: 05/05/15 08:40
Date Received: 05/06/15 08:50

Lab Sample ID: 240-50274-5
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/11/15 15:57	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/11/15 15:57	1
Acetone	10	U	10	ug/L			05/11/15 15:57	1
Benzene	1.0	U	1.0	ug/L			05/11/15 15:57	1
Chlorobenzene	1.0	U	1.0	ug/L			05/11/15 15:57	1
Ethylbenzene	1.0	U	1.0	ug/L			05/11/15 15:57	1
2-Butanone (MEK)	10	U	10	ug/L			05/11/15 15:57	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/11/15 15:57	1
Methylene Chloride	1.0	U	1.0	ug/L			05/11/15 15:57	1
Toluene	1.0	U	1.0	ug/L			05/11/15 15:57	1
Trichloroethene	1.0	U	1.0	ug/L			05/11/15 15:57	1
Vinyl chloride	1.0	U	1.0	ug/L			05/11/15 15:57	1
Xylenes, Total	1.0	U	1.0	ug/L			05/11/15 15:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*05/11/15 15:57*	*1*
4-Bromofluorobenzene (Surr)	*85*		*66 - 120*		*05/11/15 15:57*	*1*
Toluene-d8 (Surr)	*98*		*74 - 120*		*05/11/15 15:57*	*1*
Dibromofluoromethane (Surr)	*116*		*75 - 121*		*05/11/15 15:57*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

`ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050515-EM-047
Date Collected: 05/05/15 10:15
Date Received: 05/06/15 08:50

Lab Sample ID: 240-50274-6
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/11/15 16:20	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/11/15 16:20	1
Acetone	10	U	10	ug/L			05/11/15 16:20	1
Benzene	1.0	U	1.0	ug/L			05/11/15 16:20	1
Chlorobenzene	1.0	U	1.0	ug/L			05/11/15 16:20	1
Ethylbenzene	1.0	U	1.0	ug/L			05/11/15 16:20	1
2-Butanone (MEK)	10	U	10	ug/L			05/11/15 16:20	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/11/15 16:20	1
Methylene Chloride	1.0	U	1.0	ug/L			05/11/15 16:20	1
Toluene	1.0	U	1.0	ug/L			05/11/15 16:20	1
Trichloroethene	1.0	U	1.0	ug/L			05/11/15 16:20	1
Vinyl chloride	1.0	U	1.0	ug/L			05/11/15 16:20	1
Xylenes, Total	1.0	U	1.0	ug/L			05/11/15 16:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 129*		*05/11/15 16:20*	*1*
4-Bromofluorobenzene (Surr)	*87*		*66 - 120*		*05/11/15 16:20*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/11/15 16:20*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 121*		*05/11/15 16:20*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-32505-050515-EM
Date Collected: 05/05/15 00:00
Date Received: 05/06/15 08:50

Lab Sample ID: 240-50274-7
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/08/15 18:30	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/08/15 18:30	1
Acetone	10	U	10	ug/L			05/08/15 18:30	1
Benzene	1.0	U	1.0	ug/L			05/08/15 18:30	1
Chlorobenzene	1.0	U	1.0	ug/L			05/08/15 18:30	1
Ethylbenzene	1.0	U	1.0	ug/L			05/08/15 18:30	1
2-Butanone (MEK)	10	U	10	ug/L			05/08/15 18:30	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/08/15 18:30	1
Methylene Chloride	1.0	U	1.0	ug/L			05/08/15 18:30	1
Toluene	1.0	U	1.0	ug/L			05/08/15 18:30	1
Trichloroethene	1.0	U	1.0	ug/L			05/08/15 18:30	1
Vinyl chloride	1.0	U	1.0	ug/L			05/08/15 18:30	1
Xylenes, Total	1.0	U	1.0	ug/L			05/08/15 18:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 129*		*05/08/15 18:30*	*1*
4-Bromofluorobenzene (Surr)	*83*		*66 - 120*		*05/08/15 18:30*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/08/15 18:30*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 121*		*05/08/15 18:30*	*1*

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

C/MS VOA

Analysis Batch: 179885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-50274-7	TB-32505-050515-EM	Total/NA	Water	8260B	
LCS 240-179885/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-179885/5	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 180154

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-50274-1	GW-32504-050415-EM-042	Total/NA	Water	8260B	
240-50274-3	GW-32504-050415-EM-044	Total/NA	Water	8260B	
240-50274-4	GW-32504-050415-EM-045	Total/NA	Water	8260B	
240-50274-5	GW-32504-050515-EM-046	Total/NA	Water	8260B	
240-50274-6	GW-32504-050515-EM-047	Total/NA	Water	8260B	
LCS 240-180154/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-180154/5	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 180371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-50274-2	GW-32504-050415-EM-043	Total/NA	Water	8260B	
LCS 240-180371/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-180371/5	Method Blank	Total/NA	Water	8260B	

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-179885/5
Matrix: Water
Analysis Batch: 179885

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/08/15 10:56	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/08/15 10:56	1
Acetone	10	U	10	ug/L			05/08/15 10:56	1
Benzene	1.0	U	1.0	ug/L			05/08/15 10:56	1
Chlorobenzene	1.0	U	1.0	ug/L			05/08/15 10:56	1
Ethylbenzene	1.0	U	1.0	ug/L			05/08/15 10:56	1
2-Butanone (MEK)	10	U	10	ug/L			05/08/15 10:56	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/08/15 10:56	1
Methylene Chloride	1.0	U	1.0	ug/L			05/08/15 10:56	1
Toluene	1.0	U	1.0	ug/L			05/08/15 10:56	1
Trichloroethene	1.0	U	1.0	ug/L			05/08/15 10:56	1
Vinyl chloride	1.0	U	1.0	ug/L			05/08/15 10:56	1
Xylenes, Total	1.0	U	1.0	ug/L			05/08/15 10:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 129*		*05/08/15 10:56*	*1*
4-Bromofluorobenzene (Surr)	*87*		*66 - 120*		*05/08/15 10:56*	*1*
Toluene-d8 (Surr)	*98*		*74 - 120*		*05/08/15 10:56*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 121*		*05/08/15 10:56*	

Lab Sample ID: LCS 240-179885/4
Matrix: Water
Analysis Batch: 179885

Client Sample ID: Lab Control Samp...
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	10.0		ug/L		100	74 - 120
1,2-Dichloroethene, Total	20.0	20.4		ug/L		102	80 - 120
Acetone	20.0	14.3		ug/L		72	43 - 136
Benzene	10.0	10.0		ug/L		100	80 - 120
Chlorobenzene	10.0	9.99		ug/L		100	80 - 120
cis-1,2-Dichloroethene	10.0	9.99		ug/L		100	80 - 120
Ethylbenzene	10.0	9.41		ug/L		94	80 - 120
m-Xylene & p-Xylene	10.0	9.39		ug/L		94	80 - 120
2-Butanone (MEK)	20.0	18.0		ug/L		90	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	20.0		ug/L		100	63 - 128
Methylene Chloride	10.0	10.9		ug/L		109	66 - 131
o-Xylene	10.0	9.50		ug/L		95	80 - 120
Toluene	10.0	9.79		ug/L		98	80 - 120
trans-1,2-Dichloroethene	10.0	10.4		ug/L		104	80 - 120
Trichloroethene	10.0	11.0		ug/L		110	76 - 120
Vinyl chloride	10.0	8.89		ug/L		89	53 - 127
Xylenes, Total	20.0	18.9		ug/L		94	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*63 - 129*
4-Bromofluorobenzene (Surr)	*95*		*66 - 120*
Toluene-d8 (Surr)	*99*		*74 - 120*

ethod: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-179885/4
Matrix: Water
Analysis Batch: 179885

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*105*		*75 - 121*

Lab Sample ID: MB 240-180154/5
Matrix: Water
Analysis Batch: 180154

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/11/15 11:28	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/11/15 11:28	1
Acetone	10	U	10	ug/L			05/11/15 11:28	1
Benzene	1.0	U	1.0	ug/L			05/11/15 11:28	1
Chlorobenzene	1.0	U	1.0	ug/L			05/11/15 11:28	1
Ethylbenzene	1.0	U	1.0	ug/L			05/11/15 11:28	1
2-Butanone (MEK)	10	U	10	ug/L			05/11/15 11:28	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/11/15 11:28	1
Methylene Chloride	1.0	U	1.0	ug/L			05/11/15 11:28	1
Toluene	1.0	U	1.0	ug/L			05/11/15 11:28	1
Trichloroethene	1.0	U	1.0	ug/L			05/11/15 11:28	1
Vinyl chloride	1.0	U	1.0	ug/L			05/11/15 11:28	1
ʼylenes, Total	1.0	U	1.0	ug/L			05/11/15 11:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*05/11/15 11:28*	*1*
4-Bromofluorobenzene (Surr)	*92*		*66 - 120*		*05/11/15 11:28*	*1*
Toluene-d8 (Surr)	*109*		*74 - 120*		*05/11/15 11:28*	*1*
Dibromofluoromethane (Surr)	*116*		*75 - 121*		*05/11/15 11:28*	*1*

Lab Sample ID: LCS 240-180154/4
Matrix: Water
Analysis Batch: 180154

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	10.3		ug/L		103	74 - 120
1,2-Dichloroethene, Total	20.0	21.2		ug/L		106	80 - 120
Acetone	20.0	15.8		ug/L		79	43 - 136
Benzene	10.0	10.2		ug/L		102	80 - 120
Chlorobenzene	10.0	9.50		ug/L		95	80 - 120
cis-1,2-Dichloroethene	10.0	10.4		ug/L		104	80 - 120
Ethylbenzene	10.0	9.15		ug/L		92	80 - 120
m-Xylene & p-Xylene	10.0	9.31		ug/L		93	80 - 120
2-Butanone (MEK)	20.0	18.8		ug/L		94	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	18.6		ug/L		93	63 - 128
Methylene Chloride	10.0	10.6		ug/L		106	66 - 131
o-Xylene	10.0	9.05		ug/L		91	80 - 120
Toluene	10.0	9.69		ug/L		97	80 - 120
ans-1,2-Dichloroethene	10.0	10.8		ug/L		108	80 - 120
richloroethene	10.0	11.8		ug/L		118	76 - 120
Vinyl chloride	10.0	8.77		ug/L		88	53 - 127

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-180154/4
Matrix: Water
Analysis Batch: 180154

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Xylenes, Total	20.0	18.4		ug/L		92	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 129*
4-Bromofluorobenzene (Surr)	*85*		*66 - 120*
Toluene-d8 (Surr)	*101*		*74 - 120*
Dibromofluoromethane (Surr)	*108*		*75 - 121*

Lab Sample ID: MB 240-180371/5
Matrix: Water
Analysis Batch: 180371

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/12/15 12:49	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/12/15 12:49	1
Acetone	10	U	10	ug/L			05/12/15 12:49	1
Benzene	1.0	U	1.0	ug/L			05/12/15 12:49	1
Chlorobenzene	1.0	U	1.0	ug/L			05/12/15 12:49	1
Ethylbenzene	1.0	U	1.0	ug/L			05/12/15 12:49	1
2-Butanone (MEK)	10	U	10	ug/L			05/12/15 12:49	
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/12/15 12:49	
Methylene Chloride	1.0	U	1.0	ug/L			05/12/15 12:49	1
Toluene	1.0	U	1.0	ug/L			05/12/15 12:49	1
Trichloroethene	1.0	U	1.0	ug/L			05/12/15 12:49	1
Vinyl chloride	1.0	U	1.0	ug/L			05/12/15 12:49	1
Xylenes, Total	1.0	U	1.0	ug/L			05/12/15 12:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*		*05/12/15 12:49*	*1*
4-Bromofluorobenzene (Surr)	*83*		*66 - 120*		*05/12/15 12:49*	*1*
Toluene-d8 (Surr)	*92*		*74 - 120*		*05/12/15 12:49*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 121*		*05/12/15 12:49*	*1*

Lab Sample ID: LCS 240-180371/4
Matrix: Water
Analysis Batch: 180371

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	10.8		ug/L		108	74 - 120
1,2-Dichloroethene, Total	20.0	22.0		ug/L		110	80 - 120
Acetone	20.0	16.0		ug/L		80	43 - 136
Benzene	10.0	11.0		ug/L		110	80 - 120
Chlorobenzene	10.0	10.1		ug/L		101	80 - 120
cis-1,2-Dichloroethene	10.0	10.7		ug/L		107	80 - 120
Ethylbenzene	10.0	10.1		ug/L		101	80 - 120
m-Xylene & p-Xylene	10.0	10.2		ug/L		102	80 - 120
2-Butanone (MEK)	20.0	19.3		ug/L		97	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	21.6		ug/L		108	63 - 128

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

ethod: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-180371/4
Matrix: Water
Analysis Batch: 180371

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	10.0	11.3		ug/L		113	66 - 131
o-Xylene	10.0	9.93		ug/L		99	80 - 120
Toluene	10.0	10.0		ug/L		100	80 - 120
trans-1,2-Dichloroethene	10.0	11.3		ug/L		113	80 - 120
Trichloroethene	10.0	12.2	*	ug/L		122	76 - 120
Vinyl chloride	10.0	8.48		ug/L		85	53 - 127
Xylenes, Total	20.0	20.1		ug/L		101	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*63 - 129*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*
Toluene-d8 (Surr)	*99*		*74 - 120*
Dibromofluoromethane (Surr)	*108*		*75 - 121*

Surrogate Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/N.

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	**(63-129)**	**(66-120)**	**(74-120)**	**(75-121)**
240-50274-1	GW-32504-050415-EM-042	106	89	98	113
240-50274-2	GW-32504-050415-EM-043	101	85	95	111
240-50274-3	GW-32504-050415-EM-044	103	85	95	112
240-50274-4	GW-32504-050415-EM-045	102	84	93	109
240-50274-5	GW-32504-050515-EM-046	103	85	98	116
240-50274-6	GW-32504-050515-EM-047	99	87	94	101
240-50274-7	TB-32505-050515-EM	99	83	95	105
LCS 240-179885/4	Lab Control Sample	91	95	99	105
LCS 240-180154/4	Lab Control Sample	96	85	101	108
LCS 240-180371/4	Lab Control Sample	92	93	99	108
MB 240-179885/5	Method Blank	101	87	98	105
MB 240-180154/5	Method Blank	103	92	109	116
MB 240-180371/5	Method Blank	100	83	92	104

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

lient Sample ID: GW-32504-050415-EM-042 — Lab Sample ID: 240-50274-1

Date Collected: 05/04/15 11:40 — **Matrix: Water**
Date Received: 05/06/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180154	05/11/15 14:28	LEE	TAL CAN

Client Sample ID: GW-32504-050415-EM-043 — Lab Sample ID: 240-50274-2

Date Collected: 05/04/15 13:50 — **Matrix: Water**
Date Received: 05/06/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180371	05/12/15 13:34	LEE	TAL CAN

Client Sample ID: GW-32504-050415-EM-044 — Lab Sample ID: 240-50274-3

Date Collected: 05/04/15 15:35 — **Matrix: Water**
Date Received: 05/06/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180154	05/11/15 15:13	LEE	TAL CAN

Client Sample ID: GW-32504-050415-EM-045 — Lab Sample ID: 240-50274-4

te Collected: 05/04/15 17:20 — **Matrix: Water**
ate Received: 05/06/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180154	05/11/15 15:35	LEE	TAL CAN

Client Sample ID: GW-32504-050515-EM-046 — Lab Sample ID: 240-50274-5

Date Collected: 05/05/15 08:40 — **Matrix: Water**
Date Received: 05/06/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180154	05/11/15 15:57	LEE	TAL CAN

Client Sample ID: GW-32504-050515-EM-047 — Lab Sample ID: 240-50274-6

Date Collected: 05/05/15 10:15 — **Matrix: Water**
Date Received: 05/06/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180154	05/11/15 16:20	LEE	TAL CAN

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

Client Sample ID: TB-32505-050515-EM

Date Collected: 05/05/15 00:00
Date Received: 05/06/15 08:50

Lab Sample ID: 240-5027

Matrix: Wa

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	179885	05/08/15 18:30	LEE	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50274-1

ıboratory: TestAmerica Canton

certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15 *
Georgia	State Program	4	N/A	06-30-15 *
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	05-31-15 *
Kentucky (UST)	State Program	4	58	06-30-15 *
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15 *
New York	NELAP	2	10975	03-31-16 *
Ohio VAP	State Program	5	CL0024	10-31-15
Oregon	NELAP	10	4062	02-23-16
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
'Wisconsin	State Program	5	999518190	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica

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TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

240-50274 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD

14496 Sheldon Road, Suite 1, Plymouth, Michigan 48170
Phone: (734) 453-5123 Fax: (734) 453-5201

COC NO.: F 13158
1 OF 1

(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 32504-35	Laboratory Name: Test America	Lab Location: N. Canton, OH	SSOW ID: 32504-014
Project Name: Rasmussen Landfill	Lab Contact: D. Heckler	Lab Quote No: 24008783	Cooler No: —
Project Location: Livingston County, MI			Carrier: Courier
Chemistry Contact: Rawa Fleisher			Airbill No: —
Sampler(s): Eric Mickelson			Date Shipped: 5-5-15

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO_3)	Sulfuric Acid (H_2SO_4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	Select VOC's	MS/MSD Request	Comments/ Special Instructions:
1	GW-32504-050415-EM-042	5/4/15	1140	WG	G		X							3	X		
2	-043		1350				X							3	X		
3	-044		1535				X							3	X		
4	-045		1720				X							3	X		
5	GW-32504-050515-EM-046	5/5/15	0840				X							3	X		
6	-047		1015				X							3	X		
7	TB-32505-050515-EM		—	WQ	—		X							1	X		
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

EM

Michigan
190

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☒ 2 Week ☐ Other:

Total Number of Containers: 19
All Samples in Cooler must be on COC

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. Eric Mickelson	CRA	5-5-15	1030	1. [signature]	TAL MI	5/5/15	10:30
2. [signature]	TAL MI	5/5/15	10:31	2. [signature]	TAL	5/6/15	850
				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

CRA Form: COC-10A (20110804)

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5/14/2015

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 50274
Canton Facility

Client CRA Site Name Rasmussen Cooler unpacked by:
Cooler Received on 5/6/15 Opened on 5/6/15
FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. 3.0 °C Corrected Cooler Temp. 3.5 °C ☐ See Multiple Cooler Form
   ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC432654
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # B505501VB Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other
Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

Ref: SOP NC-SC-0005, Sample Receiving
X:\X-Drive Document Control\SOPs\Work Instructions\Word Version Work Instructions\WI-NC-099P-042315 Cooler Receipt Form.doc djl

5/14/2015

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-50369-1
Client Project/Site: 32504, Rasmussen Landfill

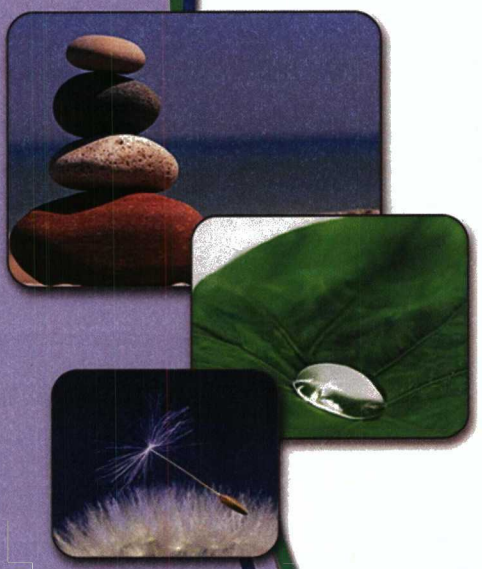
For:
Conestoga-Rovers & Associates, Inc.
14496 Sheldon Road, Suite 200
Plymouth, Michigan 48170

Attn: Rawa Fleisher

Denise D Heckler

Authorized for release by:
5/14/2015 2:38:00 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com



LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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›b ID: 240-50369-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Conestoga-Rovers & Associates, Inc.

Project: 32504, Rasmussen Landfill

Report Number: 240-50369-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions ·NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written ·proval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 05/07/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.1 C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples GW-32504-050515-EM-048 (240-50369-1), GW-32504-050515-EM-049 (240-50369-2), GW-32504-050515-EM-050 (240-50369-3), GW-32504-050515-EM-051 (240-50369-4), GW-32504-050615-EM-052 (240-50369-5), GW-32504-050615-EM-053 (240-50369-6), GW-32504-050615-EM-054 (240-50369-7) and TB-32504-050615-EM (240-50369-8) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/12/2015.

Trichloroethene failed the recovery criteria high for LCS 240-180371/4. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
*	LCS or LCSD is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-50369-1	GW-32504-050515-EM-048	Water	05/05/15 14:50	05/07/15 09:15
240-50369-2	GW-32504-050515-EM-049	Water	05/05/15 16:05	05/07/15 09:15
240-50369-3	GW-32504-050515-EM-050	Water	05/05/15 16:45	05/07/15 09:15
240-50369-4	GW-32504-050515-EM-051	Water	05/05/15 17:25	05/07/15 09:15
240-50369-5	GW-32504-050615-EM-052	Water	05/06/15 09:30	05/07/15 09:15
240-50369-6	GW-32504-050615-EM-053	Water	05/06/15 11:15	05/07/15 09:15
240-50369-7	GW-32504-050615-EM-054	Water	05/06/15 12:45	05/07/15 09:15
240-50369-8	TB-32504-050615-EM	Water	05/06/15 00:00	05/07/15 09:15

Detection Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

Client Sample ID: GW-32504-050515-EM-048 — Lab Sample ID: 240-5036

No Detections.

Client Sample ID: GW-32504-050515-EM-049 — Lab Sample ID: 240-50369-2

No Detections.

Client Sample ID: GW-32504-050515-EM-050 — Lab Sample ID: 240-50369-3

No Detections.

Client Sample ID: GW-32504-050515-EM-051 — Lab Sample ID: 240-50369-4

No Detections.

Client Sample ID: GW-32504-050615-EM-052 — Lab Sample ID: 240-50369-5

No Detections.

Client Sample ID: GW-32504-050615-EM-053 — Lab Sample ID: 240-50369-6

No Detections.

Client Sample ID: GW-32504-050615-EM-054 — Lab Sample ID: 240-50369-7

No Detections.

Client Sample ID: TB-32504-050615-EM — Lab Sample ID: 240-5036

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	1.5		1.0	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050515-EM-048
Date Collected: 05/05/15 14:50
Date Received: 05/07/15 09:15

Lab Sample ID: 240-50369-1
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/12/15 14:19	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/12/15 14:19	1
Acetone	10	U	10	ug/L			05/12/15 14:19	1
Benzene	1.0	U	1.0	ug/L			05/12/15 14:19	1
Chlorobenzene	1.0	U	1.0	ug/L			05/12/15 14:19	1
Ethylbenzene	1.0	U	1.0	ug/L			05/12/15 14:19	1
2-Butanone (MEK)	10	U	10	ug/L			05/12/15 14:19	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/12/15 14:19	1
Methylene Chloride	1.0	U	1.0	ug/L			05/12/15 14:19	1
Toluene	1.0	U	1.0	ug/L			05/12/15 14:19	1
Trichloroethene	1.0	U *	1.0	ug/L			05/12/15 14:19	1
Vinyl chloride	1.0	U	1.0	ug/L			05/12/15 14:19	1
Xylenes, Total	1.0	U	1.0	ug/L			05/12/15 14:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*63 - 129*		*05/12/15 14:19*	*1*
4-Bromofluorobenzene (Surr)	*75*		*66 - 120*		*05/12/15 14:19*	*1*
Toluene-d8 (Surr)	*85*		*74 - 120*		*05/12/15 14:19*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*05/12/15 14:19*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

`ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050515-EM-049
Date Collected: 05/05/15 16:05
Date Received: 05/07/15 09:15

Lab Sample ID: 240-50369-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/12/15 14:42	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/12/15 14:42	1
Acetone	10	U	10	ug/L			05/12/15 14:42	1
Benzene	1.0	U	1.0	ug/L			05/12/15 14:42	1
Chlorobenzene	1.0	U	1.0	ug/L			05/12/15 14:42	1
Ethylbenzene	1.0	U	1.0	ug/L			05/12/15 14:42	1
2-Butanone (MEK)	10	U	10	ug/L			05/12/15 14:42	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/12/15 14:42	1
Methylene Chloride	1.0	U	1.0	ug/L			05/12/15 14:42	1
Toluene	1.0	U	1.0	ug/L			05/12/15 14:42	1
Trichloroethene	1.0	U *	1.0	ug/L			05/12/15 14:42	1
Vinyl chloride	1.0	U	1.0	ug/L			05/12/15 14:42	1
Xylenes, Total	1.0	U	1.0	ug/L			05/12/15 14:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*05/12/15 14:42*	*1*
4-Bromofluorobenzene (Surr)	*91*		*66 - 120*		*05/12/15 14:42*	*1*
Toluene-d8 (Surr)	*99*		*74 - 120*		*05/12/15 14:42*	*1*
Dibromofluoromethane (Surr)	*110*		*75 - 121*		*05/12/15 14:42*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050515-EM-050
Date Collected: 05/05/15 16:45
Date Received: 05/07/15 09:15

Lab Sample ID: 240-50369-3
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/12/15 15:04	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/12/15 15:04	1
Acetone	10	U	10	ug/L			05/12/15 15:04	1
Benzene	1.0	U	1.0	ug/L			05/12/15 15:04	1
Chlorobenzene	1.0	U	1.0	ug/L			05/12/15 15:04	1
Ethylbenzene	1.0	U	1.0	ug/L			05/12/15 15:04	1
2-Butanone (MEK)	10	U	10	ug/L			05/12/15 15:04	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/12/15 15:04	1
Methylene Chloride	1.0	U	1.0	ug/L			05/12/15 15:04	1
Toluene	1.0	U	1.0	ug/L			05/12/15 15:04	1
Trichloroethene	1.0	U *	1.0	ug/L			05/12/15 15:04	1
Vinyl chloride	1.0	U	1.0	ug/L			05/12/15 15:04	1
Xylenes, Total	1.0	U	1.0	ug/L			05/12/15 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*63 - 129*		*05/12/15 15:04*	*1*
4-Bromofluorobenzene (Surr)	*81*		*66 - 120*		*05/12/15 15:04*	*1*
Toluene-d8 (Surr)	*90*		*74 - 120*		*05/12/15 15:04*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 121*		*05/12/15 15:04*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

`ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050515-EM-051
Date Collected: 05/05/15 17:25
Date Received: 05/07/15 09:15

Lab Sample ID: 240-50369-4
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/12/15 15:27	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/12/15 15:27	1
Acetone	10	U	10	ug/L			05/12/15 15:27	1
Benzene	1.0	U	1.0	ug/L			05/12/15 15:27	1
Chlorobenzene	1.0	U	1.0	ug/L			05/12/15 15:27	1
Ethylbenzene	1.0	U	1.0	ug/L			05/12/15 15:27	1
2-Butanone (MEK)	10	U	10	ug/L			05/12/15 15:27	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/12/15 15:27	1
Methylene Chloride	1.0	U	1.0	ug/L			05/12/15 15:27	1
Toluene	1.0	U	1.0	ug/L			05/12/15 15:27	1
Trichloroethene	1.0	U *	1.0	ug/L			05/12/15 15:27	1
Vinyl chloride	1.0	U	1.0	ug/L			05/12/15 15:27	1
Xylenes, Total	1.0	U	1.0	ug/L			05/12/15 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 129*		*05/12/15 15:27*	*1*
4-Bromofluorobenzene (Surr)	*89*		*66 - 120*		*05/12/15 15:27*	*1*
Toluene-d8 (Surr)	*96*		*74 - 120*		*05/12/15 15:27*	*1*
Dibromofluoromethane (Surr)	*110*		*75 - 121*		*05/12/15 15:27*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050615-EM-052
Date Collected: 05/06/15 09:30
Date Received: 05/07/15 09:15

Lab Sample ID: 240-50369-5
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/12/15 15:50	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/12/15 15:50	1
Acetone	10	U	10	ug/L			05/12/15 15:50	1
Benzene	1.0	U	1.0	ug/L			05/12/15 15:50	1
Chlorobenzene	1.0	U	1.0	ug/L			05/12/15 15:50	1
Ethylbenzene	1.0	U	1.0	ug/L			05/12/15 15:50	1
2-Butanone (MEK)	10	U	10	ug/L			05/12/15 15:50	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/12/15 15:50	1
Methylene Chloride	1.0	U	1.0	ug/L			05/12/15 15:50	1
Toluene	1.0	U	1.0	ug/L			05/12/15 15:50	1
Trichloroethene	1.0	U *	1.0	ug/L			05/12/15 15:50	1
Vinyl chloride	1.0	U	1.0	ug/L			05/12/15 15:50	1
Xylenes, Total	1.0	U	1.0	ug/L			05/12/15 15:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*		*05/12/15 15:50*	*1*
4-Bromofluorobenzene (Surr)	*86*		*66 - 120*		*05/12/15 15:50*	*1*
Toluene-d8 (Surr)	*92*		*74 - 120*		*05/12/15 15:50*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 121*		*05/12/15 15:50*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

`ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050615-EM-053
Date Collected: 05/06/15 11:15
Date Received: 05/07/15 09:15

Lab Sample ID: 240-50369-6
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/12/15 16:12	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/12/15 16:12	1
Acetone	10	U	10	ug/L			05/12/15 16:12	1
Benzene	1.0	U	1.0	ug/L			05/12/15 16:12	1
Chlorobenzene	1.0	U	1.0	ug/L			05/12/15 16:12	1
Ethylbenzene	1.0	U	1.0	ug/L			05/12/15 16:12	1
2-Butanone (MEK)	10	U	10	ug/L			05/12/15 16:12	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/12/15 16:12	1
Methylene Chloride	1.0	U	1.0	ug/L			05/12/15 16:12	1
Toluene	1.0	U	1.0	ug/L			05/12/15 16:12	1
Trichloroethene	1.0	U *	1.0	ug/L			05/12/15 16:12	1
Vinyl chloride	1.0	U	1.0	ug/L			05/12/15 16:12	1
Xylenes, Total	1.0	U	1.0	ug/L			05/12/15 16:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 129*		*05/12/15 16:12*	*1*
4-Bromofluorobenzene (Surr)	*80*		*66 - 120*		*05/12/15 16:12*	*1*
Toluene-d8 (Surr)	*95*		*74 - 120*		*05/12/15 16:12*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 121*		*05/12/15 16:12*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050615-EM-054
Date Collected: 05/06/15 12:45
Date Received: 05/07/15 09:15

Lab Sample ID: 240-50369-,
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/12/15 16:35	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/12/15 16:35	1
Acetone	10	U	10	ug/L			05/12/15 16:35	1
Benzene	1.0	U	1.0	ug/L			05/12/15 16:35	1
Chlorobenzene	1.0	U	1.0	ug/L			05/12/15 16:35	1
Ethylbenzene	1.0	U	1.0	ug/L			05/12/15 16:35	1
2-Butanone (MEK)	10	U	10	ug/L			05/12/15 16:35	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/12/15 16:35	1
Methylene Chloride	1.0	U	1.0	ug/L			05/12/15 16:35	1
Toluene	1.0	U	1.0	ug/L			05/12/15 16:35	1
Trichloroethene	1.0	U *	1.0	ug/L			05/12/15 16:35	1
Vinyl chloride	1.0	U	1.0	ug/L			05/12/15 16:35	1
Xylenes, Total	1.0	U	1.0	ug/L			05/12/15 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*63 - 129*		*05/12/15 16:35*	*1*
4-Bromofluorobenzene (Surr)	*76*		*66 - 120*		*05/12/15 16:35*	*1*
Toluene-d8 (Surr)	*91*		*74 - 120*		*05/12/15 16:35*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 121*		*05/12/15 16:35*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

'ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-32504-050615-EM
Date Collected: 05/06/15 00:00
Date Received: 05/07/15 09:15

Lab Sample ID: 240-50369-8
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/12/15 16:58	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/12/15 16:58	1
Acetone	10	U	10	ug/L			05/12/15 16:58	1
Benzene	1.0	U	1.0	ug/L			05/12/15 16:58	1
Chlorobenzene	1.0	U	1.0	ug/L			05/12/15 16:58	1
Ethylbenzene	1.0	U	1.0	ug/L			05/12/15 16:58	1
2-Butanone (MEK)	10	U	10	ug/L			05/12/15 16:58	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/12/15 16:58	1
Methylene Chloride	**1.5**		1.0	ug/L			05/12/15 16:58	1
Toluene	1.0	U	1.0	ug/L			05/12/15 16:58	1
Trichloroethene	1.0	U *	1.0	ug/L			05/12/15 16:58	1
Vinyl chloride	1.0	U	1.0	ug/L			05/12/15 16:58	1
Xylenes, Total	1.0	U	1.0	ug/L			05/12/15 16:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*63 - 129*		*05/12/15 16:58*	*1*
4-Bromofluorobenzene (Surr)	*85*		*66 - 120*		*05/12/15 16:58*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/12/15 16:58*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 121*		*05/12/15 16:58*	*1*

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

GC/MS VOA

Analysis Batch: 180371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-50369-1	GW-32504-050515-EM-048	Total/NA	Water	8260B	
240-50369-2	GW-32504-050515-EM-049	Total/NA	Water	8260B	
240-50369-3	GW-32504-050515-EM-050	Total/NA	Water	8260B	
240-50369-4	GW-32504-050515-EM-051	Total/NA	Water	8260B	
240-50369-5	GW-32504-050615-EM-052	Total/NA	Water	8260B	
240-50369-6	GW-32504-050615-EM-053	Total/NA	Water	8260B	
240-50369-7	GW-32504-050615-EM-054	Total/NA	Water	8260B	
240-50369-8	TB-32504-050615-EM	Total/NA	Water	8260B	
LCS 240-180371/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-180371/5	Method Blank	Total/NA	Water	8260B	

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-180371/5
Matrix: Water
Analysis Batch: 180371

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/12/15 12:49	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/12/15 12:49	1
Acetone	10	U	10	ug/L			05/12/15 12:49	1
Benzene	1.0	U	1.0	ug/L			05/12/15 12:49	1
Chlorobenzene	1.0	U	1.0	ug/L			05/12/15 12:49	1
Ethylbenzene	1.0	U	1.0	ug/L			05/12/15 12:49	1
2-Butanone (MEK)	10	U	10	ug/L			05/12/15 12:49	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/12/15 12:49	1
Methylene Chloride	1.0	U	1.0	ug/L			05/12/15 12:49	1
Toluene	1.0	U	1.0	ug/L			05/12/15 12:49	1
Trichloroethene	1.0	U	1.0	ug/L			05/12/15 12:49	1
Vinyl chloride	1.0	U	1.0	ug/L			05/12/15 12:49	1
Xylenes, Total	1.0	U	1.0	ug/L			05/12/15 12:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*		*05/12/15 12:49*	*1*
4-Bromofluorobenzene (Surr)	*83*		*66 - 120*		*05/12/15 12:49*	*1*
Toluene-d8 (Surr)	*92*		*74 - 120*		*05/12/15 12:49*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 121*		*05/12/15 12:49*	*1*

Lab Sample ID: LCS 240-180371/4
Matrix: Water
Analysis Batch: 180371

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	10.8		ug/L		108	74 - 120
1,2-Dichloroethene, Total	20.0	22.0		ug/L		110	80 - 120
Acetone	20.0	16.0		ug/L		80	43 - 136
Benzene	10.0	11.0		ug/L		110	80 - 120
Chlorobenzene	10.0	10.1		ug/L		101	80 - 120
cis-1,2-Dichloroethene	10.0	10.7		ug/L		107	80 - 120
Ethylbenzene	10.0	10.1		ug/L		101	80 - 120
m-Xylene & p-Xylene	10.0	10.2		ug/L		102	80 - 120
2-Butanone (MEK)	20.0	19.3		ug/L		97	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	21.6		ug/L		108	63 - 128
Methylene Chloride	10.0	11.3		ug/L		113	66 - 131
o-Xylene	10.0	9.93		ug/L		99	80 - 120
Toluene	10.0	10.0		ug/L		100	80 - 120
trans-1,2-Dichloroethene	10.0	11.3		ug/L		113	80 - 120
Trichloroethene	10.0	12.2	*	ug/L		122	76 - 120
Vinyl chloride	10.0	8.48		ug/L		85	53 - 127
Xylenes, Total	20.0	20.1		ug/L		101	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*63 - 129*
4-Bromofluorobenzene (Surr)	*93*		*66 - 120*
Toluene-d8 (Surr)	*99*		*74 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-180371/4
Matrix: Water
Analysis Batch: 180371

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*108*		*75 - 121*

Surrogate Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	**(63-129)**	**(66-120)**	**(74-120)**	**(75-121)**
240-50369-1	GW-32504-050515-EM-048	89	75	85	100
240-50369-2	GW-32504-050515-EM-049	103	91	99	110
240-50369-3	GW-32504-050515-EM-050	99	81	90	104
240-50369-4	GW-32504-050515-EM-051	107	89	96	110
240-50369-5	GW-32504-050615-EM-052	100	86	92	112
240-50369-6	GW-32504-050615-EM-053	106	80	95	112
240-50369-7	GW-32504-050615-EM-054	89	76	91	104
240-50369-8	TB-32504-050615-EM	101	85	94	112
LCS 240-180371/4	Lab Control Sample	92	93	99	108
MB 240-180371/5	Method Blank	100	83	92	104

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

Client Sample ID: GW-32504-050515-EM-048

Lab Sample ID: 240-5036
Matrix: Wate

Date Collected: 05/05/15 14:50
Date Received: 05/07/15 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180371	05/12/15 14:19	LEE	TAL CAN

Client Sample ID: GW-32504-050515-EM-049

Lab Sample ID: 240-50369-2
Matrix: Water

Date Collected: 05/05/15 16:05
Date Received: 05/07/15 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180371	05/12/15 14:42	LEE	TAL CAN

Client Sample ID: GW-32504-050515-EM-050

Lab Sample ID: 240-50369-3
Matrix: Water

Date Collected: 05/05/15 16:45
Date Received: 05/07/15 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180371	05/12/15 15:04	LEE	TAL CAN

Client Sample ID: GW-32504-050515-EM-051

Lab Sample ID: 240-50369-4
Matrix: Wa

Date Collected: 05/05/15 17:25
Date Received: 05/07/15 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180371	05/12/15 15:27	LEE	TAL CAN

Client Sample ID: GW-32504-050615-EM-052

Lab Sample ID: 240-50369-5
Matrix: Water

Date Collected: 05/06/15 09:30
Date Received: 05/07/15 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180371	05/12/15 15:50	LEE	TAL CAN

Client Sample ID: GW-32504-050615-EM-053

Lab Sample ID: 240-50369-6
Matrix: Water

Date Collected: 05/06/15 11:15
Date Received: 05/07/15 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180371	05/12/15 16:12	LEE	TAL CAN

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

ient Sample ID: GW-32504-050615-EM-054

Lab Sample ID: 240-50369-7

ɔate Collected: 05/06/15 12:45
Matrix: Water
Date Received: 05/07/15 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180371	05/12/15 16:35	LEE	TAL CAN

Client Sample ID: TB-32504-050615-EM

Lab Sample ID: 240-50369-8

Date Collected: 05/06/15 00:00
Matrix: Water
Date Received: 05/07/15 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180371	05/12/15 16:58	LEE	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50369-1

Laboratory: TestAmerica Canton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15 *
Georgia	State Program	4	N/A	06-30-15 *
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	05-31-15 *
Kentucky (UST)	State Program	4	58	06-30-15 *
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15 *
New York	NELAP	2	10975	03-31-16 *
Ohio VAP	State Program	5	CL0024	10-31-15
Oregon	NELAP	10	4062	02-23-16
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
Wisconsin	State Program	5	999518190	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

240-50369 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

2.6 | C3.1

CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF CUSTODY RECORD

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170
Phone: (734) 453-5123 Fax: (734) 453-5201

COC NO.: PL-13157
PAGE 1 OF 1
(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 32504-35
Laboratory Name: Test America
Lab Location: N. Canton, OH
SSOW ID: 32504-014
Project Name: Rasmussen Landfill
Lab Contact: D. Heckler
Lab Quote No: 24008783
Cooler No:
Project Location: Green Oak Twp., MI
Carrier: Courier
Chemistry Contact: Rawa Fleisher
Airbill No:
Sampler(s): Eric Mickelson
Date Shipped: 5-6-15

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd//yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO_3)	Sulfuric Acid (H_2SO_4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	Select VOC's	MS/MSD Request	Comments/ Special Instructions:
1	GW-32504-050515-EM-048	5/5/15	1450	WG	G		X							3	X		
2	-049		1605				X							3	X		
3	-050		1645				X							3	X		
4	-051		1725				X							3	X		
5	GW-32504-050615-EM-052	5/6/15	0930				X							3	X		
6	-053		1115				X							3	X		
7	-054		1245				X							3	X		
8	TB-32504-050615-EM	5/6/15	—	WQ	—		X							1	X		
9																	
10																	
11																	
12																	
13																	
14																	
15																	

Michigan
190

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☒ 2 Week ☐ Other:

Total Number of Containers: 22
All Samples in Cooler must be on COC

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. Eric Mickelson	CRA	5/6/15	1305	1. [signature]	TAL MI	5/6/15	13:05
2. [signature]	TAL MI	5/6/15	13:06	2. [signature]	TA-Canton	5/7/15	9:15am
3.				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT — ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE — Fully Executed Copy (CRA) YELLOW — Receiving Laboratory Cop PINK — Shipper GOLDENROD — Sampling Crew

CRA Form -10A (20110804)

Page 24 of 25

5/14/2015

TestAmerica Canton Sample Receipt Form/Narrative **Login # : 50369**
Canton Facility

Client Conestoga-Rovers Site Name _____ Cooler unpacked by: [signature]
Cooler Received on 5/7/15 Opened on 5/7/15
FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. 2.6 °C Corrected Cooler Temp. 3.1 °C ☐ See Multiple Cooler Form
   ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C~~
   IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC432654
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # B431701NB Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other
Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

Ref: SOP NC-SC-0005, Sample Receiving
X:\X-Drive Document Control\SOPs\Work Instructions\Word Version Work Instructions\WI-NC-099P-042315 Cooler Receipt Form.doc djl

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-50436-1
Client Project/Site: 32504, Rasmussen Landfill

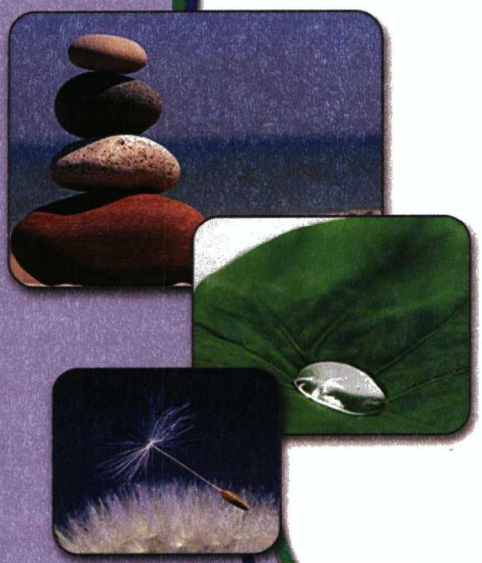
For:
Conestoga-Rovers & Associates, Inc.
14496 Sheldon Road, Suite 200
Plymouth, Michigan 48170

Attn: Rawa Fleisher

Denise D Heckler

Authorized for release by:
5/14/2015 12:48:04 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com



LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 240-50436-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Conestoga-Rovers & Associates, Inc.

Project: 32504, Rasmussen Landfill

Report Number: 240-50436-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 05/08/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.5 C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples GW-32504-050615-EM-055 (240-50436-1), GW-32504-050615-EM-056 (240-50436-2), GW-32504-050615-EM-057 (240-50436-3), GW-32504-050715-EM-058 (240-50436-4), GW-32504-050715-EM-059 (240-50436-5), GW-32504-050715-EM-060 (240-50436-6), GW-32504-050715-EM-061 (240-50436-7) and TB-32504-050715-EM (240-50436-8) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 05/13/2015.

The following samples was submitted for volatile analysis with insufficient preservation (pH>2): GW-32504-050615-EM-055 (240-50436-1), GW-32504-050615-EM-056 (240-50436-2), GW-32504-050615-EM-057 (240-50436-3) and GW-32504-050715-EM-058 (240-50436-4).

Trichloroethene failed the recovery criteria high for LCS 240-180532/4. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
*	LCS or LCSD is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
[illegible]	Quality Control
[illegible]R	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-50436-1	GW-32504-050615-EM-055	Water	05/06/15 14:15	05/08/15 08:50
240-50436-2	GW-32504-050615-EM-056	Water	05/06/15 15:50	05/08/15 08:50
240-50436-3	GW-32504-050615-EM-057	Water	05/06/15 17:45	05/08/15 08:50
240-50436-4	GW-32504-050715-EM-058	Water	05/07/15 09:20	05/08/15 08:50
240-50436-5	GW-32504-050715-EM-059	Water	05/07/15 11:15	05/08/15 08:50
240-50436-6	GW-32504-050715-EM-060	Water	05/07/15 12:00	05/08/15 08:50
240-50436-7	GW-32504-050715-EM-061	Water	05/07/15 13:50	05/08/15 08:50
240-50436-8	TB-32504-050715-EM	Water	05/07/15 00:00	05/08/15 08:50

Detection Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

lient Sample ID: GW-32504-050615-EM-055 — Lab Sample ID: 240-50436-1

No Detections.

Client Sample ID: GW-32504-050615-EM-056 — Lab Sample ID: 240-50436-2

No Detections.

Client Sample ID: GW-32504-050615-EM-057 — Lab Sample ID: 240-50436-3

No Detections.

Client Sample ID: GW-32504-050715-EM-058 — Lab Sample ID: 240-50436-4

No Detections.

Client Sample ID: GW-32504-050715-EM-059 — Lab Sample ID: 240-50436-5

No Detections.

Client Sample ID: GW-32504-050715-EM-060 — Lab Sample ID: 240-50436-6

No Detections.

Client Sample ID: GW-32504-050715-EM-061 — Lab Sample ID: 240-50436-7

No Detections.

ient Sample ID: TB-32504-050715-EM — Lab Sample ID: 240-50436-8

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050615-EM-055
Date Collected: 05/06/15 14:15
Date Received: 05/08/15 08:50

Lab Sample ID: 240-50436-1
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/13/15 12:52	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/13/15 12:52	1
Acetone	10	U	10	ug/L			05/13/15 12:52	1
Benzene	1.0	U	1.0	ug/L			05/13/15 12:52	1
Chlorobenzene	1.0	U	1.0	ug/L			05/13/15 12:52	1
Ethylbenzene	1.0	U	1.0	ug/L			05/13/15 12:52	1
2-Butanone (MEK)	10	U	10	ug/L			05/13/15 12:52	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/13/15 12:52	1
Methylene Chloride	1.0	U	1.0	ug/L			05/13/15 12:52	1
Toluene	1.0	U	1.0	ug/L			05/13/15 12:52	1
Trichloroethene	1.0	U *	1.0	ug/L			05/13/15 12:52	1
Vinyl chloride	1.0	U	1.0	ug/L			05/13/15 12:52	1
Xylenes, Total	1.0	U	1.0	ug/L			05/13/15 12:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*63 - 129*		*05/13/15 12:52*	*1*
4-Bromofluorobenzene (Surr)	*90*		*66 - 120*		*05/13/15 12:52*	*1*
Toluene-d8 (Surr)	*98*		*74 - 120*		*05/13/15 12:52*	*1*
Dibromofluoromethane (Surr)	*111*		*75 - 121*		*05/13/15 12:52*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050615-EM-056
Date Collected: 05/06/15 15:50
Date Received: 05/08/15 08:50

Lab Sample ID: 240-50436-2
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/13/15 13:14	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/13/15 13:14	1
Acetone	10	U	10	ug/L			05/13/15 13:14	1
Benzene	1.0	U	1.0	ug/L			05/13/15 13:14	1
Chlorobenzene	1.0	U	1.0	ug/L			05/13/15 13:14	1
Ethylbenzene	1.0	U	1.0	ug/L			05/13/15 13:14	1
2-Butanone (MEK)	10	U	10	ug/L			05/13/15 13:14	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/13/15 13:14	1
Methylene Chloride	1.0	U	1.0	ug/L			05/13/15 13:14	1
Toluene	1.0	U	1.0	ug/L			05/13/15 13:14	1
Trichloroethene	1.0	U *	1.0	ug/L			05/13/15 13:14	1
Vinyl chloride	1.0	U	1.0	ug/L			05/13/15 13:14	1
Xylenes, Total	1.0	U	1.0	ug/L			05/13/15 13:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 129*		*05/13/15 13:14*	*1*
4-Bromofluorobenzene (Surr)	*91*		*66 - 120*		*05/13/15 13:14*	*1*
Toluene-d8 (Surr)	*97*		*74 - 120*		*05/13/15 13:14*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 121*		*05/13/15 13:14*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

`ethod: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050615-EM-057
Date Collected: 05/06/15 17:45
Date Received: 05/08/15 08:50

Lab Sample ID: 240-50436-3
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/13/15 13:37	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/13/15 13:37	1
Acetone	10	U	10	ug/L			05/13/15 13:37	1
Benzene	1.0	U	1.0	ug/L			05/13/15 13:37	1
Chlorobenzene	1.0	U	1.0	ug/L			05/13/15 13:37	1
Ethylbenzene	1.0	U	1.0	ug/L			05/13/15 13:37	1
2-Butanone (MEK)	10	U	10	ug/L			05/13/15 13:37	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/13/15 13:37	1
Methylene Chloride	1.0	U	1.0	ug/L			05/13/15 13:37	1
Toluene	1.0	U	1.0	ug/L			05/13/15 13:37	1
Trichloroethene	1.0	U *	1.0	ug/L			05/13/15 13:37	1
Vinyl chloride	1.0	U	1.0	ug/L			05/13/15 13:37	1
Xylenes, Total	1.0	U	1.0	ug/L			05/13/15 13:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*63 - 129*		*05/13/15 13:37*	*1*
4-Bromofluorobenzene (Surr)	*86*		*66 - 120*		*05/13/15 13:37*	*1*
Toluene-d8 (Surr)	*98*		*74 - 120*		*05/13/15 13:37*	*1*
Dibromofluoromethane (Surr)	*121*		*75 - 121*		*05/13/15 13:37*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050715-EM-058
Date Collected: 05/07/15 09:20
Date Received: 05/08/15 08:50

Lab Sample ID: 240-50436-
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/13/15 14:00	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/13/15 14:00	1
Acetone	10	U	10	ug/L			05/13/15 14:00	1
Benzene	1.0	U	1.0	ug/L			05/13/15 14:00	1
Chlorobenzene	1.0	U	1.0	ug/L			05/13/15 14:00	1
Ethylbenzene	1.0	U	1.0	ug/L			05/13/15 14:00	1
2-Butanone (MEK)	10	U	10	ug/L			05/13/15 14:00	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/13/15 14:00	1
Methylene Chloride	1.0	U	1.0	ug/L			05/13/15 14:00	1
Toluene	1.0	U	1.0	ug/L			05/13/15 14:00	1
Trichloroethene	1.0	U *	1.0	ug/L			05/13/15 14:00	1
Vinyl chloride	1.0	U	1.0	ug/L			05/13/15 14:00	1
Xylenes, Total	1.0	U	1.0	ug/L			05/13/15 14:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*63 - 129*		*05/13/15 14:00*	*1*
4-Bromofluorobenzene (Surr)	*74*		*66 - 120*		*05/13/15 14:00*	*1*
Toluene-d8 (Surr)	*86*		*74 - 120*		*05/13/15 14:00*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 121*		*05/13/15 14:00*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050715-EM-059
Date Collected: 05/07/15 11:15
Date Received: 05/08/15 08:50

Lab Sample ID: 240-50436-5
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/13/15 14:21	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/13/15 14:21	1
Acetone	10	U	10	ug/L			05/13/15 14:21	1
Benzene	1.0	U	1.0	ug/L			05/13/15 14:21	1
Chlorobenzene	1.0	U	1.0	ug/L			05/13/15 14:21	1
Ethylbenzene	1.0	U	1.0	ug/L			05/13/15 14:21	1
2-Butanone (MEK)	10	U	10	ug/L			05/13/15 14:21	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/13/15 14:21	1
Methylene Chloride	1.0	U	1.0	ug/L			05/13/15 14:21	1
Toluene	1.0	U	1.0	ug/L			05/13/15 14:21	1
Trichloroethene	1.0	U *	1.0	ug/L			05/13/15 14:21	1
Vinyl chloride	1.0	U	1.0	ug/L			05/13/15 14:21	1
Xylenes, Total	1.0	U	1.0	ug/L			05/13/15 14:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 129*		*05/13/15 14:21*	*1*
4-Bromofluorobenzene (Surr)	*83*		*66 - 120*		*05/13/15 14:21*	*1*
Toluene-d8 (Surr)	*97*		*74 - 120*		*05/13/15 14:21*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 121*		*05/13/15 14:21*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050715-EM-060
Date Collected: 05/07/15 12:00
Date Received: 05/08/15 08:50

Lab Sample ID: 240-50436-6
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/13/15 14:43	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/13/15 14:43	1
Acetone	10	U	10	ug/L			05/13/15 14:43	1
Benzene	1.0	U	1.0	ug/L			05/13/15 14:43	1
Chlorobenzene	1.0	U	1.0	ug/L			05/13/15 14:43	1
Ethylbenzene	1.0	U	1.0	ug/L			05/13/15 14:43	1
2-Butanone (MEK)	10	U	10	ug/L			05/13/15 14:43	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/13/15 14:43	1
Methylene Chloride	1.0	U	1.0	ug/L			05/13/15 14:43	1
Toluene	1.0	U	1.0	ug/L			05/13/15 14:43	1
Trichloroethene	1.0	U *	1.0	ug/L			05/13/15 14:43	1
Vinyl chloride	1.0	U	1.0	ug/L			05/13/15 14:43	1
Xylenes, Total	1.0	U	1.0	ug/L			05/13/15 14:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*63 - 129*		*05/13/15 14:43*	*1*
4-Bromofluorobenzene (Surr)	*81*		*66 - 120*		*05/13/15 14:43*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*05/13/15 14:43*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 121*		*05/13/15 14:43*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-32504-050715-EM-061
Date Collected: 05/07/15 13:50
Date Received: 05/08/15 08:50

Lab Sample ID: 240-50436-7
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/13/15 15:06	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/13/15 15:06	1
Acetone	10	U	10	ug/L			05/13/15 15:06	1
Benzene	1.0	U	1.0	ug/L			05/13/15 15:06	1
Chlorobenzene	1.0	U	1.0	ug/L			05/13/15 15:06	1
Ethylbenzene	1.0	U	1.0	ug/L			05/13/15 15:06	1
2-Butanone (MEK)	10	U	10	ug/L			05/13/15 15:06	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/13/15 15:06	1
Methylene Chloride	1.0	U	1.0	ug/L			05/13/15 15:06	1
Toluene	1.0	U	1.0	ug/L			05/13/15 15:06	1
Trichloroethene	1.0	U *	1.0	ug/L			05/13/15 15:06	1
Vinyl chloride	1.0	U	1.0	ug/L			05/13/15 15:06	1
Xylenes, Total	1.0	U	1.0	ug/L			05/13/15 15:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 129*		*05/13/15 15:06*	*1*
4-Bromofluorobenzene (Surr)	*81*		*66 - 120*		*05/13/15 15:06*	*1*
Toluene-d8 (Surr)	*94*		*74 - 120*		*05/13/15 15:06*	*1*
Dibromofluoromethane (Surr)	*115*		*75 - 121*		*05/13/15 15:06*	*1*

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-32504-050715-EM
Date Collected: 05/07/15 00:00
Date Received: 05/08/15 08:50

Lab Sample ID: 240-50436-6
Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/13/15 15:29	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/13/15 15:29	1
Acetone	10	U	10	ug/L			05/13/15 15:29	1
Benzene	1.0	U	1.0	ug/L			05/13/15 15:29	1
Chlorobenzene	1.0	U	1.0	ug/L			05/13/15 15:29	1
Ethylbenzene	1.0	U	1.0	ug/L			05/13/15 15:29	1
2-Butanone (MEK)	10	U	10	ug/L			05/13/15 15:29	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/13/15 15:29	1
Methylene Chloride	1.0	U	1.0	ug/L			05/13/15 15:29	1
Toluene	1.0	U	1.0	ug/L			05/13/15 15:29	1
Trichloroethene	1.0	U *	1.0	ug/L			05/13/15 15:29	1
Vinyl chloride	1.0	U	1.0	ug/L			05/13/15 15:29	1
Xylenes, Total	1.0	U	1.0	ug/L			05/13/15 15:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*63 - 129*		*05/13/15 15:29*	*1*
4-Bromofluorobenzene (Surr)	*80*		*66 - 120*		*05/13/15 15:29*	*1*
Toluene-d8 (Surr)	*93*		*74 - 120*		*05/13/15 15:29*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 121*		*05/13/15 15:29*	*1*

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

C/MS VOA

Analysis Batch: 180532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-50436-1	GW-32504-050615-EM-055	Total/NA	Water	8260B	
240-50436-2	GW-32504-050615-EM-056	Total/NA	Water	8260B	
240-50436-3	GW-32504-050615-EM-057	Total/NA	Water	8260B	
240-50436-4	GW-32504-050715-EM-058	Total/NA	Water	8260B	
240-50436-5	GW-32504-050715-EM-059	Total/NA	Water	8260B	
240-50436-6	GW-32504-050715-EM-060	Total/NA	Water	8260B	
240-50436-7	GW-32504-050715-EM-061	Total/NA	Water	8260B	
240-50436-8	TB-32504-050715-EM	Total/NA	Water	8260B	
LCS 240-180532/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-180532/5	Method Blank	Total/NA	Water	8260B	

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-180532/5
Matrix: Water
Analysis Batch: 180532

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	ug/L			05/13/15 11:45	1
1,2-Dichloroethene, Total	1.0	U	1.0	ug/L			05/13/15 11:45	1
Acetone	10	U	10	ug/L			05/13/15 11:45	1
Benzene	1.0	U	1.0	ug/L			05/13/15 11:45	1
Chlorobenzene	1.0	U	1.0	ug/L			05/13/15 11:45	1
Ethylbenzene	1.0	U	1.0	ug/L			05/13/15 11:45	1
2-Butanone (MEK)	10	U	10	ug/L			05/13/15 11:45	1
4-Methyl-2-pentanone (MIBK)	10	U	10	ug/L			05/13/15 11:45	1
Methylene Chloride	1.0	U	1.0	ug/L			05/13/15 11:45	1
Toluene	1.0	U	1.0	ug/L			05/13/15 11:45	1
Trichloroethene	1.0	U	1.0	ug/L			05/13/15 11:45	1
Vinyl chloride	1.0	U	1.0	ug/L			05/13/15 11:45	1
Xylenes, Total	1.0	U	1.0	ug/L			05/13/15 11:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 129*		*05/13/15 11:45*	*1*
4-Bromofluorobenzene (Surr)	*87*		*66 - 120*		*05/13/15 11:45*	*1*
Toluene-d8 (Surr)	*97*		*74 - 120*		*05/13/15 11:45*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 121*		*05/13/15 11:45*	

Lab Sample ID: LCS 240-180532/4
Matrix: Water
Analysis Batch: 180532

Client Sample ID: Lab Control Samp...
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	10.7		ug/L		107	74 - 120
1,2-Dichloroethene, Total	20.0	21.1		ug/L		106	80 - 120
Acetone	20.0	15.5		ug/L		78	43 - 136
Benzene	10.0	10.4		ug/L		104	80 - 120
Chlorobenzene	10.0	8.98		ug/L		90	80 - 120
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	80 - 120
Ethylbenzene	10.0	8.65		ug/L		87	80 - 120
m-Xylene & p-Xylene	10.0	9.00		ug/L		90	80 - 120
2-Butanone (MEK)	20.0	19.7		ug/L		99	60 - 126
4-Methyl-2-pentanone (MIBK)	20.0	22.0		ug/L		110	63 - 128
Methylene Chloride	10.0	10.8		ug/L		108	66 - 131
o-Xylene	10.0	8.52		ug/L		85	80 - 120
Toluene	10.0	8.96		ug/L		90	80 - 120
trans-1,2-Dichloroethene	10.0	10.8		ug/L		108	80 - 120
Trichloroethene	10.0	12.1	*	ug/L		121	76 - 120
Vinyl chloride	10.0	9.39		ug/L		94	53 - 127
Xylenes, Total	20.0	17.5		ug/L		88	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*63 - 129*
4-Bromofluorobenzene (Surr)	*87*		*66 - 120*
Toluene-d8 (Surr)	*97*		*74 - 120*

ethod: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-180532/4
Matrix: Water
Analysis Batch: 180532

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*118*		*75 - 121*

Surrogate Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/N.

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	**(63-129)**	**(66-120)**	**(74-120)**	**(75-121)**
240-50436-1	GW-32504-050615-EM-055	109	90	98	111
240-50436-2	GW-32504-050615-EM-056	98	91	97	112
240-50436-3	GW-32504-050615-EM-057	106	86	98	121
240-50436-4	GW-32504-050715-EM-058	92	74	86	109
240-50436-5	GW-32504-050715-EM-059	98	83	97	109
240-50436-6	GW-32504-050715-EM-060	98	81	93	106
240-50436-7	GW-32504-050715-EM-061	102	81	94	115
240-50436-8	TB-32504-050715-EM	97	80	93	105
LCS 240-180532/4	Lab Control Sample	96	87	97	118
MB 240-180532/5	Method Blank	105	87	97	109

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

ient Sample ID: GW-32504-050615-EM-055

Lab Sample ID: 240-50436-1
Matrix: Water

Date Collected: 05/06/15 14:15
Date Received: 05/08/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180532	05/13/15 12:52	LEE	TAL CAN

Client Sample ID: GW-32504-050615-EM-056

Lab Sample ID: 240-50436-2
Matrix: Water

Date Collected: 05/06/15 15:50
Date Received: 05/08/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180532	05/13/15 13:14	LEE	TAL CAN

Client Sample ID: GW-32504-050615-EM-057

Lab Sample ID: 240-50436-3
Matrix: Water

Date Collected: 05/06/15 17:45
Date Received: 05/08/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180532	05/13/15 13:37	LEE	TAL CAN

Client Sample ID: GW-32504-050715-EM-058

Lab Sample ID: 240-50436-4
Matrix: Water

ate Collected: 05/07/15 09:20
ate Received: 05/08/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180532	05/13/15 14:00	LEE	TAL CAN

Client Sample ID: GW-32504-050715-EM-059

Lab Sample ID: 240-50436-5
Matrix: Water

Date Collected: 05/07/15 11:15
Date Received: 05/08/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180532	05/13/15 14:21	LEE	TAL CAN

Client Sample ID: GW-32504-050715-EM-060

Lab Sample ID: 240-50436-6
Matrix: Water

Date Collected: 05/07/15 12:00
Date Received: 05/08/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180532	05/13/15 14:43	LEE	TAL CAN

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

Client Sample ID: GW-32504-050715-EM-061

Lab Sample ID: 240-5043(

Date Collected: 05/07/15 13:50

Matrix: Wa

Date Received: 05/08/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180532	05/13/15 15:06	LEE	TAL CAN

Client Sample ID: TB-32504-050715-EM

Lab Sample ID: 240-50436-8

Date Collected: 05/07/15 00:00

Matrix: Water

Date Received: 05/08/15 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	180532	05/13/15 15:29	LEE	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 32504, Rasmussen Landfill

TestAmerica Job ID: 240-50436-1

ıboratory: TestAmerica Canton

certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15 *
Georgia	State Program	4	N/A	06-30-15 *
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	05-31-15 *
Kentucky (UST)	State Program	4	58	06-30-15 *
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15 *
New York	NELAP	2	10975	03-31-16 *
Ohio VAP	State Program	5	CL0024	10-31-15
Oregon	NELAP	10	4062	02-23-16
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
Wisconsin	State Program	5	999518190	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CHAIN OF CUSTODY
AND
RECEIVING DOCUMENTS

240-50436 Chain of Custody

4101 Shuffel Street, N.W. North Canton, OH 44720 **tel** 330.497.9396 **fax** 330.497.0772 **www.testamericainc.com**

CONESTOGA-ROVERS & ASSOCIATES

CHAIN OF C TODY RECORD

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170
Phone: (734) 453-5123 Fax: (734) 453-5201

2.01 C2.5

COC NO.: P 13152
PAGE 1 OF ___
(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 32504-35	Laboratory Name: Test America	Lab Location: N. Canton, OH	SSOW ID: 32504-SSOW-
Project Name: Rasmussen Landfil	Lab Contact: D. Heckler	Lab Quote No: —	Cooler No: —
Project Location: Green Oaks Twp., MI			Carrier: Courier
Chemistry Contact: Rawa Fleisher			Airbill No: —
Sampler(s): Eric Mickelson			Date Shipped: 5/7/15

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO_3)	Sulfuric Acid (H_2SO_4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	Select VOC's										MS/MSD Request	Comments/ Special Instructions:
1	GW-32504-050615-EM-055	5/6/15	1415	GW	G		X							3	X											
2	-056		1550				X							3	X											
3	-057		1745				X							3	X											
4	GW-32504-050715-EM-058	5/7/15	0920				X							3	X											
	-059		1115				X							3	X											
	-060		1200				X							3	X											
	-061		1350				X							3	X											
8	TB-32504-050715-EM		—	WQ	—		X							1	X											
9																										
10																										
11																										
12																										
13																										
14																										
15																										

EM

Michigan
190

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☒ 2 Week ☐ Other:

Total Number of Containers: 22
All Samples in Cooler must be on COC

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1 Eric Mickelson	CRA	5/7/15	14:16	1. [signature]	TAL	5/7/15	14:16
2 [signature]	TAL	5/7/15	14:42	2. [signature]	TAL	5-8-15	8:50
				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

CRA Form: COC-10A (20110804)

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5/14/2015

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 50436
Canton Facility

Client CRA Site Name Ras Mosson Landfill Cooler unpacked by: Jackson

Cooler Received on 5-8-14 Opened on 5-8-14

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # 1 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt
   - ~~IR GUN# A (CF +4.0 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   - IR GUN# 4 (CF +0.5 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 2.5 °C ☐ See Multiple Cooler Form
   - ~~IR GUN# 5 (CF +0.4 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C~~
   - IR GUN# 8 (CF -1.2 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   - -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
   - -Were custody seals on the bottle(s)? Yes No
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the sampler(s) clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC432654
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a trip blank present in the cooler(s)? Trip Blank Lot # Yes No

Contacted PM Date by via Verbal Voice Mail Other

Concerning

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

15. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.

Time preserved: Preservative(s) added/Lot number(s):

Ref: SOP NC-SC-0005, Sample Receiving
X:\X-Drive Document Control\SOPs\Work Instructions\Word Version Work Instructions\WI-NC-099P-042315 Cooler Receipt Form.doc djl