GOLDER
MEMBER OF WSP

REPORT

Fourth Quarter 2021 Monitoring Report

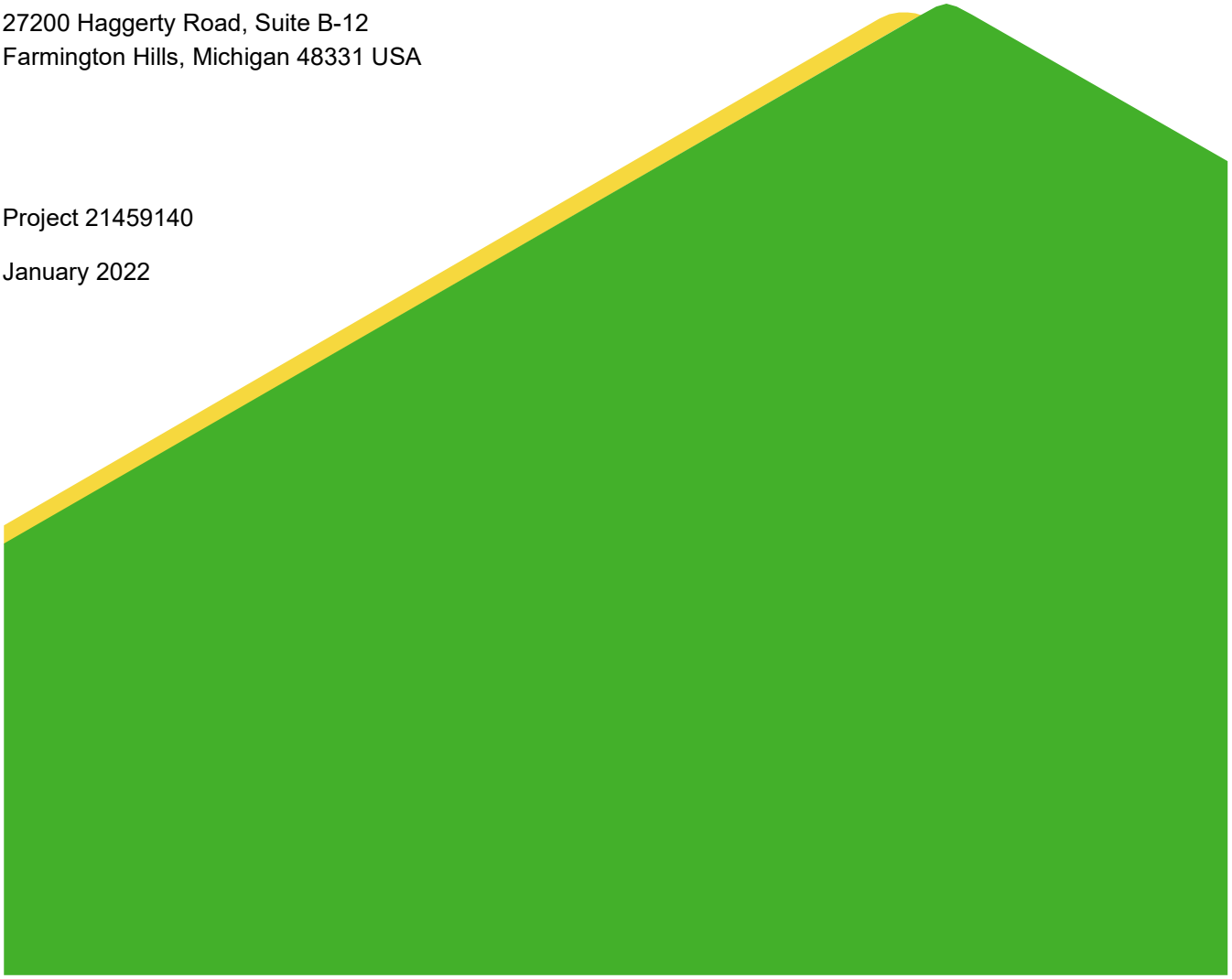
Smiths Creek Landfill

Submitted to:

Michigan Department of Environmental Quality
Southeast Michigan District
27700 Donald Court
Warren, Michigan 48092-2793

Submitted by:

Golder Associates Inc.
27200 Haggerty Road, Suite B-12
Farmington Hills, Michigan 48331 USA



Project 21459140

January 2022

January 26, 2022 Project No. 21459140

Mary Carnagie
Michigan Department of Environment, Great Lakes, and Energy
27700 Donald Court
Warren, Michigan 48092-2793

FOURTH QUARTER 2021 ENVIRONMENTAL MONITORING REPORT
SMITHS CREEK LANDFILL
ST. CLAIR COUNTY, MICHIGAN

Dear Ms. Carnagie:

Golder Associates Inc. is providing this report to summarize monitoring efforts from the above referenced sampling event. This report is submitted on behalf of St. Clair County, Michigan under the direction of Mr. Matt Williams.

1.0 INTRODUCTION

The Smiths Creek Landfill (SCL) is a Type II landfill located at 6779 Smiths Creek Road in Kimball Township, St. Clair County, Michigan. The SCL occupies approximately 264.5 acres, and is bordered on the north by residential and agricultural properties, on the south by undeveloped private and county owned property, on the east by the Wolvin Drain, and on the west by Smiths Creek and undeveloped and residential properties. **Figure 1, Site Location Map**, depicts the location and approximate areal extent of SCL in relation to nearby roads and topography.

Groundwater monitoring and reporting were performed in accordance with the Michigan Department of Environmental Quality (MDEQ, now Environment, Great Lakes and Energy [EGLE]) approved Hydrogeologic Monitoring Plan (HMP) dated December 2014, which included a reduction in sampling frequency from quarterly to semiannually (during the second and fourth quarters of each calendar year). Leachate and surface water continue to be sampled on a quarterly basis. **Table 1, Monitoring Well Network Summary,** includes a summary of the monitoring well network. Designated sampling parameters, test methods, reporting limits, and corresponding containers, preservatives, and holding times are summarized in the HMP. Water level measurement procedures, groundwater and surface water sample collection methods, decontamination procedures, and leachate sample collection procedures were performed in accordance with the HMP and applicable Public Act 451, Part 115 Rules.

2.0 MONITORING RESULTS

Samples were collected by Golder personnel from 15 monitoring wells, 4 surface water sampling locations, and 1 leachate sampling location between October 19 and 20, 2021. **Table 1** identifies the monitoring wells included in the monitoring program. **Figure 2, Monitoring Location Map**, depicts the design/permitted cell boundaries and sampling locations. Copies of laboratory reports are included in **Appendix A, Laboratory Results.**

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3.0 GROUNDWATER SEEPAGE CHARACTERISTICS

Prior to well purging, Golder field personnel collected depth to groundwater measurements from each of the monitoring wells sampled, and groundwater elevations were calculated. The elevations are presented on **Table 2, Historical Groundwater Elevations** and **Figure 3, Groundwater Elevation Contour Map – October 2021**. Review of the map indicates that groundwater flow is toward the east, which is consistent with past determinations.

In accordance with Rule 299.4907(5), the groundwater seepage velocity was determined based on groundwater elevations. As presented in the HMP, Darcy's equation was used to calculate the horizontal seepage velocity, as shown below:

$$V = K\frac{i}{n}$$

Where,

V = seepage velocity
K = hydraulic conductivity
i = hydraulic gradient
n = effective porosity

Table 3, Groundwater Seepage Velocity Calculations, presents values taken from the HMP and used in the calculations, the calculated flow gradients, and the velocity across the site. As shown on **Table 3**, the calculated average groundwater seepage velocity was 0.0047 feet per day (ft/day) (1.71 feet per year (ft/year)), which is consistent with historical determinations.

4.0 STATISTICAL ANALYSIS RESULTS

Golder completed statistical analyses in accordance with the approved statistical analysis plan, entitled, "Statistical Analysis of Background Groundwater Monitoring Data (SABGMD)", that was prepared in accordance with R299.4908, and last updated in August 2014. **Table 4, Fourth Quarter 2021 Monitoring Results**, includes the comparisons of the current and previous semiannual event with the updated tolerance limits.

4.1 Exceedances

Based on a review of **Table 4**, two (2) exceedances (one initial and one verified) were reported during the fourth quarter 2021 monitoring event:

- Chloride in monitoring well MW-203B – Initial
- Potassium in monitoring well MW-203B – Verified
- Total organic carbon in monitoring well MW-207A – Initial
- Sodium in monitoring well MW-210 – Verified

4.2 Statistically Significant Increases

As shown in **Table 5, Summary of Statistical Exceedances** (required by MDEQ RMD-115-29), four (2) exceedances (two initial and two verified) described above were reported during the fourth quarter 2021 monitoring event. An ASD is provided below for each of the exceedances.

4.2.1 Chloride and Potassium in Monitoring Well MW-203B

As discussed in a report from Golder to EGLE dated October 4, 2021, monitoring well MW-203B was installed on April 29, 2021 as a replacement well for monitoring well MW-203. Like monitoring well MW-203 before it, monitoring well MW-203B purges dry, and was thus only subject to limited well development following installation. As described in Golder's October 4, 2021 letter, additional purging of monitoring well MW-203B during continued sampling events may result in additional decreases in the concentrations of chloride, sodium, and potassium. However, if concentrations do not decrease with time for these three constituents, it may be necessary to recalculate the statistical limits for monitoring well MW-203B once a minimum of eight new background values are available from the replacement well. Thus, the current exceedances reported in monitoring well MW-203B are a result of either insufficient well development, which may improve with time, or are a result of the statistical method, because the limits being used are from the former monitoring well. If it is required to recalculate the statistical limits at some point in the future, the procedure for recalculating the statistical limits for a replacement well is described in Section 6.5 of the HMP.

4.2.2 Total Organic Carbon in Monitoring Well MW-207A

An initial exceedance was identified for total organic carbon in downgradient monitoring well MW-207A during the fourth quarter 2021 monitoring period. Total organic carbon in monitoring well MW-207A has been historically low over the last several years, this being the first initial exceedance (see **Table 5** and **Figure 4**). It is Golder's opinion that the concentration reported for TOC in MW-207A is an outlier as the other constituents are the same or lower than historic levels (see **Figures 5-8**). Based on these results, it is Golder's opinion that continued detection monitoring is appropriate. The TOC concentration reported during the fourth quarter 2021 will be confirmed during the second quarter 2022 monitoring period, but no additional response is necessary at this time.

4.2.3 Sodium in Monitoring Well MW-210

As shown in **Table 4**, the exceedance for sodium in monitoring well MW-210 is a statistically significant increase (SSI) with the result for October 2021 confirming the previous result reported for May 2021.

It is Golder's opinion that the SSI reported for sodium in monitoring well MW-210 is not a result of landfill influence on the groundwater, but is rather a result of natural geochemical variability. As shown in **Figure 9, Time Series Plot for Sodium in Selected Monitoring Wells,** the current concentration of sodium is within the range of historical values reported in monitoring well MW-210. In addition, sodium concentrations have been stable over the last three to four years. Further, the concentration of sodium in monitoring well MW-210 is within the range of sodium concentrations in upgradient monitoring wells at the SCL, particularly upgradient monitoring well MW-303A. Because the concentration in downgradient monitoring well MW-210 is similar to that in upgradient monitoring wells, it is likely that the concentration in the downgradient well is a result natural geochemical variability in the uppermost aquifer.

Finally, none of the other leachate indicator parameters in monitoring well MW-210 are showing exceedances or trends (see **Table 4**), and the reported concentrations of sodium are below the Michigan Natural Resources and Environmental Protection Act, Part 201 DWC (230 mg/L). Based on these observations, no additional response is necessary with respect to the SSI for sodium in monitoring well MW-210. Continued detection monitoring is appropriate.

4.2.4 Statistical Summary

Rule 299.4440(9) of Part 115 allows a site 30 days to prepare an ASD which asserts that a SSI indicated by groundwater monitoring data is the result of a source other than a release from the site. As indicated above, two SSIs were reported for the fourth quarter 2021 event, including potassium in monitoring well MW-207A and sodium in monitoring well MW-210. However, none of the exceedances reported during the fourth quarter 2021 monitoring period are attributable to landfill influence on the groundwater; thus, no additional response is necessary and continued detection monitoring is appropriate. Due to the relatively low seepage velocity for the SCL (1.4 feet per year), it is Golder's opinion that confirmation sampling during the next semiannual monitoring event is appropriate.

5.0 CHAIN OF CUSTODY INFORMATION & FIELD FORMS

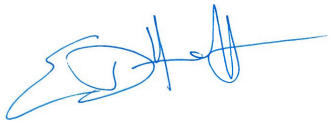
All samples were submitted under standard chain-of custody protocol. Copies of the chains of custody for this event are included with the laboratory results in **Appendix A**. Field forms are prepared at each sampling location. Copies of the field forms are included in **Appendix B, Field Data Sheets**.

6.0 CLOSING

This report is submitted as required by the site's approved HMP by the undersigned professionals. Please do not hesitate to contact either of us at 248/295-0135, if you have any questions.

Sincerely,

Golder Associates Inc.



Erin N. D'Hondt
Staff Geologist

Sean C. Paulsen, PG
Senior Consultant

END/SCP/end

TABLES

TABLE 1.
MONITORING WELL NETWORK SUMMARY
Smiths Creek Landfill

Well ID	Gradient Direction	Northing	Easting	Top of Casing Elevation (ft msl)	Bottom of Screen Elevation (ft msl)	Total Well Depth (ft)	Well Screen and Riser Materials
MW-101	Up	18374.3	14719.3	634.76	557.9	76.9	PVC
MW-106A	Down	14643.2	17132.0	633.43	558.2	75.2	PVC
MW-201	Up	18488.1	15529.3	634.57	559.2	75.4	PVC
MW-202	Up	17786.6	14714.4	635.22	570.6	64.6	PVC
MW-203	Down	14644.5	16028.9	632.05	558.9	73.2	PVC
MW-203B	Down	14546.9	16027.9	633.00	631.3	72	PVC
MW-207A	Down	15225.7	17099.4	634.29	551.4	82.9	PVC
MW-208B	Down	15533.4	17136.7	633.91	NA	NA	PVC
MW-209	Down	16102.6	17180.1	630.58	551.4	79.2	PVC
MW-210	Down	16937.0	17218.1	628.38	556.5	71.9	PVC
MW-212	Down	17719.0	16985.5	628.16	563.0	65.2	PVC
MW-301	Down	15814.4	17134.8	635.10	550.8	84.3	PVC
MW-302	Down	16545.2	17191.4	626.75	546.4	80.4	PVC
MW-303A	Up	15709.1	14987.9	633.41	557.7	75.7	PVC
MW-304	Up	16769.8	14812.1	635.12	559.4	75.7	PVC
MW-305	Down	17269.0	17204.0	628.93	553.1	75.8	PVC

Notes:

NA - Not available

Information from CTI, 2010

MSL - Mean Sea Level

PVC - Polyvinyl Chloride

TABLE 2.
HISTORICAL GROUNDWATER ELEVATIONS
Smiths Creek Landfill

Well ID	Top of Casing Elevation	2016		2017		2018		2019		2020		2021	
		4/1/2016	10/1/2016	6/1/2017	11/1/2017	5/1/2018	10/23/2018	5/14/2019	11/5/2019	5/29/2020	12/1/2020	5/4/2021	10/19/2021
MW-101	634.76	612.52	611.44	611.44	612.17	612.31	611.19	611.30	611.73	611.38	611.08	611.79	612.03
MW-106A	633.43	601.39	601.59	601.93	602.21	601.61	602.74	602.14	602.48	602.41	602.14	602.06	602.39
MW-201	634.57	611.97	610.87	611.04	611.99	611.78	610.79	610.68	611.13	611.39	610.73	611.38	611.49
MW-202	635.22	612.04	610.91	610.98	611.66	611.69	610.62	610.81	611.18	610.92	610.57	611.24	611.65
MW-203	632.05	607.33	606.87	607.54	608.18	607.71	606.39	606.02	607.28	607.66	607.62	n/a	n/a
MW-203B	633.00	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	609.02	608.77
MW-207A	634.29	598.46	598.43	598.84	598.99	598.61	597.95	597.78	598.38	598.59	598.11	598.45	598.92
MW-208B	633.91	599.78	599.62	599.89	600.31	599.93	599.13	598.96	599.58	599.87	599.41	599.80	600.21
MW-209	630.58	603.60	602.40	602.68	603.36	602.83	602.16	601.83	602.41	602.78	602.44	602.72	603.00
MW-210	628.38	600.62	600.36	600.60	601.23	600.55	600.07	599.70	600.39	600.83	600.62	600.84	601.02
MW-212	628.16	600.25	599.61	599.64	600.66	599.84	599.35	599.07	599.64	600.23	600.11	600.42	600.46
MW-301	635.10	601.38	601.14	601.51	601.94	601.54	600.76	600.49	601.20	601.40	601.01	601.36	601.74
MW-302	626.75	601.82	601.23	601.41	602.23	601.53	600.96	600.73	601.34	601.86	601.63	601.92	602.04
MW-303A	633.41	611.33	610.70	610.90	611.56	611.41	610.38	610.20	610.91	608.91	610.30	610.88	611.22
MW-304	635.12	610.49	609.74	609.84	610.46	610.36	609.47	609.42	609.89	612.34	609.27	609.93	610.21
MW-305	628.93	599.38	599.03	599.11	599.83	599.11	598.60	598.28	590.80	599.45	599.15	599.49	599.75

Notes:
All measurements recorded in feet above Mean Sea Level

TABLE 3.
GROUNDWATER SEEPAGE VELOCITY CALCULATIONS
Smiths Creek Landfill

Flow Paths	Δ h (feet)[2]	Δ l (feet)[3]	Hydraulic Gradient (Δ h/Δ l)	Average Permeability, K (feet per day)[1]	Assumed Effective Porosity (n_e)	Average Linear Groundwater Velocity (feet per day)[4]
A (MW-101/MW-212)	11.57	2356	0.0049	0.283	0.30	0.0046
B (MW-303A/MW-207A)	12.30	2168	0.0057			0.0054
C (MW-304/MW-305)	10.46	2443	0.0043			0.0040

Notes:

1. Average K values from CTI (2012).
2. Δ h = Change in groundwater elevation.
3. Δ l = Distance along flow paths.
4. Velocity = (Δ h /Δ l x K) / n_e.

TABLE 4.
SMITHS CREEK LANDFILL
Fourth Quarter 2021 Monitoring Results

Constituent Name	Units	Prediction Limit	Previous Quarterly Result	Current Quarterly Result
MW-101			**5/4/2021**	**10/19/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	30.1	24.3	25.4
Potassium	mg/L	2.4	1.51	1.52
Sodium	mg/L	75.3	65.1	67.6
Total Organic Carbon	mg/L	9.1	<0.5	1.01
Total Inorganic Nitrogen	mg/L	0.72	0.144	0.146
MW-106A			**5/4/2021**	**10/19/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	39.8	37.3	38.7
Potassium	mg/L	3.7	1.04	1.14
Sodium	mg/L	89.1	74.7	77.5
Total Organic Carbon	mg/L	5.1	<0.5	1.44
Total Inorganic Nitrogen	mg/L	0.48	0.116	0.0813
MW-201			**5/4/2021**	**10/19/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	30.2	16.9	18.1
Potassium	mg/L	2.6	1.42	1.26
Sodium	mg/L	75.2	67.5	66.3
Total Inorganic Nitrogen	mg/L	5.07	0.0737	0.102
Total Organic Carbon	mg/L	7.2	<0.5	1.01
MW-202			**5/4/2021**	**10/19/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	40	28.9	30.2
Potassium	mg/L	2.1	1.25	1.22
Sodium	mg/L	79	69.5	67.9
Total Inorganic Nitrogen	mg/L	0.64	0.128	0.136
Total Organic Carbon	mg/L	8.2	<0.5	0.943

Notes:

Shaded values represent exceedance of statistical prediction limit

mg/L = milligrams per liter; ug/L = micrograms per liter.

* = limits shown are from MW-203; additional data being gathered to determine whether revised limits are required for MW-2

TABLE 4.
SMITHS CREEK LANDFILL
Fourth Quarter 2021 Monitoring Results

Constituent Name	Units	Prediction Limit	Previous Quarterly Result	Current Quarterly Result
MW-203B			**5/4/2021**	**10/20/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	39.9*	39.9	40
Potassium	mg/L	1.5*	6.16	5.94
Sodium	mg/L	87.5*	85.4	86.7
Total Inorganic Nitrogen	mg/L	1.05*	0.181	0.205
Total Organic Carbon	mg/L	5.1*	<0.5	1.48
MW-207A			**5/4/2021**	**10/20/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	33.5	24.5	19.2
Potassium	mg/L	3.5	1.91	1.5
Sodium	mg/L	94.2	77.5	70
Total Organic Carbon	mg/L	4.2	0.509	11.4
Total Inorganic Nitrogen	mg/L	1.62	0.0934	0.0469
MW-208B			**5/4/2021**	**10/19/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	36.8	31.5	32.5
Potassium	mg/L	2.4	1.1	1.28
Sodium	mg/L	117.3	85.4	82.5
Total Inorganic Nitrogen	mg/L	4.4	0.184	0.275
Total Organic Carbon	mg/L	6.2	<0.5	1.5
MW-209			**5/4/2021**	**10/19/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	44.5	33.2	35.2
Potassium	mg/L	1.5	1.02	1.02
Sodium	mg/L	99.8	93.7	90.9
Total Inorganic Nitrogen	mg/L	5.72	0.123	0.104
Total Organic Carbon	mg/L	7.8	<0.5	1.41

Notes:

Shaded values represent exceedance of statistical prediction limit

mg/L = milligrams per liter; ug/L = micrograms per liter.

* = limits shown are from MW-203; additional data being gathered to determine whether revised limits are required for MW-2

TABLE 4.
SMITHS CREEK LANDFILL
Fourth Quarter 2021 Monitoring Results

Constituent Name	Units	Prediction Limit	Previous Quarterly Result	Current Quarterly Result
MW-210			**5/4/2021**	**10/19/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	40.1	29.1	29.3
Potassium	mg/L	2.45	1.41	1.69
Sodium	mg/L	90.6	106	114
Total Organic Carbon	mg/L	10.6	<0.5	1.73
Total Inorganic Nitrogen	mg/L	1.71	0.167	0.0827
MW-212			**5/4/2021**	**10/19/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	41.4	31	31.7
Potassium	mg/L	1.8	0.996	0.951
Sodium	mg/L	101.2	88.8	88.2
Total Organic Carbon	mg/L	7.1	0.583	1.83
Total Inorganic Nitrogen	mg/L	0.72	0.0407	0.0242
MW-301			**5/3/2021**	**10/18/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	54.3	40.1	41.4
Potassium	mg/L	11.8	1.17	1.06
Sodium	mg/L	110.4	100	97.3
Total Inorganic Nitrogen	mg/L	1.13	0.18	0.19
Total Organic Carbon	mg/L	12.3	<0.5	1.35
MW-302			**5/3/2021**	**10/18/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	67	36.1	37.4
Potassium	mg/L	7.9	1.43	1.45
Sodium	mg/L	111.9	94.3	94.5
Total Inorganic Nitrogen	mg/L	0.92	0.161	0.177
Total Organic Carbon	mg/L	11.9	<0.5	1.31

Notes:

Shaded values represent exceedance of statistical prediction limit

mg/L = milligrams per liter; ug/L = micrograms per liter.

* = limits shown are from MW-203; additional data being gathered to determine whether revised limits are required for MW-2

TABLE 4.
SMITHS CREEK LANDFILL
Fourth Quarter 2021 Monitoring Results

Constituent Name	Units	Prediction Limit	Previous Quarterly Result	Current Quarterly Result
MW-303A			**5/5/2021**	**10/20/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	48.6	41.7	41.9
Potassium	mg/L	2.2	1.01	1.01
Sodium	mg/L	157.6	104	103
Total Organic Carbon	mg/L	1.89	<0.5	1.31
Total Inorganic Nitrogen	mg/L	0.21	0.0821	0.1
MW-304			**5/4/2021**	**10/19/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	40.2	30.8	31.1
Potassium	mg/L	4.2	1.38	1.38
Sodium	mg/L	90	79.5	78.9
Total Inorganic Nitrogen	mg/L	1.3	0.133	0.157
Total Organic Carbon	mg/L	3.1	<0.5	1.21
MW-305			**5/4/2021**	**10/19/2021**
Inorganic Indicators - Semiannual				
Chloride	mg/L	49.2	32.8	33.4
Potassium	mg/L	11.1	1.42	1.48
Sodium	mg/L	96.1	93.6	89.7
Total Inorganic Nitrogen	mg/L	2.16	0.13	0.0352
Total Organic Carbon	mg/L	11.9	<0.5	1.66

Notes:

Shaded values represent exceedance of statistical prediction limit

mg/L = milligrams per liter; ug/L = micrograms per liter.

* = limits shown are from MW-203; additional data being gathered to determine whether revised limits are required for MW-2

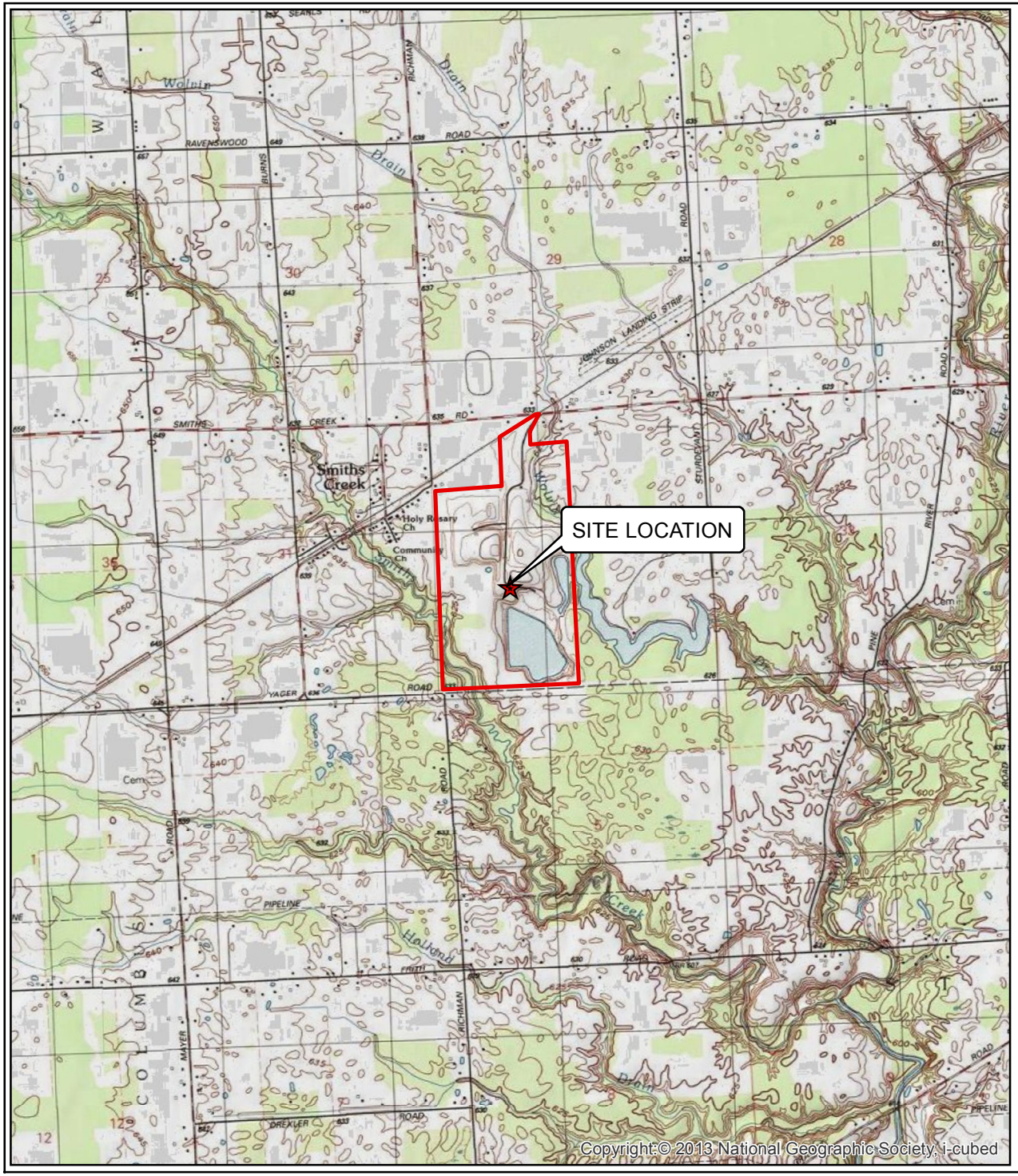
TABLE 5.
SUMMARY OF STATISTICAL EXCEEDANCES
Fourth Quarter 2021 Monitoring Event
Smiths Creek Landfill

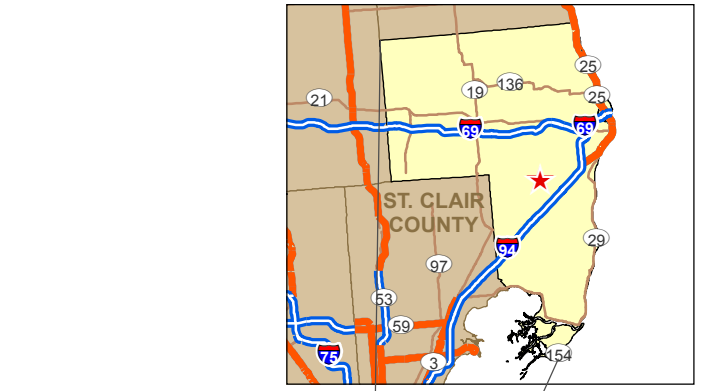
Parameter	Well #	Location (U/D/S)	Part 201 GRCC DWC	Statistical Limit	4Q2021 (bold>201)	2Q2021 (bold>201)	4Q2020 (bold>201)	2Q2020 (bold>201)
Chloride (mg/L)	MW-203B	S	250	39.9	40	39.9	n/a	n/a
Potassium (mg/l)	MW-203B	S	n/a	1.5	5.94	6.16	n/a	n/a
Total Organic Carbon (mg/L)	MW-207A	D	NC	4.2	11.4	0.509	1.34	1.60
Sodium (mg/L)	MW-210	D	230	90.6	114	106	118	133

COMMENTS: Shaded values exceed the statistical limit.
n/a = not applicable, not required during specified sampling event
n/s = not sampled, recently installed replacement well
NL=No Limit, NC=Not Calculated
U=upgradient, D=downgradient, S=sidegradient
GRCC = generic residential cleanup criteria; DWC = drinking water criteria

FIGURES

Path: H:\16x-Projects\16388921A-Smiths Creek LF\figures\A-\16388921A000-GIS.mxd





CLIENT
SMITHS CREEK LANDFILL
6779 SMITHS CREEK ROAD
SMITHS CREEK, MICHIGAN

PROJECT
2020 GROUNDWATER MONITORING

TITLE
SITE LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2016-07-18
PREPARED	DJC
DESIGN	SCP
REVIEW	JSI
APPROVED	SCP

PROJECT No.	CONTROL	Rev.	FIGURE
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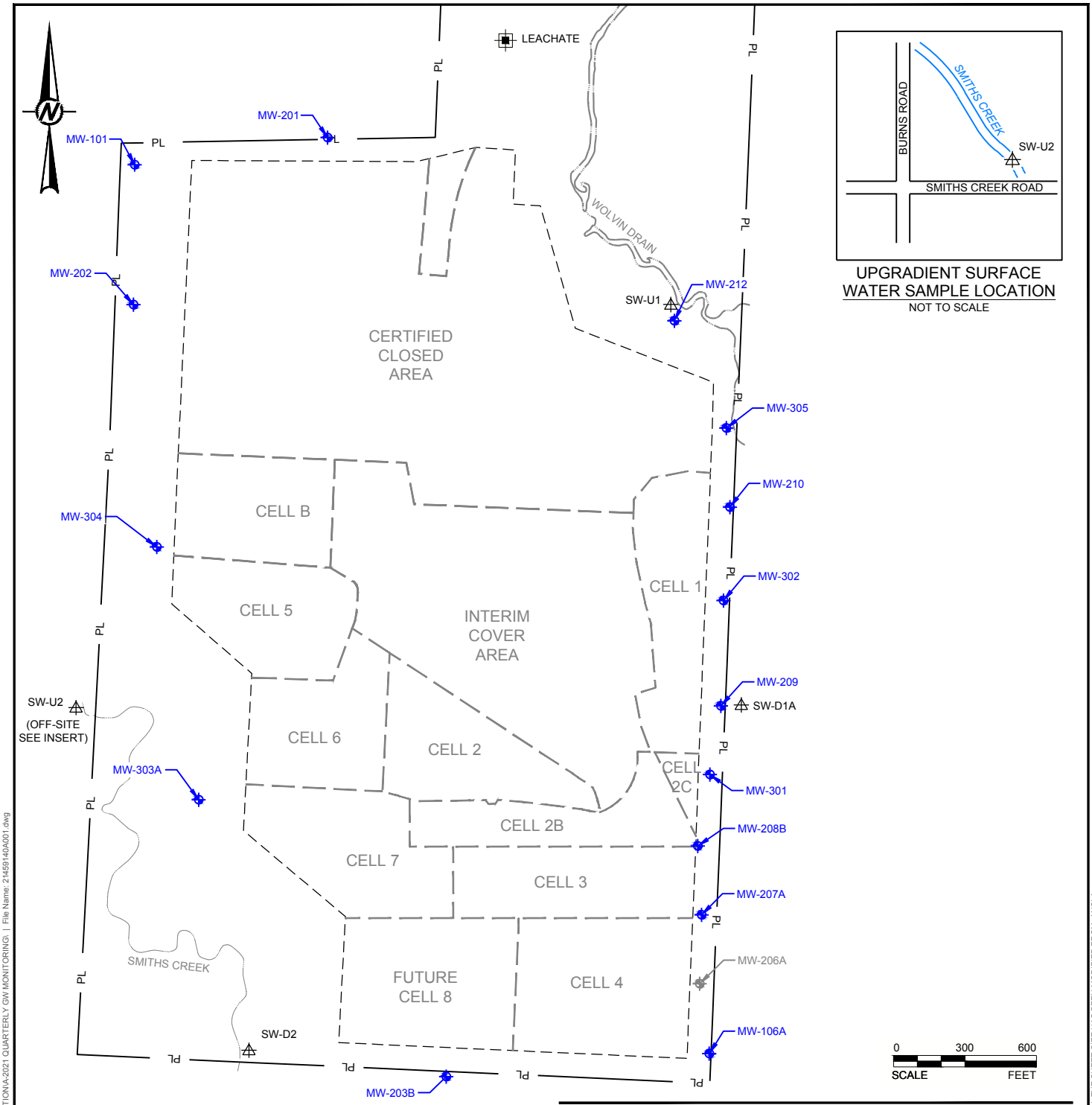


UPGRADIENT SURFACE WATER SAMPLE LOCATION
NOT TO SCALE

LEGEND

- PROPERTY BOUNDARY
- SOLID WASTE BOUNDARY
- CELL BOUNDARY
- MW-XXX — MONITORING WELL LOCATION
- SW-XX — SURFACE WATER SAMPLING LOCATION
- LEACHATE — LEACHATE SAMPLING LOCATION
- MW-XXX — WELL ABANDONED

CLIENT
SMITHS CREEK LANDFILL
6779 SMITHS CREEK ROAD
SMITHS CREEK, MICHIGAN

PROJECT
2021 GROUNDWATER MONITORING

TITLE
MONITORING LOCATION MAP

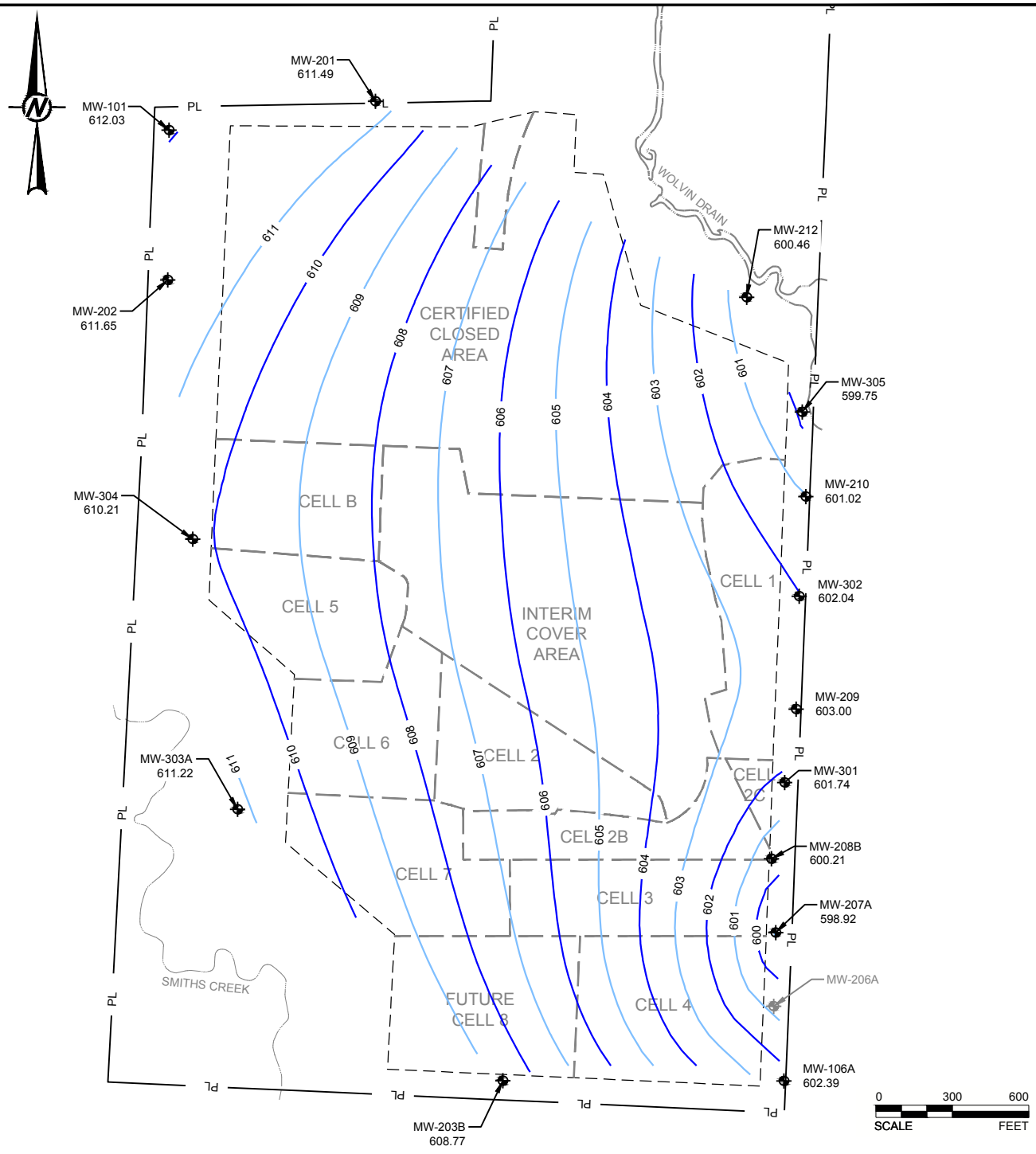
CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-05-14
PREPARED	DJC
DESIGN	END
REVIEW	RAK
APPROVED	SCP

PROJECT No.	CONTROL	Rev.	FIGURE
21459140	21459140A001.dwg	0	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

Path: \\golder.gds\complex\data\office\Detroit\cad\Projects\21x-Projects\21459140-Smiths Creek LF\PRODUCTION\A-2021 QUARTERLY GW MONITORING\ | File Name: 21459140A001.dwg



LEGEND

- PROPERTY BOUNDARY
- SOLID WASTE BOUNDARY
- CELL BOUNDARY
- 600 GROUNDWATER ELEVATION CONTOUR
- MW-XXX XXX.XX MONITORING WELL LOCATION AND GROUNDWATER ELEVATION
- MW-XXX WELL ABANDONED

CLIENT
SMITHS CREEK LANDFILL
6779 SMITHS CREEK ROAD
SMITHS CREEK, MICHIGAN

PROJECT
2021 GROUNDWATER MONITORING

TITLE
GROUNDWATER ELEVATION CONTOUR MAP
OCTOBER 19, 2021

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-11-17
PREPARED	DJC
DESIGN	END
REVIEW	END
APPROVED	SCP

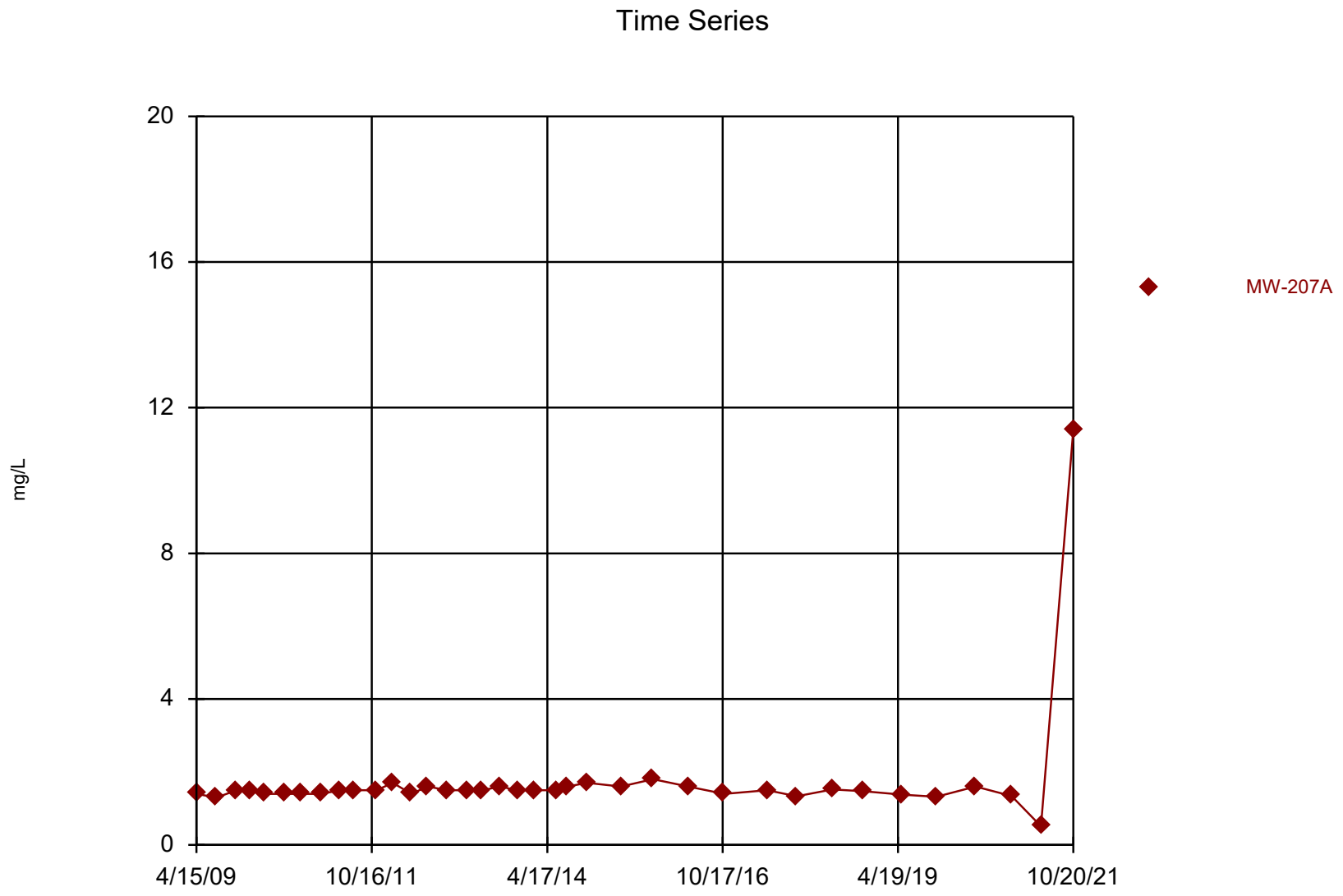
PROJECT No.	CONTROL	Rev.	FIGURE
21459140	21459140A003.dwg	0	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

Path: \\golder.gds\complex\data\office\Detroit\cad\Projects\21x-Projects\21459140-Smiths Creek LF\PRODUCTION\A-2021 QUARTERLY GW MONITORING\ | File Name: 21459140A003.dwg

FIGURE 4.

Sanitas™ v.9.6.31 For the statistical analyses of ground water by Golder Associates only. UG



Constituent: Carbon, Total Organic Analysis Run 11/15/2021 5:31 PM

Smiths Creek LF Client: St. Clair County Data: Dt-scl

FIGURE 5.

Sanitas™ v.9.6.31 For the statistical analyses of ground water by Golder Associates only. UG

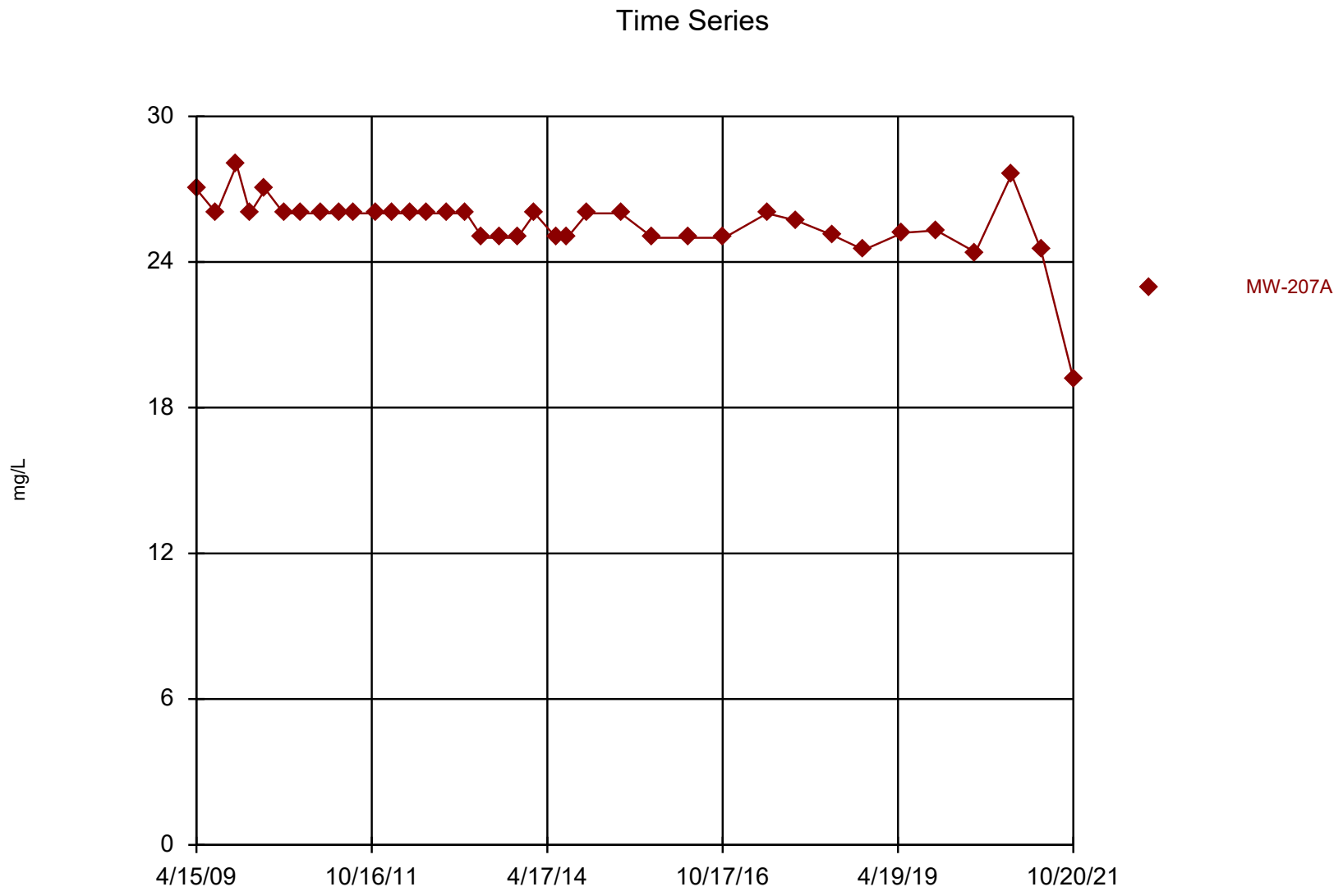
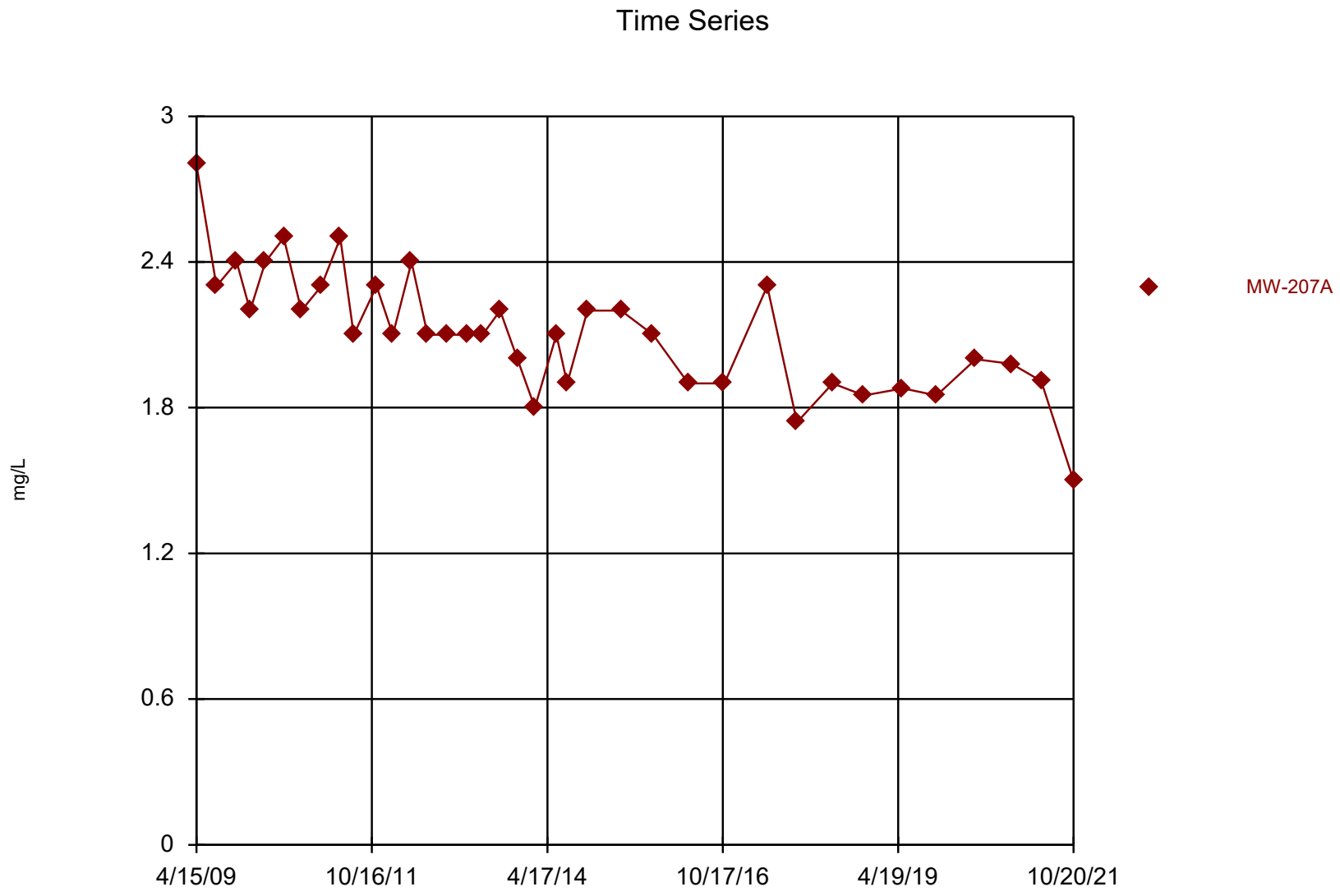


FIGURE 6.

Sanitas™ v.9.6.31 For the statistical analyses of ground water by Golder Associates only. UG

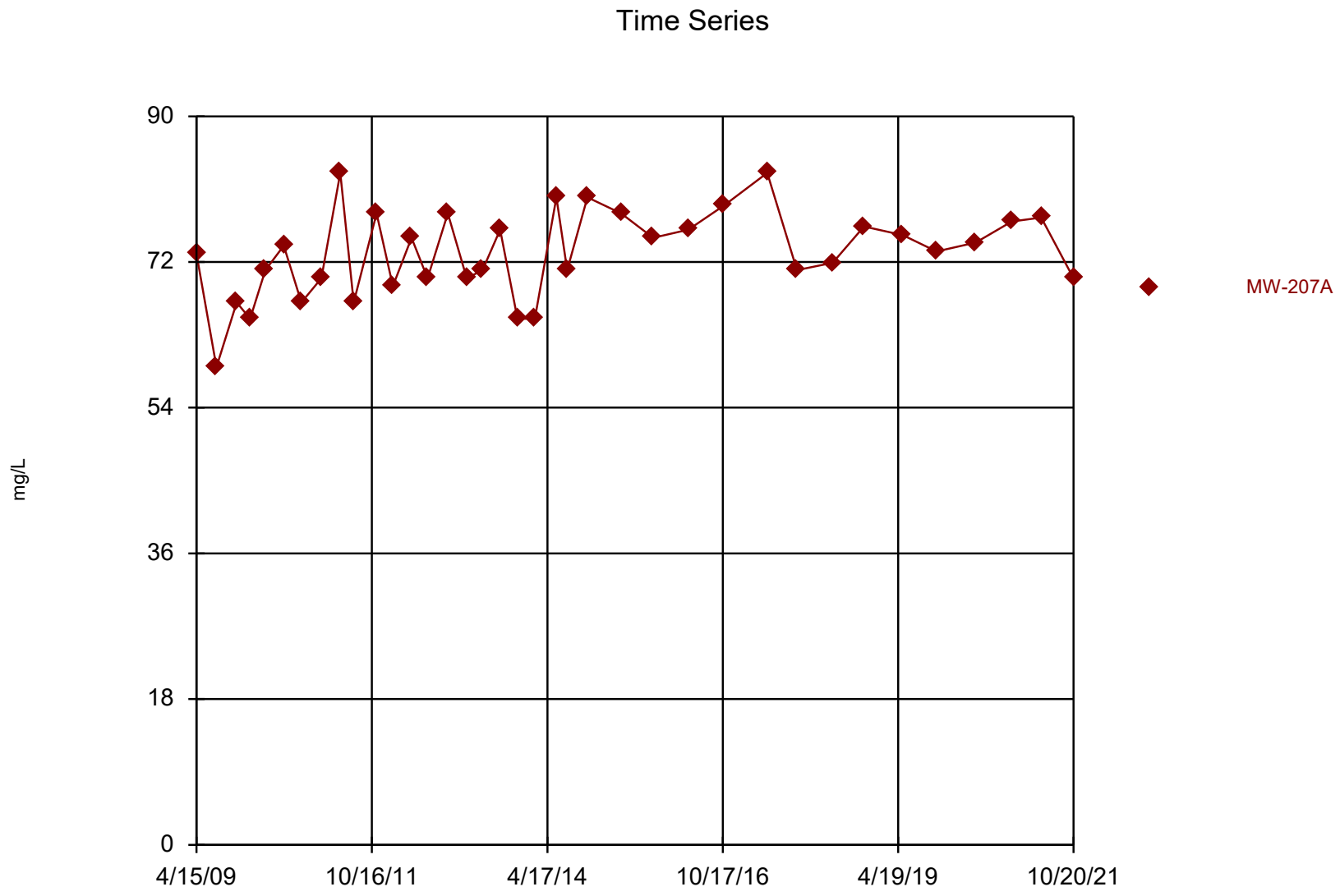


Constituent: Potassium Analysis Run 11/15/2021 5:32 PM

Smiths Creek LF Client: St. Clair County Data: Dt-scl

FIGURE 7.

Sanitas™ v.9.6.31 For the statistical analyses of ground water by Golder Associates only. UG



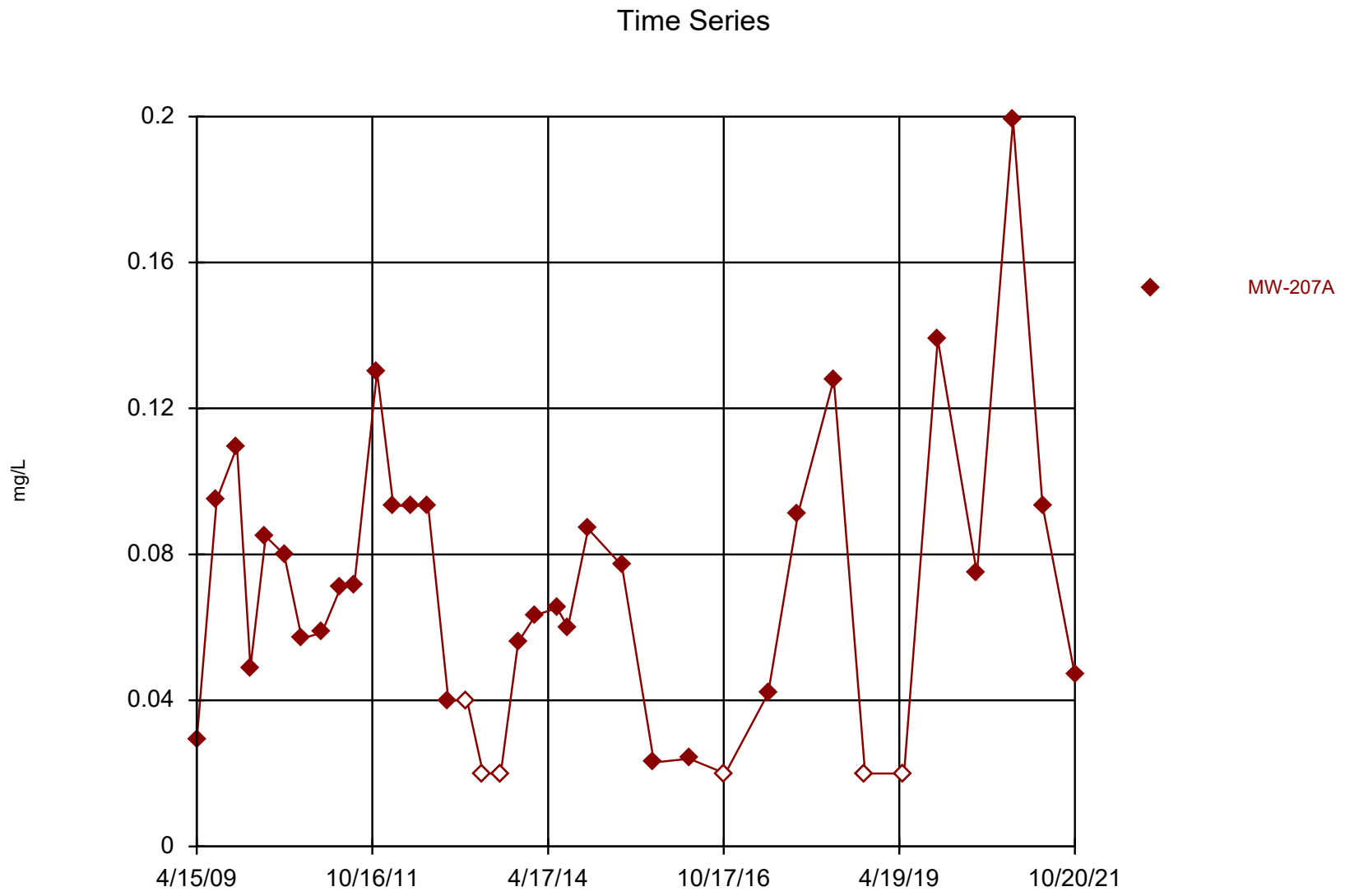
Constituent: Sodium Analysis Run 11/15/2021 5:33 PM

Smiths Creek LF Client: St. Clair County Data: Dt-scl

FIGURE 8.

Sanitas™ v.9.6.31 For the statistical analyses of ground water by Golder Associates only. UG

Hollow symbols indicate censored values.

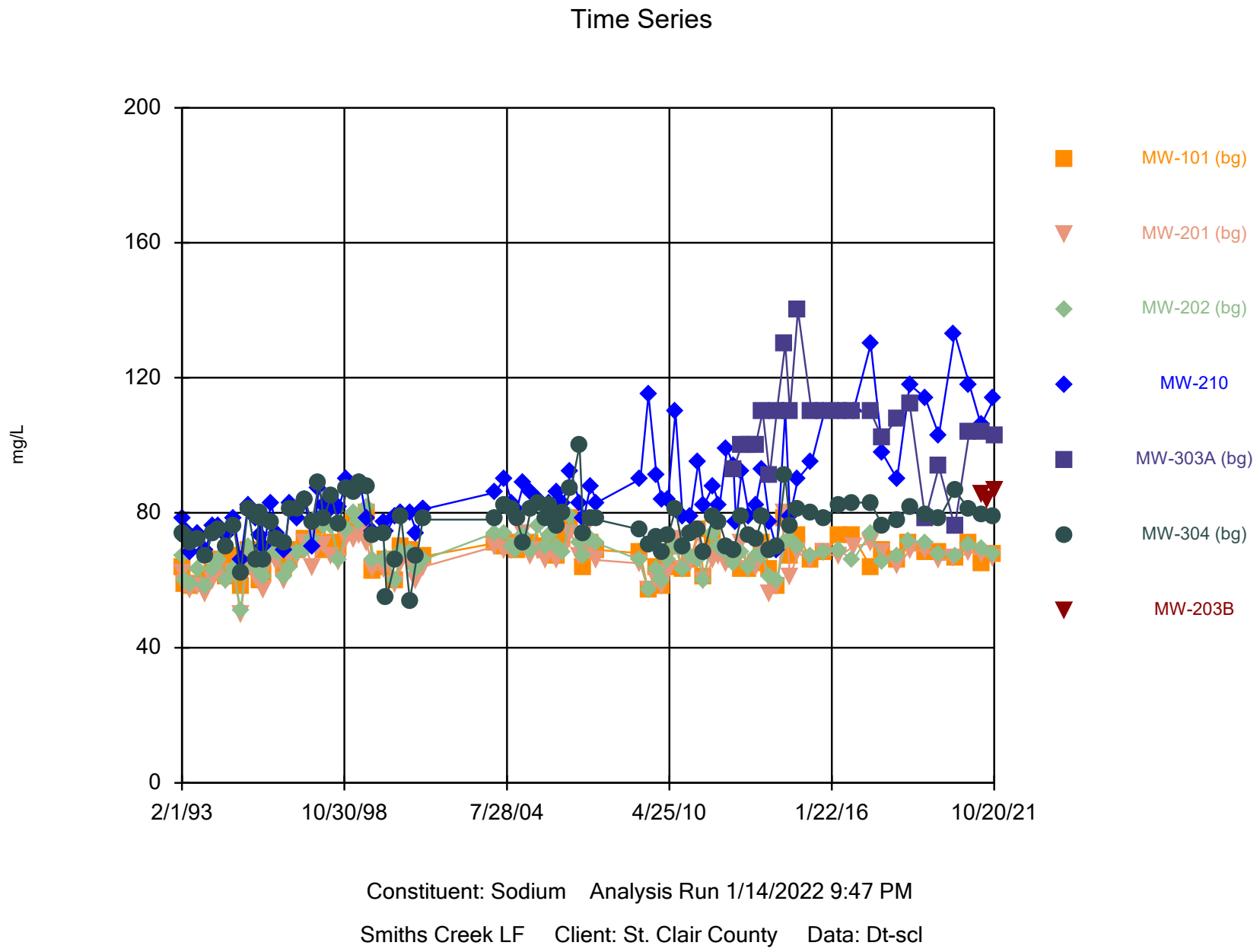


Constituent: Total Inorganic Nitrogen Analysis Run 11/15/2021 5:33 PM

Smiths Creek LF Client: St. Clair County Data: Dt-scl

FIGURE 9.

Sanitas™ v.9.6.32 For the statistical analyses of ground water by Golder Associates only. UG



APPENDIX A

Laboratory Results

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

November 05, 2021

Sean Paulsen
Golder Associates, Inc.
27200 Haggerty Rd. Suite B-12
Farmington, MI 48331

RE: Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

Dear Sean Paulsen:

Enclosed are the analytical results for sample(s) received by the laboratory on October 21, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Indianapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer L Rice

Jennifer Rice
jennifer.rice@pacelabs.com
(616)975-4500
Project Manager

Enclosures

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

CERTIFICATIONS

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

Pace Analytical Services Indianapolis

7726 Moller Road, Indianapolis, IN 46268
Illinois Accreditation #: 200074
Indiana Drinking Water Laboratory #: C-49-06
Kansas/TNI Certification #: E-10177
Kentucky UST Agency Interest #: 80226
Kentucky WW Laboratory ID #: 98019
Michigan Drinking Water Laboratory #9050
Ohio VAP Certified Laboratory #: CL0065
Oklahoma Laboratory #: 9204
Texas Certification #: T104704355
Wisconsin Laboratory #: 999788130
USDA Soil Permit #: P330-19-00257

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

SAMPLE SUMMARY

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

Lab ID	Sample ID	Matrix	Date Collected	Date Received
50300850001	**Leachate**	Water	10/20/21 15:30	10/21/21 17:30
50300850002	**Trip Blank**	Water	10/20/21 00:00	10/21/21 17:30

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

SAMPLE ANALYTE COUNT

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
50300850001	**Leachate**	EPA 6010	RAM	1	PASI-I
		EPA 5030B/8260	KLP	39	PASI-I
		SM 2540C	OAS	1	PASI-I
		EPA 9038	ZM	1	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM 4500-NH3 G	MMS	1	PASI-I

PASI-I = Pace Analytical Services - Indianapolis

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

Sample: Leachate **Lab ID: 50300850001** Collected: 10/20/21 15:30 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Iron	**290000**	ug/L	250	5	10/26/21 13:30	10/27/21 17:15	7439-89-6	
8260 MSV Low Level	Analytical Method: EPA 5030B/8260 Pace Analytical Services - Indianapolis							
Benzene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	71-43-2	
Bromodichloromethane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	75-27-4	
Bromoform	**<5.0**	ug/L	5.0	5		10/29/21 22:40	75-25-2	
Bromomethane	**<25.0**	ug/L	25.0	5		10/29/21 22:40	74-83-9	
Carbon tetrachloride	**<5.0**	ug/L	5.0	5		10/29/21 22:40	56-23-5	
Chlorobenzene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	108-90-7	
Chloroethane	**<25.0**	ug/L	25.0	5		10/29/21 22:40	75-00-3	
Chloroform	**<5.0**	ug/L	5.0	5		10/29/21 22:40	67-66-3	
Chloromethane	**<25.0**	ug/L	25.0	5		10/29/21 22:40	74-87-3	
Dibromochloromethane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	124-48-1	
Dibromomethane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	74-95-3	
1,2-Dichlorobenzene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	95-50-1	
1,4-Dichlorobenzene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	106-46-7	
1,1-Dichloroethane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	75-34-3	
1,2-Dichloroethane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	107-06-2	
1,1-Dichloroethene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	75-35-4	
cis-1,2-Dichloroethene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	156-59-2	
trans-1,2-Dichloroethene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	156-60-5	
1,2-Dichloropropane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	78-87-5	
cis-1,3-Dichloropropene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	10061-01-5	
trans-1,3-Dichloropropene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	10061-02-6	
Ethylbenzene	**17.3**	ug/L	5.0	5		10/29/21 22:40	100-41-4	
Iodomethane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	74-88-4	
Methylene Chloride	**<25.0**	ug/L	25.0	5		10/29/21 22:40	75-09-2	
Styrene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	100-42-5	
1,1,1,2-Tetrachloroethane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	630-20-6	
1,1,2,2-Tetrachloroethane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	79-34-5	
Tetrachloroethene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	127-18-4	
Toluene	**17.8**	ug/L	5.0	5		10/29/21 22:40	108-88-3	
1,1,1-Trichloroethane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	71-55-6	
1,1,2-Trichloroethane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	79-00-5	
Trichloroethene	**<5.0**	ug/L	5.0	5		10/29/21 22:40	79-01-6	
Trichlorofluoromethane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	75-69-4	
1,2,3-Trichloropropane	**<5.0**	ug/L	5.0	5		10/29/21 22:40	96-18-4	
Vinyl chloride	**<5.0**	ug/L	5.0	5		10/29/21 22:40	75-01-4	
Xylene (Total)	**45.3**	ug/L	10.0	5		10/29/21 22:40	1330-20-7	
Surrogates								
4-Bromofluorobenzene (S)	94	%.	78-117	5		10/29/21 22:40	460-00-4	D3,F1
Dibromofluoromethane (S)	99	%.	78-120	5		10/29/21 22:40	1868-53-7	
Toluene-d8 (S)	106	%.	77-118	5		10/29/21 22:40	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

Sample: Leachate **Lab ID: 50300850001** Collected: 10/20/21 15:30 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Indianapolis							
Total Dissolved Solids	**13700000**	ug/L	667000	1		10/23/21 11:40		
9038 Sulfate Water	Analytical Method: EPA 9038 Pace Analytical Services - Indianapolis							
Sulfate	**<50000**	ug/L	50000	5		10/28/21 16:45	14808-79-8	D3
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**949000**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<1000**	ug/L	1000	50		10/30/21 14:22		D3
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**6120000**	ug/L	100000	100		10/28/21 11:33	16887-00-6	
4500 Ammonia Water	Analytical Method: SM 4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**949000**	ug/L	10000	100		10/29/21 15:24	7664-41-7	P4

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

QC Batch: 646674
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300850001

METHOD BLANK: 2979830 Matrix: Water
Associated Lab Samples: 50300850001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	<50.0	50.0	10/27/21 16:28	

LABORATORY CONTROL SAMPLE: 2979831

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	10000	9320	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2979832 2979833

Parameter	Units	50300796003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	8010	10000	10000	16800	17000	88	90	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

QC Batch: 647763
QC Batch Method: EPA 5030B/8260
Analysis Method: EPA 5030B/8260
Analysis Description: 8260 MSV Low Level
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300850001

METHOD BLANK: 2984661 Matrix: Water
Associated Lab Samples: 50300850001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<1.0	1.0	10/29/21 13:54	
1,1,1-Trichloroethane	ug/L	<1.0	1.0	10/29/21 13:54	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	1.0	10/29/21 13:54	
1,1,2-Trichloroethane	ug/L	<1.0	1.0	10/29/21 13:54	
1,1-Dichloroethane	ug/L	<1.0	1.0	10/29/21 13:54	
1,1-Dichloroethene	ug/L	<1.0	1.0	10/29/21 13:54	
1,2,3-Trichloropropane	ug/L	<1.0	1.0	10/29/21 13:54	
1,2-Dichlorobenzene	ug/L	<1.0	1.0	10/29/21 13:54	
1,2-Dichloroethane	ug/L	<1.0	1.0	10/29/21 13:54	
1,2-Dichloropropane	ug/L	<1.0	1.0	10/29/21 13:54	
1,4-Dichlorobenzene	ug/L	<1.0	1.0	10/29/21 13:54	
Benzene	ug/L	<1.0	1.0	10/29/21 13:54	
Bromodichloromethane	ug/L	<1.0	1.0	10/29/21 13:54	
Bromoform	ug/L	<1.0	1.0	10/29/21 13:54	
Bromomethane	ug/L	<5.0	5.0	10/29/21 13:54	
Carbon tetrachloride	ug/L	<1.0	1.0	10/29/21 13:54	
Chlorobenzene	ug/L	<1.0	1.0	10/29/21 13:54	
Chloroethane	ug/L	<5.0	5.0	10/29/21 13:54	
Chloroform	ug/L	<1.0	1.0	10/29/21 13:54	
Chloromethane	ug/L	<5.0	5.0	10/29/21 13:54	
cis-1,2-Dichloroethene	ug/L	<1.0	1.0	10/29/21 13:54	
cis-1,3-Dichloropropene	ug/L	<1.0	1.0	10/29/21 13:54	
Dibromochloromethane	ug/L	<1.0	1.0	10/29/21 13:54	
Dibromomethane	ug/L	<1.0	1.0	10/29/21 13:54	
Ethylbenzene	ug/L	<1.0	1.0	10/29/21 13:54	
Iodomethane	ug/L	<1.0	1.0	10/29/21 13:54	
Methylene Chloride	ug/L	<5.0	5.0	10/29/21 13:54	
Styrene	ug/L	<1.0	1.0	10/29/21 13:54	
Tetrachloroethene	ug/L	<1.0	1.0	10/29/21 13:54	
Toluene	ug/L	<1.0	1.0	10/29/21 13:54	
trans-1,2-Dichloroethene	ug/L	<1.0	1.0	10/29/21 13:54	
trans-1,3-Dichloropropene	ug/L	<1.0	1.0	10/29/21 13:54	
Trichloroethene	ug/L	<1.0	1.0	10/29/21 13:54	
Trichlorofluoromethane	ug/L	<1.0	1.0	10/29/21 13:54	
Vinyl chloride	ug/L	<1.0	1.0	10/29/21 13:54	
Xylene (Total)	ug/L	<2.0	2.0	10/29/21 13:54	
4-Bromofluorobenzene (S)	%.	92	78-117	10/29/21 13:54	
Dibromofluoromethane (S)	%.	97	78-120	10/29/21 13:54	
Toluene-d8 (S)	%.	102	77-118	10/29/21 13:54	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

LABORATORY CONTROL SAMPLE: 2984662

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	52.8	106	76-125	
1,1,1-Trichloroethane	ug/L	50	50.8	102	73-132	
1,1,2,2-Tetrachloroethane	ug/L	50	45.9	92	65-131	
1,1,2-Trichloroethane	ug/L	50	53.1	106	74-127	
1,1-Dichloroethane	ug/L	50	50.0	100	73-133	
1,1-Dichloroethene	ug/L	50	51.0	102	67-136	
1,2,3-Trichloropropane	ug/L	50	44.5	89	69-126	
1,2-Dichlorobenzene	ug/L	50	48.1	96	75-114	
1,2-Dichloroethane	ug/L	50	52.8	106	69-135	
1,2-Dichloropropane	ug/L	50	54.6	109	78-134	
1,4-Dichlorobenzene	ug/L	50	47.8	96	69-117	
Benzene	ug/L	50	51.1	102	77-128	
Bromodichloromethane	ug/L	50	51.6	103	70-124	
Bromoform	ug/L	50	45.6	91	65-116	
Bromomethane	ug/L	50	36.3	73	10-200	
Carbon tetrachloride	ug/L	50	42.4	85	61-139	
Chlorobenzene	ug/L	50	48.8	98	76-124	
Chloroethane	ug/L	50	48.0	96	56-142	
Chloroform	ug/L	50	44.4	89	77-120	
Chloromethane	ug/L	50	36.6	73	29-141	
cis-1,2-Dichloroethene	ug/L	50	51.1	102	72-127	
cis-1,3-Dichloropropene	ug/L	50	53.5	107	71-131	
Dibromochloromethane	ug/L	50	51.2	102	69-132	
Dibromomethane	ug/L	50	43.5	87	76-130	
Ethylbenzene	ug/L	50	52.7	105	76-119	
Iodomethane	ug/L	50	17.9	36	10-200	
Methylene Chloride	ug/L	50	41.3	83	72-129	
Styrene	ug/L	50	60.6	121	66-123	
Tetrachloroethene	ug/L	50	52.8	106	70-124	
Toluene	ug/L	50	50.0	100	72-117	
trans-1,2-Dichloroethene	ug/L	50	48.8	98	75-133	
trans-1,3-Dichloropropene	ug/L	50	53.7	107	75-111	
Trichloroethene	ug/L	50	51.1	102	75-130	
Trichlorofluoromethane	ug/L	50	50.6	101	63-162	
Vinyl chloride	ug/L	50	49.2	98	51-140	
Xylene (Total)	ug/L	150	160	107	73-117	
4-Bromofluorobenzene (S)	%.			108	78-117	
Dibromofluoromethane (S)	%.			101	78-120	
Toluene-d8 (S)	%.			103	77-118	

MATRIX SPIKE SAMPLE: 2984663

Parameter	Units	50300937001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<1.0	50	50.0	100	40-147	
1,1,1-Trichloroethane	ug/L	<1.0	50	47.0	94	53-161	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

MATRIX SPIKE SAMPLE: 2984663

Parameter	Units	50300937001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,2,2-Tetrachloroethane	ug/L	<1.0	50	47.8	96	58-134	
1,1,2-Trichloroethane	ug/L	<1.0	50	51.6	103	60-141	
1,1-Dichloroethane	ug/L	<1.0	50	47.6	95	67-140	
1,1-Dichloroethene	ug/L	<1.0	50	52.0	104	59-154	
1,2,3-Trichloropropane	ug/L	<1.0	50	47.0	94	63-140	
1,2-Dichlorobenzene	ug/L	<1.0	50	45.2	90	17-145	
1,2-Dichloroethane	ug/L	<1.0	50	50.3	101	66-130	
1,2-Dichloropropane	ug/L	<1.0	50	53.9	108	65-136	
1,4-Dichlorobenzene	ug/L	<1.0	50	44.0	88	17-141	
Benzene	ug/L	<1.0	50	50.0	100	69-128	
Bromodichloromethane	ug/L	<1.0	50	50.2	100	51-138	
Bromoform	ug/L	<1.0	50	43.3	87	43-130	
Bromomethane	ug/L	<1.0	50	31.4	63	10-195	
Carbon tetrachloride	ug/L	<1.0	50	41.2	82	39-155	
Chlorobenzene	ug/L	<1.0	50	47.1	94	28-147	
Chloroethane	ug/L	<1.0	50	50.1	100	58-158	
Chloroform	ug/L	<1.0	50	42.8	86	54-141	
Chloromethane	ug/L	<1.0	50	34.9	70	41-145	
cis-1,2-Dichloroethene	ug/L	<1.0	50	49.2	98	45-150	
cis-1,3-Dichloropropene	ug/L	<1.0	50	49.6	99	42-139	
Dibromochloromethane	ug/L	<1.0	50	48.4	97	48-139	
Dibromomethane	ug/L	<1.0	50	41.9	84	58-140	
Ethylbenzene	ug/L	<1.0	50	49.8	100	36-144	
Iodomethane	ug/L	<5.0	50	22.3	45	10-196	
Methylene Chloride	ug/L	<5.0	50	38.5	77	58-136	
Styrene	ug/L	<1.0	50	54.5	109	19-143	
Tetrachloroethene	ug/L	<1.0	50	50.0	100	26-148	
Toluene	ug/L	<1.0	50	48.1	96	46-134	
trans-1,2-Dichloroethene	ug/L	<1.0	50	47.9	96	43-155	
trans-1,3-Dichloropropene	ug/L	<1.0	50	48.4	97	39-132	
Trichloroethene	ug/L	<1.0	50	49.7	99	35-151	
Trichlorofluoromethane	ug/L	<2.0	50	55.7	111	55-170	
Vinyl chloride	ug/L	<1.0	50	49.6	99	59-146	
Xylene (Total)	ug/L	<3.0	150	148	99	32-140	
4-Bromofluorobenzene (S)	%.				101	78-117	
Dibromofluoromethane (S)	%.				99	78-120	
Toluene-d8 (S)	%.				99	77-118	

SAMPLE DUPLICATE: 2984664

Parameter	Units	50300937002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<1.0	<1.0		20	
1,1,1-Trichloroethane	ug/L	<1.0	<1.0		20	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	<1.0		20	
1,1,2-Trichloroethane	ug/L	<1.0	<1.0		20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

SAMPLE DUPLICATE: 2984664

Parameter	Units	50300937002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1-Dichloroethane	ug/L	<1.0	<1.0		20	
1,1-Dichloroethene	ug/L	<1.0	<1.0		20	
1,2,3-Trichloropropane	ug/L	<1.0	<1.0		20	
1,2-Dichlorobenzene	ug/L	<1.0	<1.0		20	
1,2-Dichloroethane	ug/L	<1.0	<1.0		20	
1,2-Dichloropropane	ug/L	<1.0	<1.0		20	
1,4-Dichlorobenzene	ug/L	<1.0	<1.0		20	
Benzene	ug/L	<1.0	<1.0		20	
Bromodichloromethane	ug/L	<1.0	<1.0		20	
Bromoform	ug/L	<1.0	<1.0		20	
Bromomethane	ug/L	<1.0	<5.0		20	
Carbon tetrachloride	ug/L	<1.0	<1.0		20	
Chlorobenzene	ug/L	<1.0	<1.0		20	
Chloroethane	ug/L	<1.0	<5.0		20	
Chloroform	ug/L	<1.0	<1.0		20	
Chloromethane	ug/L	<1.0	<5.0		20	
cis-1,2-Dichloroethene	ug/L	<1.0	<1.0		20	
cis-1,3-Dichloropropene	ug/L	<1.0	<1.0		20	
Dibromochloromethane	ug/L	<1.0	<1.0		20	
Dibromomethane	ug/L	<1.0	<1.0		20	
Ethylbenzene	ug/L	<1.0	<1.0		20	
Iodomethane	ug/L	<5.0	<1.0		20	
Methylene Chloride	ug/L	<5.0	<5.0		20	
Styrene	ug/L	<1.0	<1.0		20	
Tetrachloroethene	ug/L	<1.0	<1.0		20	
Toluene	ug/L	<1.0	<1.0		20	
trans-1,2-Dichloroethene	ug/L	<1.0	<1.0		20	
trans-1,3-Dichloropropene	ug/L	<1.0	<1.0		20	
Trichloroethene	ug/L	<1.0	<1.0		20	
Trichlorofluoromethane	ug/L	<2.0	<1.0		20	
Vinyl chloride	ug/L	<1.0	<1.0		20	
Xylene (Total)	ug/L	<3.0	<2.0		20	
4-Bromofluorobenzene (S)	%.	91	91			
Dibromofluoromethane (S)	%.	97	98			
Toluene-d8 (S)	%.	102	102			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

QC Batch: 646522
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300850001

METHOD BLANK: 2979261 Matrix: Water
Associated Lab Samples: 50300850001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	ug/L	<20000	20000	10/23/21 11:35	

LABORATORY CONTROL SAMPLE: 2979262

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	ug/L	300000	275000	92	80-120	

SAMPLE DUPLICATE: 2979263

Parameter	Units	50300840005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	ug/L	1550 mg/L	1590000	3	10	

SAMPLE DUPLICATE: 2979264

Parameter	Units	50300841003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	ug/L	2680 mg/L	2560000	5	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

QC Batch: 647515
QC Batch Method: EPA 9038
Analysis Method: EPA 9038
Analysis Description: 9038 Sulfate Water
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300850001

METHOD BLANK: 2983279 Matrix: Water
Associated Lab Samples: 50300850001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	ug/L	<10000	10000	10/28/21 16:36	

LABORATORY CONTROL SAMPLE: 2983280

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	ug/L	20000	19000	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2983281 2983282

Parameter	Units	50300823016 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	ug/L	14.7 mg/L	20000	20000	38600	39100	119	122	90-110	1	20	M3

MATRIX SPIKE SAMPLE: 2983283

Parameter	Units	50300840001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	ug/L	2840 mg/L	5000000	6650000	76	90-110	M0

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

QC Batch: 647748
QC Batch Method: EPA 353.2
Analysis Method: EPA 353.2
Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300850001

METHOD BLANK: 2984608 Matrix: Water
Associated Lab Samples: 50300850001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	ug/L	<20.0	20.0	10/30/21 13:53	

LABORATORY CONTROL SAMPLE: 2984609

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	ug/L	2000	1880	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2984610 2984611

Parameter	Units	50300592001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	ug/L	<0.10 mg/L	2000	2000	1870	1890	93	94	90-110	1	20	

MATRIX SPIKE SAMPLE: 2984612

Parameter	Units	50300860004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	ug/L	<20.0	2000	1940	96	90-110	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

QC Batch: 647396
QC Batch Method: SM 4500-Cl-E
Analysis Method: SM 4500-Cl-E
Analysis Description: 4500 Chloride
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300850001

METHOD BLANK: 2982617 Matrix: Water
Associated Lab Samples: 50300850001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	ug/L	<1000	1000	10/28/21 11:11	

LABORATORY CONTROL SAMPLE: 2982618

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	ug/L	20000	20000	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2982619 2982620

Parameter	Units	50300849005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	ug/L	5.2 mg/L	20000	20000	26200	26300	105	106	90-110	0	20	

MATRIX SPIKE SAMPLE: 2982621

Parameter	Units	50300851002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	ug/L	45900	20000	63800	89	90-110	M0

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

QC Batch: 647627
QC Batch Method: SM 4500-NH3 G
Analysis Method: SM 4500-NH3 G
Analysis Description: 4500 Ammonia
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300850001

METHOD BLANK: 2983988 Matrix: Water
Associated Lab Samples: 50300850001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	ug/L	<100	100	10/29/21 15:01	

LABORATORY CONTROL SAMPLE: 2983989

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	ug/L	5000	5220	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2983990 2983991

Parameter	Units	50300796008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	ug/L	1.3 mg/L	5000	5000	6310	6300	101	101	90-110	0	20	

MATRIX SPIKE SAMPLE: 2983992

Parameter	Units	50300781003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	ug/L	5.2 mg/L	5000	9910	95	90-110	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALIFIERS

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
F1	The sample was analyzed at a dilution due to foaming of the sample in the purge vessel.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
P4	Sample field preservation does not meet EPA or method recommendations for this analysis.

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Smith's Creek Landfill Leachat
Pace Project No.: 50300850

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50300850001	**Leachate**	EPA 3010	646674	EPA 6010	647125
50300850001	**Leachate**	EPA 5030B/8260	647763		
50300850001	**Leachate**	SM 2540C	646522		
50300850001	**Leachate**	EPA 9038	647515		
50300850001	**Leachate**	NO2+NO3+NH3 Calculation	648899		
50300850001	**Leachate**	EPA 353.2	647748		
50300850001	**Leachate**	SM 4500-Cl-E	647396		
50300850001	**Leachate**	SM 4500-NH3 G	647627		

Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request D

WO# : 50300850

50300850

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields mu

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at https://info.pac

Section A
Required Client Information:

Company:	Golder Associates, Inc. - MI
Address:	27200 Haggerty Rd. Suite B-12
	Farmington, MI 48331
Email:	sean_paulsen@golder.com
Phone:	NONE Fax:
Requested Due Date:	

Section B
Required Project Information:

Report To:	Sean Paulsen
Copy To:	
Purchase Order #:	
Project Name:	Smith's Creek Leachate
Project #:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	jennifer.rice@pacelabs.com,
Pace Profile #:	8219

Regulatory Agency

State / Location

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: VOC - 8260	TDS	Cl, SO4	NH3, NPN, TIN	Total Iron	Residual Chlorine (Y/N)
1	Leachate	WW	G			10-20-21	1530	19.8	7	2	1	1	3					X	X	X	X	X		
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Sampler	10-21-21	1400		10-21-21	1400	
		10.21.21	1730		10/21/21	1730	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Arthur O. Rose III

SIGNATURE of SAMPLER:

DATE Signed: 10-21-21

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical®

Sample Conditions Upon Receipt Form (SCUR)

WO# : 50300850

PM: JLR1 Due Date: 11/05/21

CLIENT: GR-Golder

Date/Time: 10/21/21	**Evaluated by:** DN			
Client: Golder Assoc.				
Project Manager: JLR	**Profile ID:** 8219			
Rush TAT Requested: YES ✓NO **Due Date:**				
Lab Notified of Rush or Short Holds: ✓YES NO		**Non Conformance Form Required:** YES ✓NO		
Samples Received Via: FedEx UPS Client ✓Pace Courier Other: _____				**Comments:**
Custody Seals Present and Intact:	YES	NO	✓NA	
Received Sample Information Form(s): Drinking Waters Only	YES	NO	✓NA	
USDA Regulated Soils: (AL, AR, CA, FL, GA, ID, LA, MS, NM, NY, NC, OK, OR, SC, TN, TX, WA or Puerto Rico)	YES	NO	✓N/A	
Short Holds Present (< 72 Hours):	YES	✓NO		
Samples Received in Hold:	✓YES	NO		
Custody Signatures Present:	✓YES	NO		
Collector Signature Present:	✓YES	NO		
Packing Material Used:	✓YES	NO		
Samples Collected Today and On Ice:	YES	NO	✓N/A	
IR Gun #: ✓280 281	**Digital Thermometer #:** 282 ✓283			
Ice Type: ✓WET Bagged / WET Loose BLUE NONE	**1.** Cooler Temp Upon Receipt: 1.2 / 1.7 °C			
Ice Location: TOP BOTTOM MIDDLE ✓DISPERSED	Temp should be 0-6°C (Initial/Corrected)			
Temp Blank Received:	✓YES	NO		
Containers Intact:	✓YES	NO		
Correct Containers:	✓YES	NO		
Sufficient Volume:	✓YES	NO		
Sample pH Acceptable: All containers needing preservation are found to be in complaince with EPA recommendation **pH Strip Lot #:** HC157843 *Exceptions are VOA, coliform, LLHg, O&G, or any container with a septum cap or preserved with HCl*	YES	✓NO	N/A	
Residual Chlorine Absent: **Cl_2 Strip Lot #:** _____ (SVOC/Pest 625, PCB 608, Total/Amenable Cyanide)	YES	NO	✓N/A	
VOA Headspace Acceptable (<6mm):	YES	✓NO	N/A	
Trip Blank Received: ✓HCl MeOH TSP OTHER	✓YES	~~✓NO~~ DN 10/22		Hold
Comments:	**2.** Cooler Temp Upon Receipt: _____ °C			
	3. Cooler Temp Upon Receipt: _____ °C			
	4. Cooler Temp Upon Receipt: _____ °C			

Sample Receiving Non-Conformance Form (NCF)

WO#: 50300850

PM: JLR1 Due Date: 11/05/21

CLIENT: GR-Golder

Af L		COC Integrity Issues: Check issues below and add details where appropriate		Sample Intergrity Issues: Check issues below and add details where appropriate		
Date: 10/21/21		COC does not match samples received (missing, additional, etc.)		Custody seal(s) damaged or missing on coolers, samples, or trip blanks		*Insufficient sample volume received
Evaluated by: JN		COC sample ID does not match sample label		Cooler or sample container broken or compromised		*Sample contains residual chlorine
Client: Golder Assoc.		*COC collection date/time missing or does not match sample label		*Sample past holding time	✓	Improper preservation
***Drinking Water Deficiency:** Samples may be invalid. Analysis must not proceed without client written permission.		*Analyses/ analytes missing or clarification needed		*Temperature not within acceptance criteria (typically 0-6°C)		*Sample contains interferences (multi-phasic, solids, color, odor, etc...)
		*Required signatures are missing		*Sample arrived frozen or partially frozen	✓	Vial(s) received with improper headspace (>6mm)
*No Sample Information Form (SIF) received with sample(s)		*Residual Chlorine presence/ absence not indicated on COC		*Incorrect or improper containers received		Other: See notes below

COC					Sample Label					Sample Notes
Sample ID	Date	Time	Container Type	Quantity	Sample ID	Date	Time	Container Type	Quantity	
					Leachate			3P3N		pH = 6
					↓			3P3S		pH = 6
								VG9H		(2 of 3) Headspace

General Comments/ Client Instructions:

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

November 15, 2021

Sean Paulsen
Golder Associates, Inc.
27200 Haggerty Rd. Suite B-12
Farmington, MI 48331

RE: Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Dear Sean Paulsen:

Enclosed are the analytical results for sample(s) received by the laboratory on October 21, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Indianapolis

This report replaces the one issued 11/5/21. It was revised to correct the inorganic nitrogen calculation for MW-302. JLR 11/15/21

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Rice
jennifer.rice@pacelabs.com
(616)975-4500
Project Manager

Enclosures

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

CERTIFICATIONS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Pace Analytical Services Indianapolis

7726 Moller Road, Indianapolis, IN 46268
Illinois Accreditation #: 200074
Indiana Drinking Water Laboratory #: C-49-06
Kansas/TNI Certification #: E-10177
Kentucky UST Agency Interest #: 80226
Kentucky WW Laboratory ID #: 98019
Michigan Drinking Water Laboratory #9050
Ohio VAP Certified Laboratory #: CL0065
Oklahoma Laboratory #: 9204
Texas Certification #: T104704355
Wisconsin Laboratory #: 999788130
USDA Soil Permit #: P330-19-00257

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SAMPLE SUMMARY

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Lab ID	Sample ID	Matrix	Date Collected	Date Received
50300899001	**MW-101**	Water	10/19/21 13:05	10/21/21 17:30
50300899002	**MW-106A**	Water	10/19/21 09:45	10/21/21 17:30
50300899003	**MW-201**	Water	10/19/21 08:45	10/21/21 17:30
50300899004	**MW-202**	Water	10/19/21 14:45	10/21/21 17:30
50300899005	**MW-203BR**	Water	10/20/21 12:45	10/21/21 17:30
50300899006	**MW-207A**	Water	10/20/21 09:00	10/21/21 17:30
50300899007	**MW-208B**	Water	10/19/21 10:45	10/21/21 17:30
50300899008	**MW-209**	Water	10/19/21 09:45	10/21/21 17:30
50300899009	**MW-210**	Water	10/19/21 09:30	10/21/21 17:30
50300899010	**MW-212**	Water	10/19/21 09:00	10/21/21 17:30
50300899011	**MW-213**	Water	10/19/21 16:05	10/21/21 17:30
50300899012	**MW-301**	Water	10/18/21 17:35	10/21/21 17:30
50300899013	**MW-302**	Water	10/18/21 15:40	10/21/21 17:30
50300899014	**MW-303A**	Water	10/20/21 11:30	10/21/21 17:30
50300899015	**MW-304**	Water	10/19/21 16:05	10/21/21 17:30
50300899016	**MW-305**	Water	10/19/21 09:15	10/21/21 17:30

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SAMPLE ANALYTE COUNT

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
50300899001	**MW-101**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899002	**MW-106A**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899003	**MW-201**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899004	**MW-202**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899005	**MW-203BR**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899006	**MW-207A**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899007	**MW-208B**	EPA 6010	JPK	2	PASI-I

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SAMPLE ANALYTE COUNT

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899008	**MW-209**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899009	**MW-210**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899010	**MW-212**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899011	**MW-213**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899012	**MW-301**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899013	**MW-302**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I

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SAMPLE ANALYTE COUNT

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899014	**MW-303A**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899015	**MW-304**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50300899016	**MW-305**	EPA 6010	JPK	2	PASI-I
		NO2+NO3+NH3 Calculation	SEP	1	PASI-I
		EPA 353.2	SKK	1	PASI-I
		SM 4500-Cl-E	SKK	1	PASI-I
		SM-4500-NH3 G	MMS	1	PASI-I
		SM 5310C	GWA	1	PASI-I

PASI-I = Pace Analytical Services - Indianapolis

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-101 **Lab ID: 50300899001** Collected: 10/19/21 13:05 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1520**	ug/L	500	1	10/29/21 06:38	10/29/21 22:12	7440-09-7	
Sodium, Dissolved	**67600**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:12	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**146**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 16:32		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**25400**	ug/L	1000	1		10/28/21 12:26	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**146**	ug/L	20.0	1		10/27/21 12:00	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1010**	ug/L	500	1		11/02/21 12:39	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-106A **Lab ID: 50300899002** Collected: 10/19/21 09:45 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1140**	ug/L	500	1	10/29/21 06:38	10/29/21 22:14	7440-09-7	
Sodium, Dissolved	**77500**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:14	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**81.3**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 16:33		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**38700**	ug/L	1000	1		10/28/21 12:27	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**81.3**	ug/L	20.0	1		10/27/21 12:01	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1440**	ug/L	500	1		11/02/21 12:58	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-201 **Lab ID: 50300899003** Collected: 10/19/21 08:45 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1260**	ug/L	500	1	10/29/21 06:38	10/29/21 22:16	7440-09-7	
Sodium, Dissolved	**66300**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:16	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**102**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**102**	ug/L	20.0	1		10/30/21 16:35		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**18100**	ug/L	1000	1		10/28/21 12:28	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**<20.0**	ug/L	20.0	1		10/27/21 12:03	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1010**	ug/L	500	1		11/02/21 13:24	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-202 **Lab ID: 50300899004** Collected: 10/19/21 14:45 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1220**	ug/L	500	1	10/29/21 06:38	10/29/21 22:25	7440-09-7	
Sodium, Dissolved	**67900**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:25	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**136**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 16:37		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**30200**	ug/L	1000	1		10/28/21 12:32	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**136**	ug/L	20.0	1		10/27/21 12:04	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**943**	ug/L	500	1		11/02/21 14:02	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-203BR **Lab ID: 50300899005** Collected: 10/20/21 12:45 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**5940**	ug/L	500	1	10/29/21 06:38	10/29/21 22:27	7440-09-7	
Sodium, Dissolved	**86700**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:27	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**205**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 16:39		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**40000**	ug/L	1000	1		10/28/21 12:33	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**205**	ug/L	20.0	1		10/27/21 12:07	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1480**	ug/L	500	1		11/02/21 14:21	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-207A **Lab ID: 50300899006** Collected: 10/20/21 09:00 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1500**	ug/L	500	1	10/29/21 06:38	10/29/21 22:29	7440-09-7	
Sodium, Dissolved	**70000**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:29	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**46.9**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**46.9**	ug/L	20.0	1		10/30/21 16:44		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**19200**	ug/L	1000	1		10/28/21 12:34	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**<20.0**	ug/L	20.0	1		10/27/21 12:08	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**11400**	ug/L	500	1		11/04/21 18:48	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-208B **Lab ID: 50300899007** Collected: 10/19/21 10:45 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1280**	ug/L	500	1	10/29/21 06:38	10/29/21 22:35	7440-09-7	
Sodium, Dissolved	**82500**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:35	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**275**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 16:46		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**32500**	ug/L	1000	1		10/28/21 12:35	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**275**	ug/L	20.0	1		10/27/21 12:14	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1500**	ug/L	500	1		11/04/21 18:58	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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4171 40th St. SE
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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-209 **Lab ID: 50300899008** Collected: 10/19/21 09:45 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1020**	ug/L	500	1	10/29/21 06:38	10/29/21 22:37	7440-09-7	
Sodium, Dissolved	**90900**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:37	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**104**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**44.0**	ug/L	20.0	1		10/30/21 16:48		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**35200**	ug/L	1000	1		10/28/21 12:36	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**59.6**	ug/L	20.0	1		10/27/21 12:16	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1410**	ug/L	500	1		11/04/21 19:08	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-210 **Lab ID: 50300899009** Collected: 10/19/21 09:30 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1690**	ug/L	500	1	10/29/21 06:38	10/29/21 22:39	7440-09-7	
Sodium, Dissolved	**114000**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:39	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**82.7**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 16:49		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**29300**	ug/L	1000	1		10/28/21 12:37	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**82.7**	ug/L	20.0	1		10/27/21 12:17	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1730**	ug/L	500	1		11/04/21 19:17	7440-44-0	

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-212 **Lab ID: 50300899010** Collected: 10/19/21 09:00 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**951**	ug/L	500	1	10/29/21 06:38	10/29/21 22:41	7440-09-7	
Sodium, Dissolved	**88200**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:41	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**24.2**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 16:51		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**31700**	ug/L	1000	1		10/28/21 12:38	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**24.2**	ug/L	20.0	1		10/27/21 12:18	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1830**	ug/L	500	1		11/04/21 19:27	7440-44-0	

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-213 **Lab ID: 50300899011** Collected: 10/19/21 16:05 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1400**	ug/L	500	1	10/29/21 06:38	10/29/21 22:44	7440-09-7	
Sodium, Dissolved	**79200**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:44	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**155**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 16:53		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**31800**	ug/L	1000	1		10/28/21 12:39	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**155**	ug/L	20.0	1		10/27/21 12:22	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1260**	ug/L	500	1		11/04/21 19:37	7440-44-0	

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-301 **Lab ID: 50300899012** Collected: 10/18/21 17:35 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1060**	ug/L	500	1	10/29/21 06:38	10/29/21 22:46	7440-09-7	
Sodium, Dissolved	**97300**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:46	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**190**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 16:55		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**41400**	ug/L	1000	1		10/28/21 12:40	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**190**	ug/L	20.0	1		10/27/21 12:23	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1350**	ug/L	500	1		11/04/21 19:47	7440-44-0	

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-302 **Lab ID: 50300899013** Collected: 10/18/21 15:40 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1450**	ug/L	500	1	10/29/21 06:38	10/29/21 22:48	7440-09-7	
Sodium, Dissolved	**94500**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:48	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**177**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 16:57		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**37400**	ug/L	1000	1		10/28/21 12:46	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**177**	ug/L	20.0	1		10/27/21 12:27	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1310**	ug/L	500	1		11/04/21 20:38	7440-44-0	

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-303A **Lab ID: 50300899014** Collected: 10/20/21 11:30 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1010**	ug/L	500	1	10/29/21 06:38	10/29/21 22:50	7440-09-7	
Sodium, Dissolved	**103000**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:50	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**100**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 16:58		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**41900**	ug/L	1000	1		10/28/21 12:49	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**100**	ug/L	20.0	1		10/27/21 12:28	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1310**	ug/L	500	1		11/04/21 20:48	7440-44-0	

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-304 **Lab ID: 50300899015** Collected: 10/19/21 16:05 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1380**	ug/L	500	1	10/29/21 06:38	10/29/21 22:52	7440-09-7	
Sodium, Dissolved	**78900**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:52	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**157**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 17:00		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**31100**	ug/L	1000	1		10/28/21 12:50	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**157**	ug/L	20.0	1		10/27/21 12:30	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1210**	ug/L	500	1		11/04/21 20:57	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Sample: MW-305 **Lab ID: 50300899016** Collected: 10/19/21 09:15 Received: 10/21/21 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Indianapolis							
Potassium, Dissolved	**1480**	ug/L	500	1	10/29/21 06:38	10/29/21 22:54	7440-09-7	
Sodium, Dissolved	**89700**	ug/L	1000	1	10/29/21 06:38	10/29/21 22:54	7440-23-5	
Total Inorganic Nitrogen	Analytical Method: NO2+NO3+NH3 Calculation Pace Analytical Services - Indianapolis							
Total Inorganic Nitrogen	**35.2**	ug/L	20.0	1		11/05/21 15:00		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Indianapolis							
Nitrogen, NO2 plus NO3	**<20.0**	ug/L	20.0	1		10/30/21 17:11		
4500 Chloride	Analytical Method: SM 4500-Cl-E Pace Analytical Services - Indianapolis							
Chloride	**33400**	ug/L	1000	1		10/28/21 12:51	16887-00-6	
4500 Ammonia Water Low Level	Analytical Method: SM-4500-NH3 G Pace Analytical Services - Indianapolis							
Nitrogen, Ammonia	**35.2**	ug/L	20.0	1		10/27/21 12:31	7664-41-7	
5310C TOC	Analytical Method: SM 5310C Pace Analytical Services - Indianapolis							
Total Organic Carbon	**1660**	ug/L	500	1		11/04/21 21:07	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

QC Batch: 647315
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET Dissolved
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300899001, 50300899002, 50300899003, 50300899004, 50300899005, 50300899006, 50300899007, 50300899008, 50300899009, 50300899010, 50300899011, 50300899012, 50300899013, 50300899014, 50300899015, 50300899016

METHOD BLANK: 2982409
Matrix: Water
Associated Lab Samples: 50300899001, 50300899002, 50300899003, 50300899004, 50300899005, 50300899006, 50300899007, 50300899008, 50300899009, 50300899010, 50300899011, 50300899012, 50300899013, 50300899014, 50300899015, 50300899016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Potassium, Dissolved	ug/L	<500	500	10/29/21 22:06	
Sodium, Dissolved	ug/L	<1000	1000	10/29/21 22:06	

LABORATORY CONTROL SAMPLE: 2982410

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium, Dissolved	ug/L	10000	9310	93	80-120	
Sodium, Dissolved	ug/L	10000	9180	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2982411 2982412

Parameter	Units	50300899003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Potassium, Dissolved	ug/L	1260	10000	10000	10700	10800	95	95	75-125	1	20	
Sodium, Dissolved	ug/L	66300	10000	10000	73600	75900	74	96	75-125	3	20	P6

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QUALITY CONTROL DATA

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

QC Batch: 647810
QC Batch Method: EPA 353.2
Analysis Method: EPA 353.2
Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300899001, 50300899002, 50300899003, 50300899004, 50300899005, 50300899006, 50300899007, 50300899008, 50300899009, 50300899010, 50300899011, 50300899012, 50300899013, 50300899014, 50300899015

METHOD BLANK: 2984789 Matrix: Water
Associated Lab Samples: 50300899001, 50300899002, 50300899003, 50300899004, 50300899005, 50300899006, 50300899007, 50300899008, 50300899009, 50300899010, 50300899011, 50300899012, 50300899013, 50300899014, 50300899015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	ug/L	<20.0	20.0	10/30/21 16:12	

LABORATORY CONTROL SAMPLE: 2984790

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	ug/L	2000	1890	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2984791 2984792

Parameter	Units	50300860025 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	ug/L	<20.0	2000	2000	1680	1840	83	91	90-110	9	20	M0

MATRIX SPIKE SAMPLE: 2984793

Parameter	Units	50300899015 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	ug/L	<20.0	2000	1870	93	90-110	

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QUALITY CONTROL DATA

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

QC Batch: 647811
QC Batch Method: EPA 353.2
Analysis Method: EPA 353.2
Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300899016

METHOD BLANK: 2984794 Matrix: Water
Associated Lab Samples: 50300899016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	ug/L	<20.0	20.0	10/30/21 17:07	

LABORATORY CONTROL SAMPLE: 2984795

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	ug/L	2000	1860	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2984796 2984797

Parameter	Units	50300926005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	ug/L	ND	2000	2000	703	717	35	36	90-110	2	20	M3

MATRIX SPIKE SAMPLE: 2984798

Parameter	Units	50300926014 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	ug/L	ND	2000	1190	58	90-110	M0

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QUALITY CONTROL DATA

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

QC Batch: 647398
QC Batch Method: SM 4500-Cl-E
Analysis Method: SM 4500-Cl-E
Analysis Description: 4500 Chloride
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300899001, 50300899002, 50300899003, 50300899004, 50300899005, 50300899006, 50300899007, 50300899008, 50300899009, 50300899010, 50300899011, 50300899012

METHOD BLANK: 2982627 Matrix: Water
Associated Lab Samples: 50300899001, 50300899002, 50300899003, 50300899004, 50300899005, 50300899006, 50300899007, 50300899008, 50300899009, 50300899010, 50300899011, 50300899012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	ug/L	<1000	1000	10/28/21 12:12	

LABORATORY CONTROL SAMPLE: 2982628

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	ug/L	20000	19900	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2982629 2982630

Parameter	Units	50300860022 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	ug/L	469000	400000	400000	863000	858000	99	97	90-110	1	20	

MATRIX SPIKE SAMPLE: 2982631

Parameter	Units	50300899012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	ug/L	41400	20000	60500	96	90-110	

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QUALITY CONTROL DATA

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

QC Batch: 647399
QC Batch Method: SM 4500-Cl-E
Analysis Method: SM 4500-Cl-E
Analysis Description: 4500 Chloride
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300899013, 50300899014, 50300899015, 50300899016

METHOD BLANK: 2982632 Matrix: Water
Associated Lab Samples: 50300899013, 50300899014, 50300899015, 50300899016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	ug/L	<1000	1000	10/28/21 12:44	

LABORATORY CONTROL SAMPLE: 2982633

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	ug/L	20000	20200	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2982634 2982635

Parameter	Units	50300899013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	ug/L	37400	20000	20000	56700	56000	97	93	90-110	1	20	

MATRIX SPIKE SAMPLE: 2982636

Parameter	Units	50301017011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	ug/L	12.2 mg/L	20000	33600	107	90-110	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

QC Batch: 647122
QC Batch Method: SM-4500-NH3 G
Analysis Method: SM-4500-NH3 G
Analysis Description: 4500 Ammonia Low Level
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300899001, 50300899002, 50300899003, 50300899004, 50300899005, 50300899006

METHOD BLANK: 2981573 Matrix: Water
Associated Lab Samples: 50300899001, 50300899002, 50300899003, 50300899004, 50300899005, 50300899006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	ug/L	<20.0	20.0	10/27/21 11:32	

LABORATORY CONTROL SAMPLE: 2981574

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	ug/L	1000	1020	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2981575 2981576

Parameter	Units	50300860019 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	ug/L	48.6	1000	1000	1020	1020	97	97	90-110	1	20	

MATRIX SPIKE SAMPLE: 2981577

Parameter	Units	50300899004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	ug/L	136	1000	1130	99	90-110	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

QC Batch: 647123
QC Batch Method: SM-4500-NH3 G
Analysis Method: SM-4500-NH3 G
Analysis Description: 4500 Ammonia Low Level
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300899007, 50300899008, 50300899009, 50300899010, 50300899011, 50300899012, 50300899013, 50300899014, 50300899015, 50300899016

METHOD BLANK: 2981579 Matrix: Water
Associated Lab Samples: 50300899007, 50300899008, 50300899009, 50300899010, 50300899011, 50300899012, 50300899013, 50300899014, 50300899015, 50300899016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	ug/L	<20.0	20.0	10/27/21 12:12	

LABORATORY CONTROL SAMPLE: 2981580

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	ug/L	1000	1010	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2981581 2981582

Parameter	Units	50300899010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	ug/L	24.2	1000	1000	991	995	97	97	90-110	0	20	

MATRIX SPIKE SAMPLE: 2981583

Parameter	Units	50300937004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	ug/L	0.37 mg/L	1000	1150	78	90-110	M0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

QC Batch: 647982 — Analysis Method: SM 5310C
QC Batch Method: SM 5310C — Analysis Description: 5310C Total Organic Carbon
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300899001, 50300899002, 50300899003, 50300899004, 50300899005

METHOD BLANK: 2985566 Matrix: Water
Associated Lab Samples: 50300899001, 50300899002, 50300899003, 50300899004, 50300899005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	ug/L	<500	500	11/02/21 04:36	

LABORATORY CONTROL SAMPLE: 2985567

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	ug/L	10000	9610	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2985568 2985569

Parameter	Units	50300860022 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	ug/L	1530	10000	10000	11600	11600	101	101	80-120	0	20	

MATRIX SPIKE SAMPLE: 2985570

Parameter	Units	50300899003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	ug/L	1010	10000	11100	101	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

QC Batch: 648724 — Analysis Method: SM 5310C
QC Batch Method: SM 5310C — Analysis Description: 5310C Total Organic Carbon
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 50300899006, 50300899007, 50300899008, 50300899009, 50300899010, 50300899011, 50300899012, 50300899013, 50300899014, 50300899015, 50300899016

METHOD BLANK: 2989173 — Matrix: Water
Associated Lab Samples: 50300899006, 50300899007, 50300899008, 50300899009, 50300899010, 50300899011, 50300899012, 50300899013, 50300899014, 50300899015, 50300899016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	ug/L	<500	500	11/04/21 18:25	

LABORATORY CONTROL SAMPLE: 2989174

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	ug/L	10000	10400	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2989175 2989176

Parameter	Units	50300899012 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	ug/L	1350	10000	10000	11400	11400	100	100	80-120	0	20	

MATRIX SPIKE SAMPLE: 2989177

Parameter	Units	50300871001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	ug/L	8.2 mg/L	10000	19200	110	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALIFIERS

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50300899001	**MW-101**	EPA 3010	647315	EPA 6010	647790
50300899002	**MW-106A**	EPA 3010	647315	EPA 6010	647790
50300899003	**MW-201**	EPA 3010	647315	EPA 6010	647790
50300899004	**MW-202**	EPA 3010	647315	EPA 6010	647790
50300899005	**MW-203BR**	EPA 3010	647315	EPA 6010	647790
50300899006	**MW-207A**	EPA 3010	647315	EPA 6010	647790
50300899007	**MW-208B**	EPA 3010	647315	EPA 6010	647790
50300899008	**MW-209**	EPA 3010	647315	EPA 6010	647790
50300899009	**MW-210**	EPA 3010	647315	EPA 6010	647790
50300899010	**MW-212**	EPA 3010	647315	EPA 6010	647790
50300899011	**MW-213**	EPA 3010	647315	EPA 6010	647790
50300899012	**MW-301**	EPA 3010	647315	EPA 6010	647790
50300899013	**MW-302**	EPA 3010	647315	EPA 6010	647790
50300899014	**MW-303A**	EPA 3010	647315	EPA 6010	647790
50300899015	**MW-304**	EPA 3010	647315	EPA 6010	647790
50300899016	**MW-305**	EPA 3010	647315	EPA 6010	647790
50300899001	**MW-101**	NO2+NO3+NH3 Calculation	648899		
50300899002	**MW-106A**	NO2+NO3+NH3 Calculation	648899		
50300899003	**MW-201**	NO2+NO3+NH3 Calculation	648899		
50300899004	**MW-202**	NO2+NO3+NH3 Calculation	648899		
50300899005	**MW-203BR**	NO2+NO3+NH3 Calculation	648899		
50300899006	**MW-207A**	NO2+NO3+NH3 Calculation	648899		
50300899007	**MW-208B**	NO2+NO3+NH3 Calculation	648899		
50300899008	**MW-209**	NO2+NO3+NH3 Calculation	648899		
50300899009	**MW-210**	NO2+NO3+NH3 Calculation	648899		
50300899010	**MW-212**	NO2+NO3+NH3 Calculation	648899		
50300899011	**MW-213**	NO2+NO3+NH3 Calculation	648899		
50300899012	**MW-301**	NO2+NO3+NH3 Calculation	648899		
50300899013	**MW-302**	NO2+NO3+NH3 Calculation	648899		
50300899014	**MW-303A**	NO2+NO3+NH3 Calculation	648899		
50300899015	**MW-304**	NO2+NO3+NH3 Calculation	648899		
50300899016	**MW-305**	NO2+NO3+NH3 Calculation	648899		
50300899001	**MW-101**	EPA 353.2	647810		
50300899002	**MW-106A**	EPA 353.2	647810		
50300899003	**MW-201**	EPA 353.2	647810		
50300899004	**MW-202**	EPA 353.2	647810		
50300899005	**MW-203BR**	EPA 353.2	647810		

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50300899006	MW-207A	EPA 353.2	647810		
50300899007	MW-208B	EPA 353.2	647810		
50300899008	MW-209	EPA 353.2	647810		
50300899009	MW-210	EPA 353.2	647810		
50300899010	MW-212	EPA 353.2	647810		
50300899011	MW-213	EPA 353.2	647810		
50300899012	MW-301	EPA 353.2	647810		
50300899013	MW-302	EPA 353.2	647810		
50300899014	MW-303A	EPA 353.2	647810		
50300899015	MW-304	EPA 353.2	647810		
50300899016	MW-305	EPA 353.2	647811		
50300899001	MW-101	SM 4500-Cl-E	647398		
50300899002	MW-106A	SM 4500-Cl-E	647398		
50300899003	MW-201	SM 4500-Cl-E	647398		
50300899004	MW-202	SM 4500-Cl-E	647398		
50300899005	MW-203BR	SM 4500-Cl-E	647398		
50300899006	MW-207A	SM 4500-Cl-E	647398		
50300899007	MW-208B	SM 4500-Cl-E	647398		
50300899008	MW-209	SM 4500-Cl-E	647398		
50300899009	MW-210	SM 4500-Cl-E	647398		
50300899010	MW-212	SM 4500-Cl-E	647398		
50300899011	MW-213	SM 4500-Cl-E	647398		
50300899012	MW-301	SM 4500-Cl-E	647398		
50300899013	MW-302	SM 4500-Cl-E	647399		
50300899014	MW-303A	SM 4500-Cl-E	647399		
50300899015	MW-304	SM 4500-Cl-E	647399		
50300899016	MW-305	SM 4500-Cl-E	647399		
50300899001	MW-101	SM-4500-NH3 G	647122		
50300899002	MW-106A	SM-4500-NH3 G	647122		
50300899003	MW-201	SM-4500-NH3 G	647122		
50300899004	MW-202	SM-4500-NH3 G	647122		
50300899005	MW-203BR	SM-4500-NH3 G	647122		
50300899006	MW-207A	SM-4500-NH3 G	647122		
50300899007	MW-208B	SM-4500-NH3 G	647123		
50300899008	MW-209	SM-4500-NH3 G	647123		
50300899009	MW-210	SM-4500-NH3 G	647123		
50300899010	MW-212	SM-4500-NH3 G	647123		
50300899011	MW-213	SM-4500-NH3 G	647123		
50300899012	MW-301	SM-4500-NH3 G	647123		
50300899013	MW-302	SM-4500-NH3 G	647123		
50300899014	MW-303A	SM-4500-NH3 G	647123		
50300899015	MW-304	SM-4500-NH3 G	647123		
50300899016	MW-305	SM-4500-NH3 G	647123		
50300899001	MW-101	SM 5310C	647982		
50300899002	MW-106A	SM 5310C	647982		
50300899003	MW-201	SM 5310C	647982		

Pace Analytical Services, LLC
4171 40th St. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Smith's Creek Landfill GW
Pace Project No.: 50300899

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50300899004	**MW-202**	SM 5310C	647982		
50300899005	**MW-203BR**	SM 5310C	647982		
50300899006	**MW-207A**	SM 5310C	648724		
50300899007	**MW-208B**	SM 5310C	648724		
50300899008	**MW-209**	SM 5310C	648724		
50300899009	**MW-210**	SM 5310C	648724		
50300899010	**MW-212**	SM 5310C	648724		
50300899011	**MW-213**	SM 5310C	648724		
50300899012	**MW-301**	SM 5310C	648724		
50300899013	**MW-302**	SM 5310C	648724		
50300899014	**MW-303A**	SM 5310C	648724		
50300899015	**MW-304**	SM 5310C	648724		
50300899016	**MW-305**	SM 5310C	648724		

CHAIN-OF-CUSTODY / Analytical Request D

WO# : 50300899

50300899

Pace Analytical
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The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields mu

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at https://info.pac

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:	
Company: Golder Associates, Inc. - MI	Report To: Sean Paulsen	Attention:	Regulatory Agency
Address: 27200 Haggerty Rd. Suite B-12	Copy To:	Company Name:	
Farmington, MI 48331		Address:	State / Location
Email: sean_paulsen@golder.com	Purchase Order #:	Pace Quote:	
Phone: NONE Fax:	Project Name: Smith's Creek GW	Pace Project Manager: jennifer.rice@pacelabs.com,	
Requested Due Date:	Project #:	Pace Profile #: 8284	

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: Cl	NH3, NPN, TIN	Dissolved Metals	TOC	Residual Chlorine (Y/N)
1	MW-101	GW	G			10-19-21	1305	12.8	4	1	2	1							X	X	X	X	
2	MW-106A					10-19-21	0945	12.4															
3	MW-201					10-19-21	0845	10.9															
4	MW-202					10-19-21	1445	12.8															
5	MW-203BR					10-20-21	1245	12.9															
6	MW-207A					10-20-21	0900	11.9															
7	MW-208B					10-19-21	1045	12.5															
8	MW-209					10-19-21	0945	11.1															
9	MW-210					10-19-21	0930	11.2															
10	MW-212					10-19-21	0900	10.9															
11	MW-213					10-19-21	1605	12.4															
12	MW-301	↓	↓			10-18-21	1735	12.1	↓	↓	↓	↓							↓	↓	↓	↓	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Sampler	10-21-21	1400		10-21-21	1400	
		10-21-21	1730				

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Arthur D. Rossiff

SIGNATURE of SAMPLER:

DATE Signed: 10-21-21

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

CHAIN-OF-CUSTODY / Analytical Request Document

Pace Analytical
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The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at https://info.pacelabs.com/hubfs/pas-standard-terms.pdf.

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Golder Associates, Inc. - MI	Report To:	Sean Paulsen	Attention:	
Address:	27200 Haggerty Rd. Suite B-12	Copy To:		Company Name:	
Farmington, MI 48331				Address:	
Email:	sean_paulsen@golder.com	Purchase Order #:		Pace Quote:	
Phone:	NONE Fax:	Project Name:	Smith's Creek GW	Pace Project Manager:	jennifer.rice@pacelabs.com,
Requested Due Date:		Project #:		Pace Profile #:	8284

Regulatory Agency

State / Location

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: Cl	NH3, NPN, TIN	Dissolved Metals	TOC	Residual Chlorine (Y/N)
1	MW-302	SW	G			10-18-21	1540	13.6	4	1	2	1							X	X	X	X	
2	MW-303A	↓	↓			10-20-21	1130	12.0	↓	↓	↓	↓							↓	↓	↓	↓	
3	MW-304					10-19-21	1605	12.4															
4	MW-305	↓	↓			10-19-21	0915	10.8	↓	↓	↓	↓							↓	↓	↓	↓	
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Sampler	10-21-21	1400		10.21.21	1400	
		10.21.21	1730				

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Arthur O. Rossetti

SIGNATURE of SAMPLER: [signature] DATE Signed: 10-21-21

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical®

Sample Conditions Upon Receipt Form (SCUR)

Date/Time: 10.21.21	**Evaluated by:** WDC	**WO#: 50300899**
Client: Golder		**PM:** JLR1 **Due Date:** 11/05/21
Project Manager: JLR	**Profile ID:**	**CLIENT:** GR-Golder
Rush TAT Requested: YES NO **Due Date:**		
Lab Notified of Rush or Short Holds: YES NO		**Non Conformance Form Required:** YES NO

Samples Received Via: FedEx UPS Client Pace Courier Other: _____ **Comments:**

Custody Seals Present and Intact:	YES	NO	NA	
Received Sample Information Form(s): Drinking Waters Only	YES	NO	NA	
USDA Regulated Soils: (AL, AR, CA, FL, GA, ID, LA, MS, NM, NY, NC, OK, OR, SC, TN, TX, WA or Puerto Rico)	YES	NO	N/A	
Short Holds Present (< 72 Hours):	YES	NO		
Samples Received in Hold:	YES	NO		
Custody Signatures Present:	YES	NO		
Collector Signature Present:	YES	NO		
Packing Material Used:	YES	NO		
Samples Collected Today and On Ice:	YES	NO	N/A	

IR Gun #: 280 281 **Digital Thermometer #:** 282 283

Ice Type: WET Bagged / WET Loose BLUE NONE

Ice Location: TOP BOTTOM MIDDLE DISPERSED

1. Cooler Temp Upon Receipt: 1.7/2.2 °C

Temp should be 0-6°C (Initial/Corrected)

Temp Blank Received:	YES	NO	
Containers Intact:	YES	NO	
Correct Containers:	YES	NO	
Sufficient Volume:	YES	NO	
Sample pH Acceptable: All containers needing preservation are found to be in complaince with EPA recommendation **pH Strip Lot #:** HC739245 *Exceptions are VOA, coliform, LLHg, O&G, or any container with a septum cap or preserved with HCl*	YES	NO	N/A
Residual Chlorine Absent: **Cl_2 Strip Lot #:** _____ (SVOC/Pest 625, PCB 608, Total/Amenable Cyanide)	YES	NO	N/A
VOA Headspace Acceptable (<6mm):	YES	NO	N/A
Trip Blank Received: HCl MeOH TSP OTHER	YES	NO	

Comments:

2. Cooler Temp Upon Receipt: 4.3/4.8 °C

3. Cooler Temp Upon Receipt: _____ °C

4. Cooler Temp Upon Receipt: _____ °C

APPENDIX B

Field Data Sheets

Well ID MW-101

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: Clear
GROUND: moist
AIR TEMPERATURE (°F): 64
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: nom
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 22.73
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 76.9
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 8.8

PURGING

INITIAL PURGE DATE: 10-19-21
INITIAL PURGE TIME: 1154

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1217	1242					1305
Volume Removed (gal)	8.8	17.7					26.5
pH (s.u.)	8.02	8.26					8.27
Conductivity. (µmho/cm)	443	433					429
Temperature (°C)	12.0	12.6					12.8

SAMPLING

SAMPLE DATE: 10-19-21
SAMPLE TIME: 1305
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, colorless):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: AOR

EQUIPMENT

FIELD METER USED: Horiba 005
CALIBRATION TIME: 0915
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

DATE FORM COMPLETED: 10-19-21
FORM COMPLETED BY (signature):

Well ID MW-106A

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: Clear
GROUND: moist
AIR TEMPERATURE (°F): 57
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 31.04
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 75.2
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 7.2

PURGING

INITIAL PURGE DATE: 10-19-21
INITIAL PURGE TIME: 1107

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1135	1140					0945
Volume Removed (gal)	7.2	7.6					7.6
pH (s.u.)	7.81	well					8.16
Conductivity. (µmho/cm)	435	went					449
Temperature (°C)	12.0	Dry					12.4

SAMPLING

SAMPLE DATE: 10-19-21
SAMPLE TIME: 0945
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, colorless):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: AOR

EQUIPMENT

FIELD METER USED: Horiba 005
CALIBRATION TIME: 0815
PH CALIBRATION STANDARDS (s.u.): 4,7,10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

Went dry on 11/17

DATE FORM COMPLETED: 10-20-21
FORM COMPLETED BY (signature):

Well ID MW-201

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: p. Cloudy
GROUND: moist
AIR TEMPERATURE (°F): 55
PRECIPITATION (LAST 24 HRS): None

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 23.08
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 75.4
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 8.5

PURGING

INITIAL PURGE DATE: 10-18-21
INITIAL PURGE TIME: 1202

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	12.23	1225					0845
Volume Removed (gal)	8.5	8.6					8.6
pH (s.u.)	8.54	well					7.67
Conductivity. (µmho/cm)	489	went					389
Temperature (°C)	12.4	Dry					10.9

SAMPLING

SAMPLE DATE: 10-19-21
SAMPLE TIME: 0845
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, colorless):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: AOR

EQUIPMENT

FIELD METER USED: Horiba U-52
CALIBRATION TIME: 0940
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: lab
PUMP/BAILER TYP: mp 50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

Went dry on 11/17

DATE FORM COMPLETED: 10-19-21
FORM COMPLETED BY (signature):

Well ID MW-202

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: Clear
GROUND: moist
AIR TEMPERATURE (°F): 70
PRECIPITATION (LAST 24 HRS): rain

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 23.57
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 64.6
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 6.7

PURGING

INITIAL PURGE DATE: 10-19-21
INITIAL PURGE TIME: 1324

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1342	1410					1445
Volume Removed (gal)	6.7	13.4					20.1
pH (s.u.)	8.27	8.30					8.36
Conductivity. (µmho/cm)	398	406					400
Temperature (°C)	12.7	12.2					12.8

SAMPLING

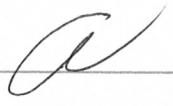
SAMPLE DATE: 10-19-21
SAMPLE TIME: 1445
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid): clear
COLOR (yellow, brown, rust, grey, white, colorless): colorless
ODOR (sulfur, LFG, musty, solvent, petrol, no odor): no odor
SAMPLE COLLECTED BY: AOR

EQUIPMENT

FIELD METER USED: Horiba 005
CALIBRATION TIME: 0815
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: Lab
PUMP/BAILER TYP: MP-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

DATE FORM COMPLETED: 10-19-21
FORM COMPLETED BY (signature): 

Well ID MW-203B R

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: p. Cloudy
GROUND: moist
AIR TEMPERATURE (ºF): 73
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 24.23
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 73.21
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 8.0

PURGING

INITIAL PURGE DATE: 10.19-21
INITIAL PURGE TIME: 1619

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1800	1805					1245
Volume Removed (gal)	8.0	8.1					8.1
pH (s.u.)	9.14	well					8.93
Conductivity. (µmho/cm)	460	wat					443
Temperature (ºC)	13.0	Dry					12.9

SAMPLING

SAMPLE DATE: 10-20-21
SAMPLE TIME: 1245
TOTAL BOTTLES COLLECTED: ~~8~~ 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, colorless):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: AOR

EQUIPMENT

FIELD METER USED: Horiba 005
CALIBRATION TIME: 0815
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

DATE FORM COMPLETED: 10-20-21 FORM COMPLETED BY (signature):

Well ID MW-207A

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: Clear
GROUND: moist
AIR TEMPERATURE (°F): 50
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 35.37
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 82.9
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 7.7

PURGING

INITIAL PURGE DATE: 10-19-21
INITIAL PURGE TIME: 1005

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1030	1035					0900
Volume Removed (gal)	7.7	8.3					8.3
pH (s.u.)	7.44	wet					7.21
Conductivity. (µmho/cm)	965	wet					1075
Temperature (°C)	11.4	Dry					11.9

SAMPLING

SAMPLE DATE: 10-20-21
SAMPLE TIME: 0900
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, colorless):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: AOR

EQUIPMENT

FIELD METER USED: Horiba U-52
CALIBRATION TIME: 0815
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

Went dry on 11/17

DATE FORM COMPLETED: 10-20-21
FORM COMPLETED BY (signature):

Well ID MW-208B

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: Clear
GROUND: moist
AIR TEMPERATURE (°F): 61
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: ok
WELL DIAMETER: 2"
CONCRETE PAD: ok

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 33.70
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): NA
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS):

PURGING

INITIAL PURGE DATE: 10-18-21
INITIAL PURGE TIME: 1750

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1835	1837					1045
Volume Removed (gal)	8.5	8.6					8.6
pH (s.u.)	8.13	well					8.15
Conductivity. (µmho/cm)	441	went					449
Temperature (°C)	12.2	Dry					12.5

SAMPLING

SAMPLE DATE: 10-19-21
SAMPLE TIME: 1045
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, colorless):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: AOR

EQUIPMENT

FIELD METER USED: Horiba U-52
CALIBRATION TIME: 0940
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: lab
PUMP/BAILER TYP: MP-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

Went dry on 11/17

DATE FORM COMPLETED: 10-19-21
FORM COMPLETED BY (signature):

Well ID MW-209

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: Clear
GROUND: moist
AIR TEMPERATURE (°F): 61
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 27.58
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 79.2
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 8.4

PURGING

INITIAL PURGE DATE: 10-18-21
INITIAL PURGE TIME: 1554

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1617	1620					0945
Volume Removed (gal)	8.4	8.8					8.8
pH (s.u.)	8.36	well					8.21
Conductivity. (µmho/cm)	461	went					501
Temperature (°C)	12.8	Dry					11.1

SAMPLING

SAMPLE DATE: 10-19-21
SAMPLE TIME: 0945
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, colorless):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: AGR

EQUIPMENT

FIELD METER USED: Horiba 005
CALIBRATION TIME: 0940
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

Went dry on 11/17

DATE FORM COMPLETED: 10-19-21 FORM COMPLETED BY (signature):

Well ID MW-210

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: p. Cloudy
GROUND: wet
AIR TEMPERATURE (°F): 60
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 27.36
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 71.9
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 7.3

PURGING

INITIAL PURGE DATE: 10-18-21
INITIAL PURGE TIME: 1349

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1408	1410					0930
Volume Removed (gal)	7.3	7.5					7.5
pH (s.u.)	7.68	well					7.68
Conductivity. (µmho/cm)	1102	went					832
Temperature (°C)	12.6	Dry					11.2

SAMPLING

SAMPLE DATE: 10-19-21
SAMPLE TIME: 0930
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, colorless):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: ASR

EQUIPMENT

FIELD METER USED: Horiba 005
CALIBRATION TIME: 0940
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: Lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

Went dry on 11/17

DATE FORM COMPLETED: 10-19-21 FORM COMPLETED BY (signature):

Well ID MW-212

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: P. Cloudy
GROUND: moist
AIR TEMPERATURE (°F): 57
PRECIPITATION (LAST 24 HRS): None

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: None
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 27.70
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 65.2
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 6.1

PURGING

INITIAL PURGE DATE: 10-18-21
INITIAL PURGE TIME: 1240

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1306	1310					0900
Volume Removed (gal)	6.1	6.5					6.5
pH (s.u.)	8.31	well					7.96
Conductivity. (µmho/cm)	454	went					447
Temperature (°C)	11.5	Dry					10.9

SAMPLING

SAMPLE DATE: 10-19-21
SAMPLE TIME: 0900
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid): clear
COLOR (yellow, brown, rust, grey, white, colorless): colorless
ODOR (sulfur, LFG, musty, solvent, petrol, no odor): no odor
SAMPLE COLLECTED BY: Asa

EQUIPMENT

FIELD METER USED: Horiba 005
CALIBRATION TIME: 0940
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: Lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

Went dry on 11/17

DATE FORM COMPLETED: 10-19-21 FORM COMPLETED BY (signature):

Well ID MW-301

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: Clear
GROUND: moist
AIR TEMPERATURE (°F): 61
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 33.36
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 84.3
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 8.3

PURGING

INITIAL PURGE DATE: 10-18-21
INITIAL PURGE TIME: 1629

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1652	1713					1735
Volume Removed (gal)	8.3	16.6					24.9
pH (s.u.)	8.45	8.49					8.48
Conductivity. (µmho/cm)	486	483					477
Temperature (°C)	12.6	12.1					12.1

SAMPLING

SAMPLE DATE: 10-18-21
SAMPLE TIME: 1735
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, colorless):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: AOB

EQUIPMENT

FIELD METER USED: Horiba U-52
CALIBRATION TIME: 0940
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

DATE FORM COMPLETED: 10-18-21
FORM COMPLETED BY (signature):

Well ID MW-302

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: p. Cloudy
GROUND: moist
AIR TEMPERATURE (°F): 60
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 24.71
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 80.4
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 9.1

PURGING

INITIAL PURGE DATE: 10-18-21
INITIAL PURGE TIME: 1420

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1442	1510					1540
Volume Removed (gal)	9.1	18.1					27.2
pH (s.u.)	8.40	8.45					8.50
Conductivity. (µmho/cm)	503	468					470
Temperature (°C)	13.9	13.8					13.6

SAMPLING

SAMPLE DATE: 10-18-21
SAMPLE TIME: 1540
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, ~~colorless~~):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: AOR

EQUIPMENT

FIELD METER USED: Horiba U-52
CALIBRATION TIME: 0940
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

DATE FORM COMPLETED: 10-18-21
FORM COMPLETED BY (signature):

Well ID MW-303A

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: p. Cloudy
GROUND: moist
AIR TEMPERATURE (ºF): 50
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 22.19
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 75.7
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 8.7

PURGING

INITIAL PURGE DATE: 10-20-21
INITIAL PURGE TIME: 1015

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1040	1105					1130
Volume Removed (gal)	8.7	17.4					26.2
pH (s.u.)	8.55	8.66					8.70
Conductivity. (µmho/cm)	493	489					495
Temperature (ºC)	11.4	11.3					12.0

SAMPLING

SAMPLE DATE: 10-20-21
SAMPLE TIME: 1130
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid): clear (circled)
COLOR (yellow, brown, rust, grey, white, colorless): colorless (circled)
ODOR (sulfur, LFG, musty, solvent, petrol, no odor): no odor (circled)
SAMPLE COLLECTED BY: AOR

EQUIPMENT

FIELD METER USED: Horiba 005
CALIBRATION TIME: 0830
PH CALIBRATION STANDARDS (s.u.): 4,7,10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

10/4/21 1609

DATE FORM COMPLETED: 10-20-21 FORM COMPLETED BY (signature): [signature]

Well ID MW-304

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: p. Cloudy
GROUND: moist
AIR TEMPERATURE (°F):
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 24.91
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 75.7
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 8.3

PURGING

INITIAL PURGE DATE: 10-19-21
INITIAL PURGE TIME: 1505

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1525	1545					1605
Volume Removed (gal)	8.3	16.6					24.8
pH (s.u.)	8.42	8.44					8.45
Conductivity. (µmho/cm)	431	433					434
Temperature (°C)	12.8	12.3					12.4

SAMPLING

SAMPLE DATE: 10-19-21
SAMPLE TIME: 1605
TOTAL BOTTLES COLLECTED: 8
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, colorless):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: AOR

EQUIPMENT

FIELD METER USED: Horiba 005
CALIBRATION TIME: 0815
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: Lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

MW-213 taken for

DATE FORM COMPLETED: 10-19-21
FORM COMPLETED BY (signature):

Well ID MW-305

GROUNDWATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS

SKY: p. Cloudy
GROUND: moist
AIR TEMPERATURE (°F): 59
PRECIPITATION (LAST 24 HRS): none

WELL SECURITY

PROTECTIVE COVER: OK
BUMPER POSTS: none
EXTERNAL WELL ID: OK
LOCK: OK
WELL DIAMETER: 2"
CONCRETE PAD: OK

CALCULATIONS

WELL ELEVATION (FT/MSL):
DEPTH TO WATER (FT): 29.18
GROUNDWATER ELEVATION (FT/MSL):
TOTAL WELL DEPTH (FT): 75.8
WELL STICK-UP (FT):
WATER VOLUME IN CASING (GALLONS): 7.6

PURGING

INITIAL PURGE DATE: 10-18-21
INITIAL PURGE TIME: 1317

STABILIZATION READINGS

	1	2	3	4	5	6	Final
Time	1335	1337					0915
Volume Removed (gal)	7.6	7.7					7.7
pH (s.u.)	8.07	well					7.92
Conductivity. (µmho/cm)	462	went					456
Temperature (°C)	11.8	Dry					10.8

SAMPLING

SAMPLE DATE: 10-19-21
SAMPLE TIME: 0915
TOTAL BOTTLES COLLECTED: 4
FILTERED FOR METALS: Y
SAMPLE CLARITY (clear, sl. turbid, m. turbid, v. turbid):
COLOR (yellow, brown, rust, grey, white, colorless):
ODOR (sulfur, LFG, musty, solvent, petrol, no odor):
SAMPLE COLLECTED BY: AOR

EQUIPMENT

FIELD METER USED: Horiba 005
CALIBRATION TIME: 0940
PH CALIBRATION STANDARDS (s.u.): 4, 7, 10
CONDUCTIVITY STANDARD (µmho/cm): 1413
PURIFIED WATER SUPPLIED BY: lab
PUMP/BAILER TYP: mp-50

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

Went dry on 11/17

DATE FORM COMPLETED: 10-19-21
FORM COMPLETED BY (signature):

Sample ID SW-DA1

SURFACE WATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS DURING SAMPLING

SKY: P. Cloudy
WIND (mph): 0-5
AIR TEMPERATURE (°F): 66

SAMPLING

SAMPLE DATE: 10-20-21
SAMPLE TIME: 1400
TOTAL BOTTLES COLLECTED: 6
FILTERED FOR METALS: N
SAMPLE CLARIT: Slt turbid
SAMPLE COLOR: Brown
SAMPLE ODOR: none

FIELD MEASUREMENTS

FIELD MEASUREMENT TIME: 1400
FINAL pH (S.U.): 8.00
FINAL CONDUCTIVITY (µMHO/CM): 419
SAMPLE TEMPERATURE (°C): 16.1
DISSOLVED OXYGEN (mg/L): 6.42

EQUIPMENT

FIELD METER USED: Horiba 005 / YSI DO 200
CALIBRATION TIME: 0830 / 1315
FINAL CALIBRATION pH: 4, 7, 10
FINAL CALIBRATION SC: 1413
DEIONIZED WATER SUPPLIED BY: lab

SAMPLE COLLECTED BY: AOR
SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

DATE FORM COMPLETED: 10-20-21
FORM COMPLETED BY (signature):

Sample ID SW-D2

SURFACE WATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS DURING SAMPLING

SKY: P. Cloudy
WIND (mph): 0-5
AIR TEMPERATURE (°F): 66

SAMPLING

SAMPLE DATE: 10-20-21
SAMPLE TIME: 1330
TOTAL BOTTLES COLLECTED: 6
FILTERED FOR METALS: N
SAMPLE CLARIT: Sl. turbid
SAMPLE COLOR: Brown
SAMPLE ODOR: none

FIELD MEASUREMENTS

FIELD MEASUREMENT TIME: 1330
FINAL pH (S.U.): 7.88
FINAL CONDUCTIVITY (µMHO/CM): 511
SAMPLE TEMPERATURE (°C): 16.7
DISSOLVED OXYGEN (mg/L): 7.64

EQUIPMENT

FIELD METER USED: Horiba 005 / YSI DO 200
CALIBRATION TIME: 0830 / 1315
FINAL CALIBRATION pH: 4, 7, 10
FINAL CALIBRATION SC: 1413
DEIONIZED WATER SUPPLIED BY: Lab

SAMPLE COLLECTED BY: AOR

SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

DATE FORM COMPLETED: FORM COMPLETED BY (signature):

Sample ID SW-U1

SURFACE WATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 20141318
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS DURING SAMPLING

SKY: p. Cloudy
WIND (mph): 0-5
AIR TEMPERATURE (°F): 67

SAMPLING

SAMPLE DATE: 10-20-21
SAMPLE TIME: 1500
TOTAL BOTTLES COLLECTED: 6
FILTERED FOR METALS: ~~Ø~~ NO
SAMPLE CLARIT Sl. turbid
SAMPLE COLOR: Brown
SAMPLE ODOR: none

FIELD MEASUREMENTS

FIELD MEASUREMENT TIME: 1500
FINAL pH (S.U.): 8.26
FINAL CONDUCTIVITY (µMHO/CM): 714
SAMPLE TEMPERATURE (°C): 15.8
DISSOLVED OXYGEN (mg/L): 8.21

EQUIPMENT

FIELD METER USED: Horiba 005 / YSI 0200
CALIBRATION TIME: 0830 / 1315
FINAL CALIBRATION pH: 4, 7, 10
FINAL CALIBRATION SC: 1414
DEIONIZED WATER SUPPLIED BY: lab

SAMPLE COLLECTED BY: AOR
SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

DATE FORM COMPLETED: 10-20-21 FORM COMPLETED BY (signature):

Sample ID SW-U2

SURFACE WATER SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 20141318
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS DURING SAMPLING

SKY: P. Cloudy
WIND (mph): 0-5
AIR TEMPERATURE (°F): 67

SAMPLING

SAMPLE DATE: 10-20-21
SAMPLE TIME: 1430
TOTAL BOTTLES COLLECTED: 6
FILTERED FOR METALS: No
SAMPLE CLARIT: Slt turbid
SAMPLE COLOR: Brown
SAMPLE ODOR: none

FIELD MEASUREMENTS

FIELD MEASUREMENT TIME: 1430
FINAL pH (S.U.): 8.10
FINAL CONDUCTIVITY (µMHO/CM): 478
SAMPLE TEMPERATURE (°C): 15.5
DISSOLVED OXYGEN (mg/L): 7.84

EQUIPMENT

FIELD METER USED: Horiba 005/ YSI DO200
CALIBRATION TIME: 0830/ 1315
FINAL CALIBRATION pH: 4, 7, 10
FINAL CALIBRATION SC: 1413
DEIONIZED WATER SUPPLIED BY: lab

SAMPLE COLLECTED BY: AOR
SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

DATE FORM COMPLETED: 10.20.21 FORM COMPLETED BY (signature):

SAMPLE ID: Leachate

LEACHATE SAMPLE COLLECTION RECORD

SITE IDENTIFICATION

COMPANY: Smith's Creek Landfill
FACILITY/SITE: Smith's Creek Landfill
PROJECT NUMBER: 21459140
ADDRESS: 6779 Smith's Creek Rd. Smith's Creek, MI
CONTACT: Matt Williams
PHONE: (248) 459-3309

WEATHER CONDITIONS DURING SAMPLING

SKY: p. Cloudy
WIND (mph): 0-5
AIR TEMPERATURE (°F): 68

SAMPLING

SAMPLE DATE: 10-20-21
SAMPLE TIME: 1530
TOTAL BOTTLES COLLECTED: 7
FILTERED FOR METALS: N
SAMPLE CLARITY: M. Turbid
SAMPLE COLOR: gray
SAMPLE ODOR: LFG

FIELD MEASUREMENTS

FIELD MEASUREMENT TIME: 1530
FINAL pH (S.U.): 7.43
FINAL CONDUCTIVITY (µMHO/CM): 19530
SAMPLE TEMPERATURE (°C): 19.8

EQUIPMENT

FIELD METER USED: Horiba 005
CALIBRATION TIME: 0830
FINAL CALIBRATION pH: 4, 7, 10
FINAL CALIBRATION SC: 1413
FILTER TYPE USED: N A
PUMP OR BAILER USED: 4" Bailer

SAMPLE COLLECTED BY: AOR
SAMPLING COMPANY: Golder Associates Inc.
SAMPLER'S PHONE: 248-295-0135
SAMPLER'S ADDRESS: 27200 Haggerty Road, Suite B-12 Farmington Hills, Michigan, USA 48331
CLIENT REPRESENTATIVES:
REGULATORY REPRESENTATIVES:

COMMENTS:

DATE FORM COMPLETED:
FORM COMPLETED BY (signature):

golder.com