



Environmental Resources Group

28003 Center Oaks Court • Suite 106 • Wixom, MI • 48393
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October 5, 2018

Mr. Paul Bucholtz
Lansing District Office
Remediation and Redevelopment Division
Constitution Hall
525 West Allegan Street
Lansing, MI 48909

**RE: Gilkey Creek GSI Porewater Sampling Results Memorandum
 RACER Site 12920 – Davison Road Industrial Land
 Davison and Donegal Road, Burton, Genesee County, Michigan
 Facility ID No.: 25000447**

Dear Mr. Bucholtz:

Environmental Resources Group, LLC. (ERG) has completed an investigation of groundwater/surface water interface (GSI) at the above referenced RACER Trust (RACER) Site located at Davison and Donegal Road in Burton, Genesee County, Michigan (the Site). A map of the Site is provided in Appendix 1, Figure 1.

INTRODUCTION

Historical groundwater sample analysis has identified arsenic concentrations above the GSI cleanup criteria in monitoring wells located near Gilkey Creek within the Site. As a result, arsenic entering Gilkey Creek via the GSI pathway is considered a potential relevant pathway within the Site. The goal of this investigation was to evaluate if groundwater is seeping into Gilkey Creek and venting arsenic above the GSI cleanup criteria. To evaluate this, ERG collected pore water samples, where possible, from the sediment beneath the surface water of Gilkey Creek for the analysis of total and dissolved arsenic.

BACKGROUND

A No Further Action (NFA) Report was submitted to the Michigan Department of Environmental Quality (MDEQ) on May 4, 2017 and approved by MDEQ on August 9, 2017. The NFA report was based on soil remediation activities completed to date, results of the groundwater sampling events, and an analysis of the relevant and complete exposure pathways for the Site. The purpose of the NFA report was to document and present a detailed summary of the Site background and the corrective actions



implemented to address remnant contamination from historic operations, primarily from placement of fill. The remedial actions included a Declaration of Restrictive Covenant (DRC) to allow RACER to satisfy applicable cleanup criteria established under Part 201 of the Michigan Natural Resources and Environmental Protection Act (NREPA) (Public Act 451). Currently, the only remaining relevant exposure pathway to be addressed at the Site is arsenic via the GSI pathway.

METHODOLOGY

ERG completed this GSI pathway investigation on September 4 through September 6, 2018, utilizing a 48" MHE PushPoint™ Sampler (PPS) to collect sediment porewater samples at 14 locations along the length of Gilkey Creek. The placement of these locations was based upon conditions identified during a Site reconnaissance completed on August 16, 2018, using thermal imaging provided by MDEQ and logging of subsurface conditions using a hand auger to identify likely areas of groundwater discharge.

The PPS consists of a pointed stainless-steel tube with a screened zone at one end and a sampling port at the other. The pointed end with the screened zone consists of a series of fine, interlaced machine slots to allow pore water to enter the sampler. A ridged, removable guard-rod was used to prevent plugging and prevent damage during insertion into sediments. When the desired depth was reached, the guard-rod was removed from the PushPoint without disturbing the position of the deployed sampler.

The following steps were completed at each porewater sampling location, working from the downstream towards the upstream end of Gilkey Creek within the Site:

1. Upon arrival at each sampling location, ERG collected a sediment core sample by driving a 3-foot long 1" diameter liner into the creek sediment. This sample was logged by ERG personnel and the sedimentary unit most likely to be transmissive of groundwater was identified.
2. The PPS was pushed into the sediment until the screened zone was positioned within this transmissive unit.
3. ERG connected a large syringe or peristaltic pump to the PPS sample port via Tygon tubing and attempted to purge groundwater through the sampler. The syringe was used in locations where lesser transmissive units were encountered and higher pressures were needed to attempt to pull groundwater.
4. If no groundwater was purged from the most likely transmissive unit, ERG raised or lowered the screened zone of the PPS to other locations in the subsurface to identify if groundwater was recharging the creek through the other less transmissive units.
5. In locations where groundwater was successfully purged from the subsurface of the creek, ERG allowed the water level in the sampler to stabilize and collected a static water level reading using a micro water level meter.
6. A peristaltic pump was attached to the PPS sample port and groundwater was purged through the sampler at a "low-flow" rate (50-200 ml/min) and water quality readings (pH, specific conductivity, temperature, dissolved oxygen, oxidation-reduction potential, and turbidity) were



collected using an In-Situ AquaTroll 600 sonde. Purging continued until water quality readings stabilized or after 20 minutes of purging, whichever occurred first.

7. Following stabilization, porewater samples were collected and analyzed for total and dissolved arsenic using Method 6020. Additionally, an equipment blank Quality Assurance/Quality Control (QA/QC) sample was collected. All samples were analyzed by TestAmerica Laboratories, Inc.
8. All sampling equipment was thoroughly washed and decontaminated using a mixture of Alconox® and deionized water and rinsed with deionized water.
9. Location and elevation data of each sample point was collected using Trimble Geo7x GPS. From this information, the corresponding elevations of surface water and groundwater at each sample location were determined.
10. ERG collected water elevation data and water quality data from three surface water locations within Gilkey Creek and seven monitoring wells near Gilkey Creek including MW-16-14, TMW-1, TMW-8, MW-7-12, MW-9-12, MW-15-14 and TMW-6 to compare with the data collected from the porewater locations.

SAMPLING RESULTS AND DISCUSSION

ERG performed the above sampling procedures at 14 locations within Gilkey Creek (PW-1 through PW-14), as shown in Appendix 1, Figure 2, Sample Location Map. Pore water samples PW-2, PW-7, PW-9, PW-11, and PW-14 were located within Gilkey Creek, while the other locations were along the streambank closest to the fill. Also indicated on the map are the locations of the monitoring wells and surface water locations (SW-1 through SW-3) where water quality parameters were collected. The results of each separate phase of the sampling process are indicated below. Photographs of the sampling procedures are provided in Appendix 6.

Creek Bed Lithology

ERG logged subsurface soil at each location designated PW-1 through PW-14 by driving a three-foot-long plastic liner into the soil. Recoveries were generally low (around 1.5') due to the saturated nature of the soils. Summaries of the soils encountered at each sampling location are indicated below:

- **PW-1:** Approximately 2.5' of clayey, organic-rich grey silt, followed by 0.5' of medium- to coarse-grained, gravelly, brown sand.
- **PW-2:** Approximately 0.5' of fine- to medium-grained brown sand, followed by 2' of black, organic-rich silty sand and 0.5' of brown, gravelly fine- to medium-grained sand.
- **PW-3 through PW-14:** Varying amounts of black silty sands, grey sandy silts, and grey silts, with the subsurface becoming increasingly silty in the upstream sampling locations. Some brown sands were encountered in the very top layer of the stream subsurface but were often very thin.

Using the soils encountered within Gilkey Creek during sampling and the historical soil borings at the Site, ERG designated the subsurface soils as either low hydraulic conductivity (silts and clays) or high



conductivity (sands and gravels), as shown in Appendix 1, Figure 3, Subsurface Lithology Map. Additionally, copies of the historical soil borings completed at the Site are provided in Appendix 5. Hydraulic conductivity is a measure of a soil's capacity to transmit water. As the map shows, a majority of the Site consists of low hydraulic conductivity soils, with the exception of two areas. The area of high hydraulic conductivity soil in the far southeastern portion of the Site is approximately 900 feet from Gilkey Creek and not considered to affect GSI pathways at the Site. The other region of high hydraulic conductivity soil is located north of Gilkey Creek in the western portion of the Site and was encountered in SB/MW-7-12, SB/MW-4-12, SB-17-12, SB-16-12, SB/MW-16-14, PW-1 and PW-2. This region is located within the floodplain of Gilkey Creek and may be old streambeds or outwash areas. It intersects Gilkey Creek near PW-1 and PW-2 locations, resulting in an area of potential groundwater discharge within the creek. This area is shown in red on Figure 3. As discussed in the next section, ERG was able to collect porewater samples from PW-1 and PW-2.

Porewater Sampling Results

Although the PPS was deployed at multiple depths at every sample location, the only locations where potential porewater was successfully purged from the subsurface were PW-1 and PW-2. All other locations either produced no water at all or a very concentrated silt-water mixture that would clog the peristaltic pump and was unsampleable. If this mixture was encountered during sampling and able to be pumped by the peristaltic pump, ERG would run the pump for at least 20 minutes to determine if the point could be fully developed and a porewater sample collected. However, this was never successfully completed, and the mixture has been determined to be saturated silt that was liquified due to the high pressures exerted by the pump or syringe and not actual groundwater recharging to the creek. Additionally, if the PPS was raised high enough in the subsurface (within one foot of the ground surface), ERG was often capable of purging water from the PPS. However, this was considered to be surficial creek water flowing through the shallow subsurface and was not sampled.

Water Quality Parameter Testing Results

While sampling from PW-1 and PW-2, ERG was able to collect water quality parameters to be compared with the water quality parameters collected in Gilkey Creek surface water and groundwater wells located near the Creek. These parameters are summarized in the tables below and are also provided in Appendix 3.

Groundwater Parameters							
Location	Date	pH	Temperature (F)	Spec. Conductivity (μS/cm)	RDO (mg/L)	Turbidity (NTU)	ORP (mV)
TMW-1	9/5/2018	6.82	65.96	1339.6	0.35	20.95	56.6
TMW-6	9/6/2018	6.94	61.56	1728.4	4.68	4.55	-5.5
TMW-8	9/5/2018	6.81	63.68	516.41	0.15	0	30.3
SB/MW-7-12	9/5/2018	6.89	67.56	1481	1.19	1.2	147.8
SB/MW-9-12	9/6/2018	6.88	60.28	2178.9	0.3	51.13	0.4
SB/MW-15-14	9/6/2018	7.25	59.39	2131.2	0.28	0	8.8
SB/MW-16-14	9/4/2018	6.81	66.4	955.68	0.16	0	-110.1

Table 1: Groundwater quality parameters collected from various monitoring wells close to Gilkey Creek.



Pore Water Parameters							
Location	Date	pH	Temperature (F)	Spec. Conductivity (μS/cm)	RDO (mg/L)	Turbidity (NTU)	ORP (mV)
PW-1	9/4/2018	7.38	71.49	387.13	0.86	6.41	132
PW-2	9/4/2018	7.31	74.11	379.66	1.99	9.25	176.7

Table 2: Porewater quality parameters collected from PW-1 and PW-2

Surface Water Parameters							
Location	Date	pH	Temperature (F)	Spec. Conductivity (μS/cm)	RDO (mg/L)	Turbidity (NTU)	ORP (mV)
SW-1 (downstream of culvert)	9/4/2018	7.99	82.49	1144.7	8.46	49.85	153.7
SW-2 (upstream of culvert)	9/4/2018	8.00	82.46	1143.2	8.4	44.68	150.1
SW-3 (following rain)	9/6/2018	7.91	70	988	7.99	35.04	89.4

Table 3: Surface water quality parameters collected from Gilkey Creek.

Because the storm sewer outfall shown in the Site Map was releasing water during the sampling event, ERG collected surface water parameters upstream and downstream of the outfall culvert, as well as after a rain event that occurred during sampling. Because both porewater samples were collected downstream of the outfall, near SB/MW-16-14, and prior to the rain event, ERG only compared the water quality parameters of PW-1 and PW-2 to those from SW-1 and SB/MW-16-14.

As shown in the above tables, the porewater parameters are not similar to either the groundwater or surface water parameters collected nearby. ERG believes that this may be due a mixing effect of groundwater and surface water below Gilkey Creek near PW-1 and PW-2. For example, both the pH and temperature of both porewater samples appears to be an average of the surface and groundwater parameters in the area, as would be expected in a mixing zone. Turbidity is considered to be negligible as the turbidity of the creek was increased in the sampling area by ERG personnel disturbing creek sediment during sampling activities. Dissolved oxygen in the porewater is slightly higher than groundwater in the area, but much lower than the surface water. Again, this would be expected in a mixing zone. Finally, specific conductivity and oxidation-reduction potential depend greatly on other factors, such as ionic content of the water, and the mixing of two waters of different specific conductivity and ORP cannot be predicted without a much more thorough investigation of water quality. However, the lower specific conductivity of the porewater indicates that there is fewer ions in the water than either the surface water or the groundwater. Additionally, the ORP of the surface water and porewater was found to be oxidizing, while the groundwater in the area was reducing.

Laboratory Analytical Results

ERG submitted the porewater samples collected at PW-1 and PW-2 to TestAmerica Laboratories for analysis for total and dissolved arsenic. ERG received the analytical results on September 28, 2018, which are provided in Appendix 2, Table 2. The full laboratory analytical report from TestAmerica Laboratories is enclosed in Appendix 4. The analytical results are summarized in the table below:



Constituent* <i>*(Refer to detailed laboratory report for method reference data)</i>	Chemical Abstract Service Number	Residential Drinking Water Criteria	Nonresidential Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Sample Location	PW-1	PW-2	Eq. Blank
					Sample Identification			
					Collection Date	9/4/2018	9/4/2018	9/6/2018
<i>Metals (Total)</i>								
Arsenic	7440-38-2	10 (A)	10 (A)	10		0.76	6.8	< 0.75
<i>Metals (Dissolved)</i>								
Arsenic						< 0.75	< 0.75	-

Table 4: Porewater analytical results from samples collected on September 4, 2018.

As shown in the table, dissolved arsenic was not detected in either porewater sample. Total arsenic was detected in both PW-1 (0.76 ppb) and PW-2 (6.8 ppb), but the concentration of both samples is below the applicable GSI criteria (10 ppb). Arsenic was not detected in Equipment Blank QA/QC sample submitted by ERG, indicating that the decontamination procedures utilized by ERG were sufficient in fully decontaminating the equipment after sampling.

Groundwater Elevation Results

ERG collected groundwater elevation data from wells near Gilkey Creek, as well at PW-1 and PW-2, where porewater was encountered. The results of this are presented in Appendix 1, Figure 4: Groundwater Elevation Map and Appendix 2, Table 1: Groundwater Elevation Table. As the map shows, the groundwater generally flows towards Gilkey Creek and the hydraulic gradient increases towards the downstream section of Site. Additionally, as PW-1 and PW-2 are the only locations where pore water was encountered, it indicates that groundwater from the Site only discharges to Gilkey Creek in this area and that the groundwater flows too far below Gilkey Creek and/or hydraulic conductivity of soil not high enough at the bottom or sides of Gilkey Creek in the rest of the Site to allow any discharge.

SUMMARY AND CONCLUSIONS

As discussed in the prior sections, ERG has completed an investigation of the GSI within Gilkey Creek at the Davison Road Industrial Land Site. To do this, ERG attempted to locate areas of groundwater discharge to the creek within the Site. If these areas were found, ERG would use a PPS to collect a sample of the porewater recharging into Gilkey Creek. ERG was unable to sample porewater from a majority of Gilkey Creek with the exception of a small area, approximately 50 feet, of the downstream section of the creek near the west property boundary. PW-1 and PW-2 were collected from this location and submitted to TestAmerica Laboratories for analysis for total and dissolved arsenic. While total arsenic was detected in both samples, it was below the applicable GSI criteria. Dissolved arsenic was not detected above the reporting limit of 0.75 ppb in either sample. These results indicate a contribution of arsenic from solids in the sample. ERG also collected water quality parameters from the porewater, surface water, and groundwater monitoring wells near Gilkey Creek. Comparing the results of these tests, it appears that the porewater purged from beneath the creek from PW-1 AND PW-2 may be a mixture of groundwater and surface water, as may be expected at the GSI. Finally, ERG collected groundwater elevations from the



applicable monitoring wells and porewater sampling locations. These groundwater elevations were used to create a contour map of the water table near the creek at the Site. The water table elevation is lower than the creek throughout much of the Site near the creek, with the exception of the small downstream portion where PW-1 and PW-2 were collected.

In summary, there is an area of the Site with relatively higher hydraulic conductivity soil (brown, gravelly sand) located in the flood plain of Gilkey Creek that appears to be provide for a relatively higher groundwater flow and discharge rate. The groundwater discharges into Gilkey Creek in the very small downstream portion of the Site, near the western property boundary. While total available arsenic was detected in the samples collected from the porewater in this location, it was below the applicable GSI criteria and dissolved arsenic was not detected. ERG believes that these samples represent the only area of groundwater discharge within the Site at this time and that, while trace arsenic may be entering Gilkey Creek via the GSI pathway, the samples collected demonstrate that the quality of Gilkey Creek is not being adversely affected by this discharge.

I will be in contact to schedule a call to discuss these results.

Sincerely,

ENVIRONMENTAL RESOURCES GROUP

A handwritten signature in blue ink that reads "Susan Graves".

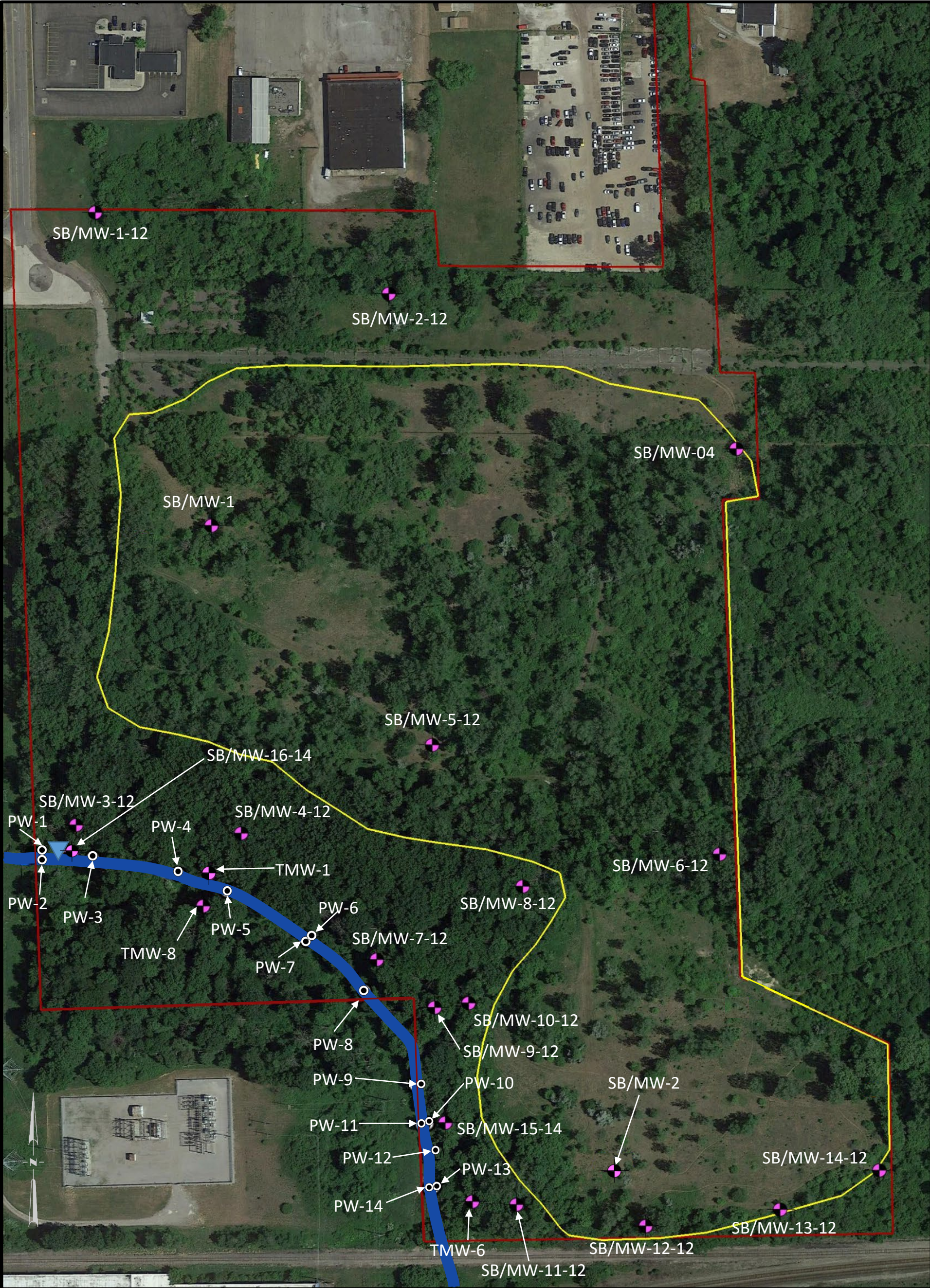
Susan Graves
Project Manager

CC: Dave Favero – RACER Trust

- Enc. Appendix 1 – Figures
 Appendix 2 – Tables
 Appendix 3 – Water Quality Parameter Test Results
 Appendix 4 – Laboratory Analytical Results
 Appendix 5 – Soil Borings
 Appendix 6 – Site Photographs

APPENDIX 1

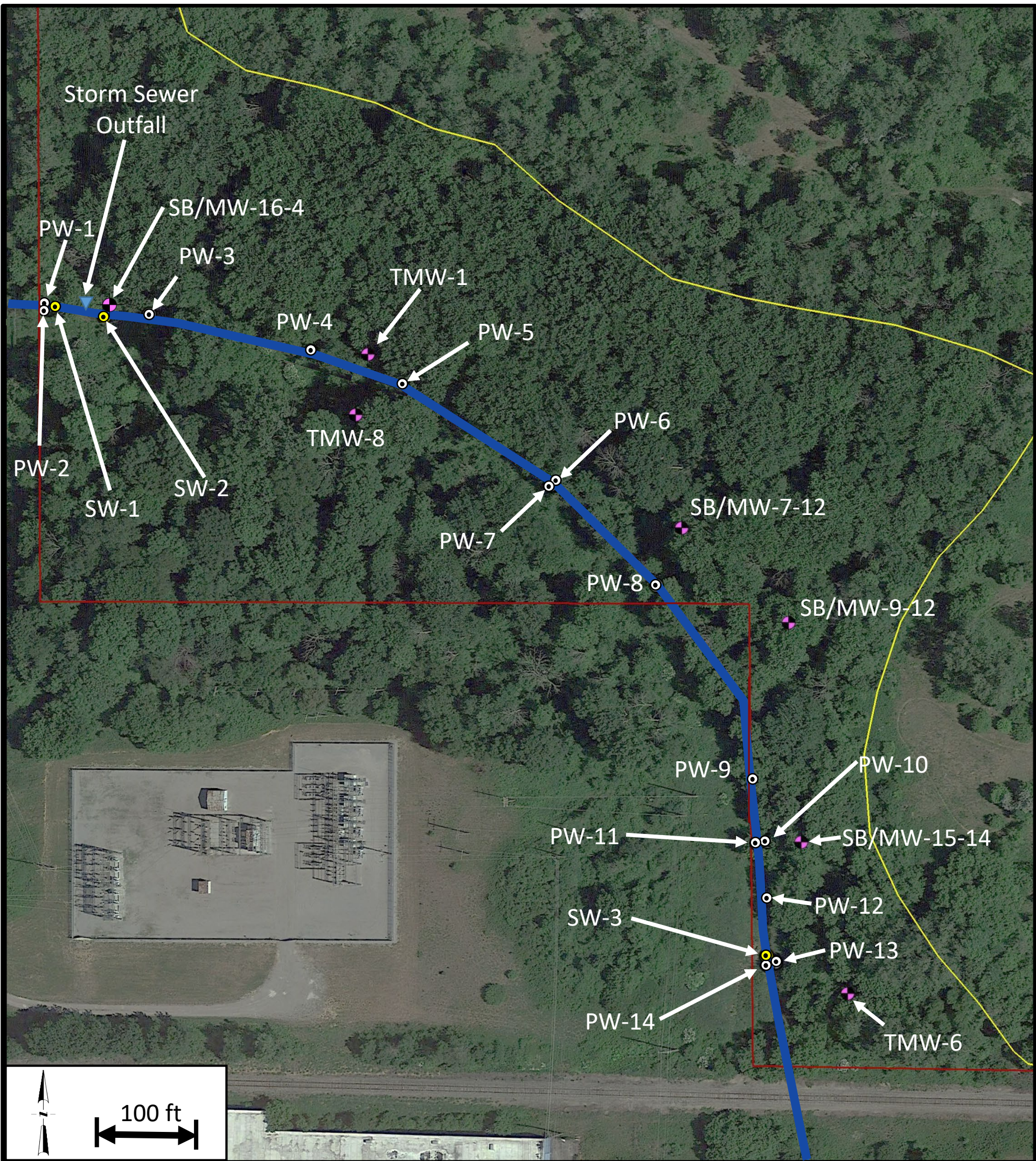
FIGURES



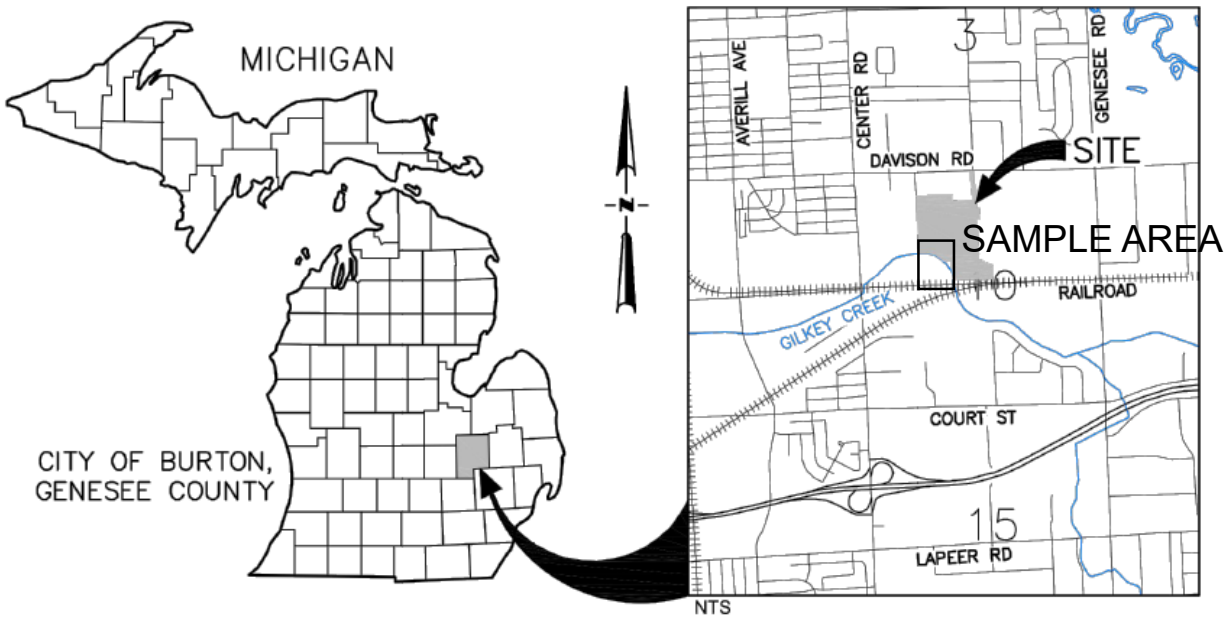
LEGEND

- Pore Water Sample
- Monitoring Well
- Storm Sewer Outfall
- Fill Boundary
- Gilkey Creek
- Site Boundary

FIGURE 1	PROJECT NO.: 1119.004	APPROVED BY : SG	SITE MAP		 Environmental Resources Group 28003 Center Oaks Court • Suite 106 • Wixom, MI • 48393 Phone: 248-773-7986 • Fax: 248-924-3108
	DRWG by : TNV	SCALE: 1" = 200'	DAVISON ROAD INDUSTRIAL LAND RACER TRUST		
	DATE : 6/14/18	SHEET : 1 OF 4	DAVISON AND DONEGAL, BURTON, MICHIGAN		



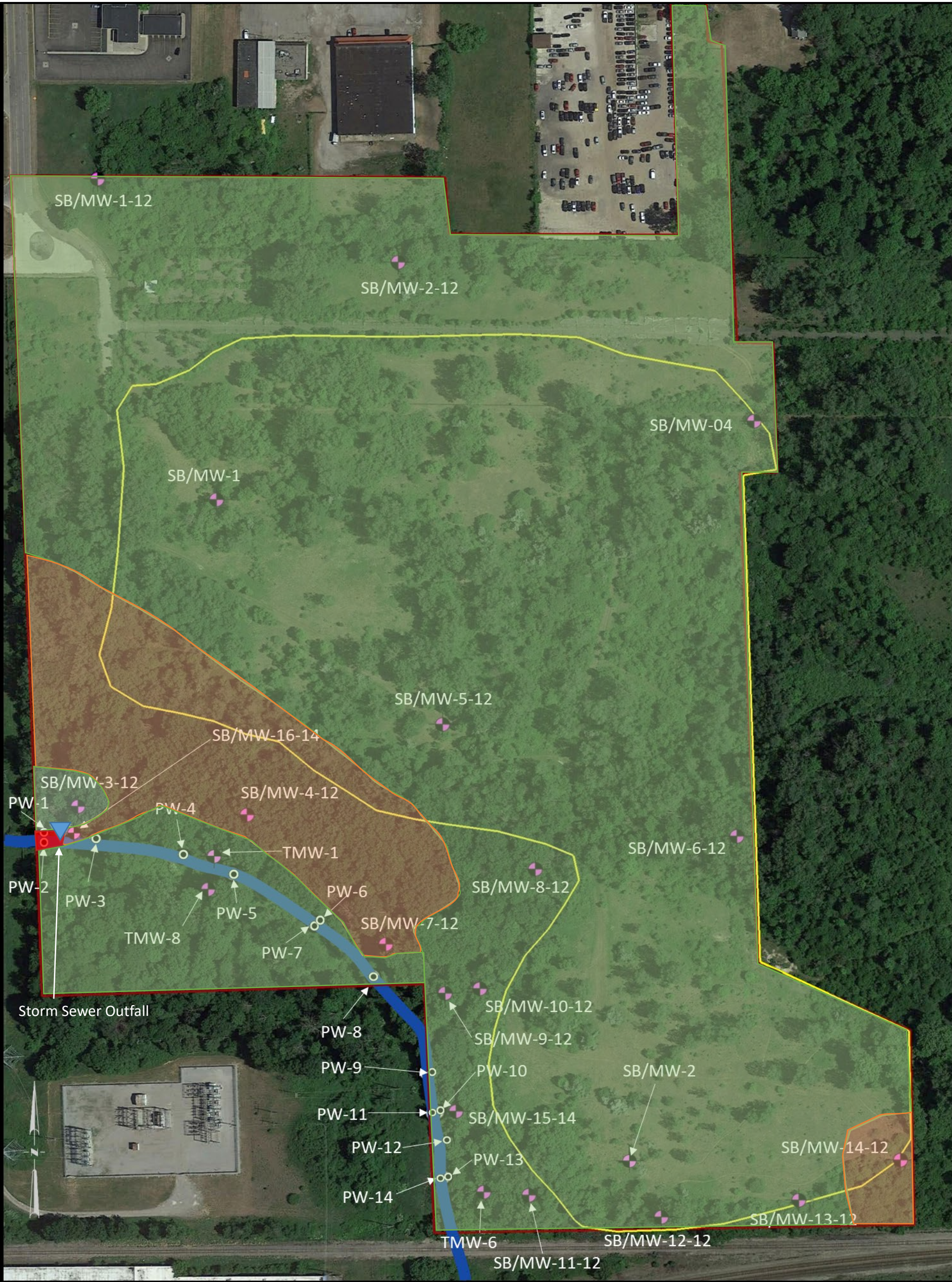
LOCATON MAP



LEGEND

- Monitoring Well
- Porewater Sample
- Surface Water Sample
- Fill Boundary
- Site Boundary
- Gilkey Creek

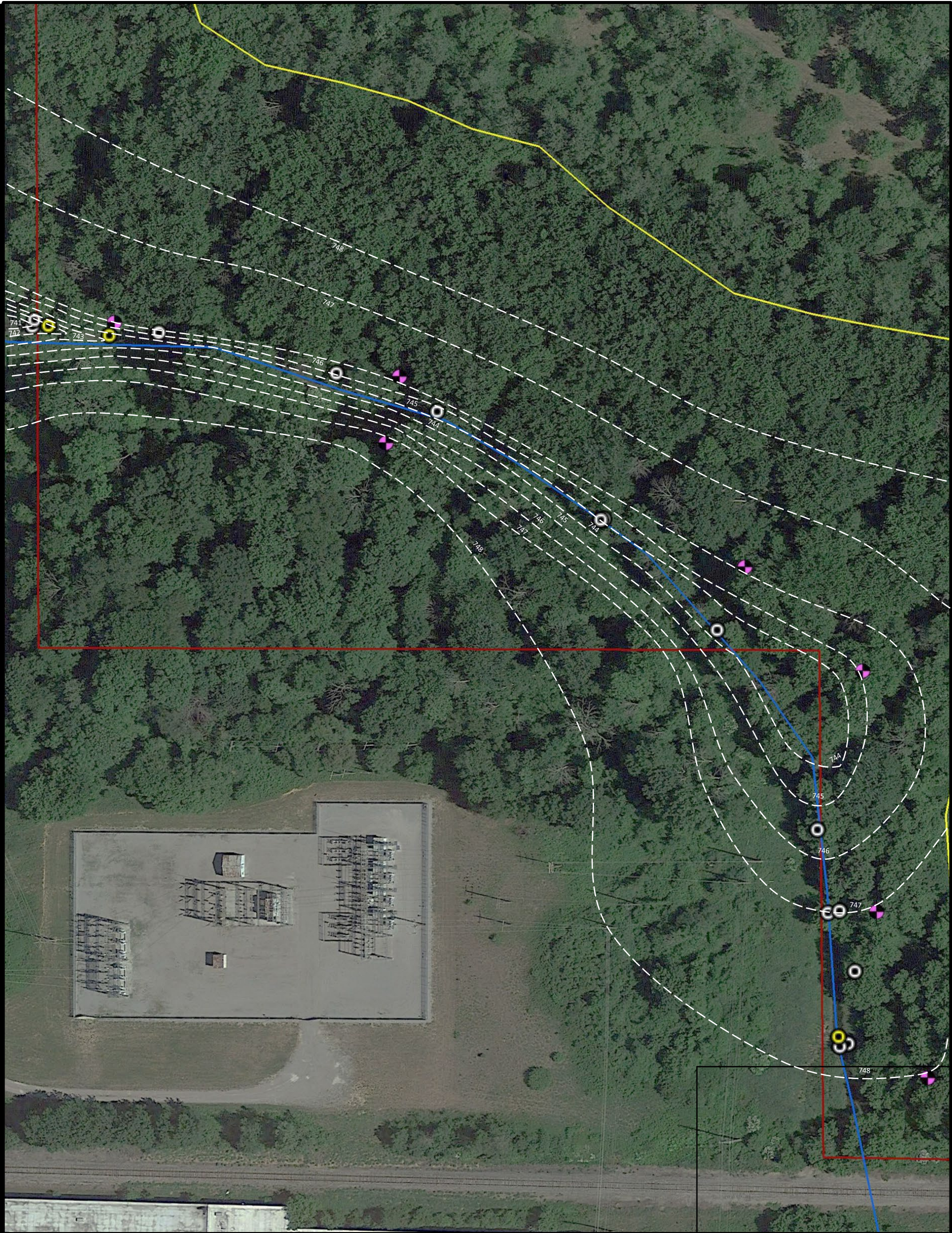
FIGURE 2	PROJECT NO.: 1119.004	APPROVED BY : SG	SAMPLE LOCATION MAP DAVISON ROAD INDUSTRIAL LAND RACER TRUST DAVISON AND DONEGAL, BURTON, MICHIGAN	 Environmental Resources Group 28003 Center Oaks Court • Suite 106 • Wixom, MI • 48393 Phone: 248-773-7986 • Fax: 248-924-3108
	DRWG by : TNV			
	DATE : 9/20/18	SHEET : 2 of 4		



LEGEND

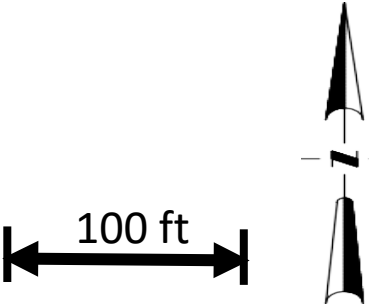
- Monitoring Well
- Pore Water Sample
- Gilkey Creek
- Fill Boundary
- Site Boundary
- Area of Low Hydraulic Conductivity Soil
- Area of High Hydraulic Conductivity Soil
- Area of Potential Groundwater Interaction

FIGURE 3	PROJECT NO.: 1119.004	APPROVED BY : SG	SUBSURFACE LITHOLOGY MAP DAVISON ROAD INDUSTRIAL LAND RACER TRUST DAVISON AND DONEGAL, BURTON, MICHIGAN	Environmental Resources Group 28003 Center Oaks Court • Suite 106 • Wixom, MI • 48393 Phone: 248-773-7986 • Fax: 248-924-3108
	DRWG by : TNV	SCALE: 1" = 200'		
	DATE : 9/21/18	SHEET : 3 OF 4		



LEGEND

-  Monitoring Well
-  Porewater Sample
-  Surface Water Sample
-  Fill Boundary
-  Site Boundary
-  Gilkey Creek



*Groundwater elevations inferred from well static water levels measured during sampling event

FIGURE 4	PROJECT NO.: 1119.004	APPROVED BY : SG	GROUNDWATER ELEVATION MAP DAVISON ROAD INDUSTRIAL LAND RACER TRUST DAVISON AND DONEGAL, BURTON, MICHIGAN	 Environmental Resources Group 28003 Center Oaks Court • Suite 106 • Wixom, MI • 48393 Phone: 248-773-7986 • Fax: 248-924-3108
	DRWG by : TNV			
	DATE : 9/20/18	SHEET : 4 of 4		

APPENDIX 2

TABLES

Table 1 - Static Groundwater Elevations
RACER-Davison Road Industrial Land
September 4-6, 2018
ERG Project No.: 1119.004



Well	Northing (or Latitude)	Easting (or Longitude)	Ground Elevation at Well (ft.)	Well Depth to Bottom (ft.)	Well Top of Casing Elevation (ft.)	Depth to Water (ft.)	Static Water Level Elevation (ft.)
SB/MW-7-12	557611.5	13320911.8	752.35	13.95	755.48	9.12	746.36
SB/MW-9-12	557520.3	13321024.6	752.23	15.35	755.52	9.58	745.94
SB/MW-15-14	557304.067	13321043.54	751.17	21.74	754.47	7.05	747.42
SB/MW-16-14	557814.307	13320322.36	751.82	13.17	755.02	8.45	746.57
TMW-1	557773.6	13320589.4	753.09	15.23	756.01	9.60	746.41
TMW-6	557152.9	13321095.7	754.17	12.9	756.43	7.89	748.54
TMW-8	557711.535	13320575.93	753.722	17.5	757.92	10.82	747.10
PW-1	43.0282694	-83.63021311	742.099	3.02	743.08	1.19	741.89
PW-2	43.0282534	-83.63021981	742.302	2.71	743.59	1.85	741.74
PW-3	43.0282486	-83.62978636	750.899	N/A	N/A	N/A	N/A
PW-4	43.0281618	-83.62917469	751.619	N/A	N/A	N/A	N/A
PW-5	43.0280744	-83.62882563	765.438	N/A	N/A	N/A	N/A
PW-6	43.0278192	-83.62824362	765.694	N/A	N/A	N/A	N/A
PW-7	43.0278168	-83.62825383	754.549	N/A	N/A	N/A	N/A
PW-8	43.0275503	-83.62784312	754.016	N/A	N/A	N/A	N/A
PW-9	43.027058	-83.6274769	742.125	N/A	N/A	N/A	N/A
PW-10	43.0268562	-83.62739187	743.334	N/A	N/A	N/A	N/A
PW-11	43.0268503	-83.62743103	742.334	N/A	N/A	N/A	N/A
PW-12	43.026706	-83.62733224	744.568	N/A	N/A	N/A	N/A
PW-13	43.0265239	-83.62734725	744.177	N/A	N/A	N/A	N/A
PW-14	43.0265161	-83.62737499	742.345	N/A	N/A	N/A	N/A

750.899

- Presumed to be erroneous GPS data

TABLE 2 - Porewater Analytical Results Summary
RACER-Davison Road Industrial Land
September 4-6, 2018
ERG Project No.: 1119.004

Constituent* *(Refer to detailed laboratory report for method reference data)	Chemical Abstract Service Number	Residential Drinking Water Criteria	Nonresidential Drinking Water Criteria	Groundwater Surface Water Interface Criteria	Sample Location	PW-1	PW-2	Eq. Blank
					Sample Identification			
					Collection Date	9/4/2018	9/4/2018	9/6/2018
Metals (Total)								
Arsenic	7440-38-2	10 (A)	10 (A)	10		0.76	6.8	< 0.75
Metals (Dissolved)								
Arsenic						< 0.75	< 0.75	-

Notes:

Concentrations were compared to MDEQ Cleanup Criteria Requirements for Response Activity (CCRRA), Effective December 30, 2013 (formerly Part 201 Residential Generic Cleanup Criteria and Screening Levels; Part 213 Tier 1 Risk-Based Screening Levels (RBSLs))

Bold -Concentrations exceeding the Residential/Nonresidential Drinking Water CCRRA.

Italic -Concentrations exceeding the Groundwater/Surface Water Interface (GSI) CCRRA.

Units are measured in ug/L

NA = Not Analyzed

NS = Not Sampled

Refer to R 299.49 for Footnotes for Generic Cleanup Criteria.

APPENDIX 3

WATER QUALITY PARAMETER TEST RESULTS

Low-Flow Test Report:

Test Date / Time: 9/4/2018 11:50:56 AM
Project: SB/MW-16-14
Operator Name: LLL/TNV

Location Name: SB/MW-16-14 Well Diameter: 2 in Casing Type: PVC Screen Length: 5 ft Top of Screen: 5 ft Total Depth: 13.17 ft Initial Depth to Water: 8.45 ft	Pump Type: Peristaltic Tubing Type: HDPE 0.17" ID Pump Intake From TOC: 10.5 ft Estimated Total Volume Pumped: 3454.167 ml Flow Cell Volume: 130 ml Final Flow Rate: 125 ml/min Final Draw Down: 8.49 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Purge at 11:52
Began test at 11:58
1.5 gal purged

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5	
9/4/2018 11:50 AM	00:00	6.80 pH	68.47 °F	1,119.6 µS/cm	0.55 mg/L	6.04 NTU	9.6 mV	8.45 ft	125.00 ml/min
9/4/2018 11:56 AM	05:48	6.80 pH	67.24 °F	1,062.1 µS/cm	0.51 mg/L	2.08 NTU	-23.1 mV	8.45 ft	125.00 ml/min
9/4/2018 11:57 AM	06:38	6.80 pH	67.14 °F	1,041.2 µS/cm	0.49 mg/L	0.36 NTU	-28.0 mV	8.45 ft	125.00 ml/min
9/4/2018 12:00 PM	09:38	6.80 pH	67.02 °F	1,014.6 µS/cm	0.46 mg/L	0.00 NTU	-44.5 mV	8.45 ft	125.00 ml/min
9/4/2018 12:03 PM	12:38	6.80 pH	66.85 °F	1,000.5 µS/cm	0.41 mg/L	0.00 NTU	-61.1 mV	8.45 ft	125.00 ml/min
9/4/2018 12:06 PM	15:38	6.80 pH	66.68 °F	986.81 µS/cm	0.37 mg/L	0.00 NTU	-74.9 mV	8.45 ft	125.00 ml/min
9/4/2018 12:09 PM	18:38	6.80 pH	66.68 °F	975.82 µS/cm	0.36 mg/L	0.00 NTU	-86.3 mV	8.45 ft	125.00 ml/min
9/4/2018 12:12 PM	21:38	6.81 pH	66.41 °F	963.77 µS/cm	0.33 mg/L	0.00 NTU	-95.9 mV	8.45 ft	125.00 ml/min
9/4/2018 12:15 PM	24:38	6.81 pH	66.42 °F	964.69 µS/cm	0.17 mg/L	0.00 NTU	-102.8 mV	8.45 ft	125.00 ml/min
9/4/2018 12:18 PM	27:38	6.81 pH	66.40 °F	955.68 µS/cm	0.16 mg/L	0.00 NTU	-110.1 mV	8.45 ft	125.00 ml/min

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 9/4/2018 1:41:16 PM
Project: PW-1 (2)
Operator Name: LLL/TNV

Location Name: PW-1 Well Diameter: 0.5 cm Casing Type: Stainless steel Screen Length: 1.5 in Top of Screen: 34.75 in Total Depth: 36.25 in Initial Depth to Water: 14.25 in	Pump Type: Peristaltic Tubing Type: Ldpe Pump Intake From TOC: 34.25 in Estimated Total Volume Pumped: 960 ml Flow Cell Volume: 130 ml Final Flow Rate: 80 ml/min Final Draw Down: 0 in	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5	
9/4/2018 1:41 PM	00:00	7.44 pH	75.58 °F	364.26 µS/cm	2.39 mg/L	36.20 NTU	121.5 mV	1.19 ft	80.00 ml/min
9/4/2018 1:44 PM	03:00	7.38 pH	72.44 °F	386.48 µS/cm	0.87 mg/L	26.06 NTU	120.7 mV	1.19 ft	80.00 ml/min
9/4/2018 1:47 PM	06:00	7.37 pH	71.84 °F	387.86 µS/cm	0.86 mg/L	13.30 NTU	130.7 mV	1.19 ft	80.00 ml/min
9/4/2018 1:50 PM	09:00	7.37 pH	71.77 °F	388.18 µS/cm	0.86 mg/L	13.39 NTU	132.6 mV	1.19 ft	80.00 ml/min
9/4/2018 1:53 PM	12:00	7.38 pH	71.49 °F	387.13 µS/cm	0.86 mg/L	6.14 NTU	132.0 mV	1.19 ft	80.00 ml/min

Samples

Sample ID:	Description:
PW-1	Total/Diss Arsenic

Low-Flow Test Report:

Test Date / Time: 9/4/2018 2:57:09 PM
Project: PW-2
Operator Name: LLL/TNV

Location Name: PW-2 Well Diameter: 0.5 cm Casing Type: Stainless steel Screen Length: 1.5 in Top of Screen: 31 in Total Depth: 32.5 in Initial Depth to Water: 22.25 in	Pump Type: Peristaltic Tubing Type: Ldpe Pump Intake From TOC: 31 in Estimated Total Volume Pumped: 2100 ml Flow Cell Volume: 130 ml Final Flow Rate: 100 ml/min Final Draw Down: 0 in	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5	
9/4/2018 2:57 PM	00:00	7.43 pH	84.15 °F	355.27 µS/cm	4.00 mg/L	103.34 NTU	137.1 mV	1.85 ft	100.00 ml/min
9/4/2018 3:00 PM	03:00	7.35 pH	75.98 °F	371.77 µS/cm	2.10 mg/L	33.74 NTU	164.2 mV	1.85 ft	100.00 ml/min
9/4/2018 3:03 PM	06:00	7.31 pH	74.71 °F	375.05 µS/cm	2.06 mg/L	23.27 NTU	171.9 mV	1.85 ft	100.00 ml/min
9/4/2018 3:06 PM	09:00	7.29 pH	73.98 °F	376.73 µS/cm	2.04 mg/L	14.81 NTU	176.5 mV	1.85 ft	100.00 ml/min
9/4/2018 3:09 PM	12:00	7.27 pH	73.89 °F	378.43 µS/cm	2.03 mg/L	3.82 NTU	176.0 mV	1.85 ft	100.00 ml/min
9/4/2018 3:12 PM	15:00	7.27 pH	74.44 °F	379.95 µS/cm	2.02 mg/L	2.04 NTU	176.5 mV	1.85 ft	100.00 ml/min
9/4/2018 3:15 PM	18:00	7.29 pH	74.52 °F	379.11 µS/cm	2.00 mg/L	2.92 NTU	176.7 mV	1.85 ft	100.00 ml/min
9/4/2018 3:18 PM	21:00	7.31 pH	74.11 °F	376.66 µS/cm	1.99 mg/L	9.25 NTU	176.7 mV	1.85 ft	100.00 ml/min

Samples

Sample ID:	Description:
PW-2	Total/Diss As

Low-Flow Test Report:

Test Date / Time: 9/4/2018 3:36:50 PM
Project: SW-1
Operator Name: LLL/TNV

Location Name: SW-1	Flow Cell Volume: 130 ml	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:
Collecting Surface water for indicator parameters. SW-1 is taken west of culvert.

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5
9/4/2018 3:36 PM	00:00	8.00 pH	83.26 °F	1,143.6 µS/cm	8.64 mg/L	72.05 NTU	192.3 mV	
9/4/2018 3:37 PM	00:30	7.99 pH	82.91 °F	642.00 µS/cm	8.46 mg/L	47.21 NTU	174.1 mV	
9/4/2018 3:37 PM	01:00	8.00 pH	82.48 °F	1,138.1 µS/cm	8.51 mg/L	49.77 NTU	164.6 mV	
9/4/2018 3:38 PM	01:30	8.00 pH	82.44 °F	1,139.8 µS/cm	8.51 mg/L	44.70 NTU	158.2 mV	
9/4/2018 3:38 PM	02:00	7.99 pH	82.49 °F	1,144.7 µS/cm	8.46 mg/L	49.85 NTU	153.7 mV	

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 9/4/2018 3:40:47 PM
Project: SW-2
Operator Name: LLL/TNV

Location Name: SW-2	Flow Cell Volume: 130 ml	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:
Collecting Surface water for indicator parameters. SW-2 is taken east of culvert.

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5
9/4/2018 3:40 PM	00:00	8.03 pH	82.58 °F	1,143.9 µS/cm	8.69 mg/L	48.92 NTU	163.7 mV	
9/4/2018 3:41 PM	00:30	8.00 pH	82.51 °F	1,141.6 µS/cm	8.44 mg/L	47.14 NTU	156.3 mV	
9/4/2018 3:41 PM	01:00	8.00 pH	82.48 °F	1,143.5 µS/cm	8.40 mg/L	46.49 NTU	152.0 mV	
9/4/2018 3:42 PM	01:30	8.00 pH	82.46 °F	1,143.2 µS/cm	8.40 mg/L	44.68 NTU	150.1 mV	

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 9/5/2018 10:09:07 AM
Project: TMW-1
Operator Name: LLL/TNV

Location Name: TMW-1 Well Diameter: 1 in Casing Type: PVC Screen Length: 5 ft Top of Screen: 10 ft Total Depth: 15.06 ft Initial Depth to Water: 9.6 ft	Pump Type: Peristaltic Tubing Type: HDPE 0.17" ID Pump Intake From TOC: 13.3 ft Estimated Total Volume Pumped: 1260 ml Flow Cell Volume: 130 ml Final Flow Rate: 60 ml/min Final Draw Down: 1.39 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:
10:00 Drawdown exceeded .3 ft during flow cell filling, reduced flow rate to allow water level to start to recover before beginning test. Started low flow at 10:08 with exceeded drawdown.

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5	
9/5/2018 10:09 AM	00:00	6.81 pH	67.57 °F	1,290.0 µS/cm	0.81 mg/L	4.73 NTU	147.9 mV	10.69 ft	60.00 ml/min
9/5/2018 10:12 AM	03:00	6.81 pH	66.98 °F	1,297.6 µS/cm	0.65 mg/L	1.50 NTU	128.4 mV	10.75 ft	60.00 ml/min
9/5/2018 10:15 AM	06:00	6.81 pH	66.41 °F	1,303.6 µS/cm	0.62 mg/L	4.46 NTU	109.9 mV	10.79 ft	60.00 ml/min
9/5/2018 10:18 AM	09:00	6.81 pH	65.93 °F	1,312.9 µS/cm	0.55 mg/L	9.15 NTU	94.8 mV	10.82 ft	60.00 ml/min
9/5/2018 10:21 AM	12:00	6.81 pH	66.02 °F	1,325.0 µS/cm	0.45 mg/L	10.59 NTU	82.1 mV	10.92 ft	60.00 ml/min
9/5/2018 10:24 AM	15:00	6.82 pH	65.93 °F	1,329.1 µS/cm	0.40 mg/L	10.36 NTU	72.1 mV	10.96 ft	60.00 ml/min
9/5/2018 10:27 AM	18:00	6.82 pH	65.83 °F	1,335.0 µS/cm	0.37 mg/L	17.39 NTU	63.5 mV	10.99 ft	60.00 ml/min
9/5/2018 10:30 AM	21:00	6.82 pH	65.96 °F	1,339.6 µS/cm	0.35 mg/L	20.95 NTU	56.6 mV	10.99 ft	60.00 ml/min

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 9/5/2018 11:50:20 AM
Project: TMW-8
Operator Name: LLL/TNV

Location Name: TMW-8 Well Diameter: 1 in Casing Type: PVC Screen Length: 5 ft Top of Screen: 12.5 ft Total Depth: 17.5 ft Initial Depth to Water: 10.82 ft	Pump Type: Peristaltic Tubing Type: HDPE 0.17" ID Pump Intake From TOC: 15 ft Estimated Total Volume Pumped: 1725 ml Flow Cell Volume: 130 ml Final Flow Rate: 115 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5	
9/5/2018 11:50 AM	00:00	6.78 pH	67.92 °F	559.78 µS/cm	1.68 mg/L	260.49 NTU	56.7 mV	10.82 ft	115.00 ml/min
9/5/2018 11:53 AM	03:00	6.81 pH	65.88 °F	527.05 µS/cm	0.27 mg/L	10.72 NTU	51.6 mV	10.82 ft	115.00 ml/min
9/5/2018 11:56 AM	06:00	6.81 pH	64.78 °F	520.05 µS/cm	0.20 mg/L	1.77 NTU	40.9 mV	10.82 ft	115.00 ml/min
9/5/2018 11:59 AM	09:00	6.81 pH	63.96 °F	520.70 µS/cm	0.16 mg/L	0.89 NTU	36.9 mV	10.82 ft	115.00 ml/min
9/5/2018 12:02 PM	12:00	6.80 pH	64.02 °F	515.55 µS/cm	0.15 mg/L	0.00 NTU	33.6 mV	10.82 ft	115.00 ml/min
9/5/2018 12:05 PM	15:00	6.81 pH	63.68 °F	516.41 µS/cm	0.15 mg/L	0.00 NTU	30.3 mV	10.82 ft	115.00 ml/min

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 9/5/2018 4:22:36 PM
Project: SB/MW-7-12
Operator Name: LLL/TNV

Location Name: SB/MW-7-12 Well Diameter: 2 in Casing Type: PVC Screen Length: 5 ft Top of Screen: 5.5 ft Total Depth: 13.95 ft Initial Depth to Water: 9.12 ft	Pump Type: Peristaltic Tubing Type: HDPE 0.17" ID Pump Intake From TOC: 11.5 ft Estimated Total Volume Pumped: 1104 ml Flow Cell Volume: 130 ml Final Flow Rate: 92 ml/min Final Draw Down: 0.43 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:
4:15 well drawdown at start of pumping while filling flow cell prior to start of test

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5	
9/5/2018 4:22 PM	00:00	6.95 pH	68.91 °F	1,455.7 µS/cm	1.13 mg/L	0.89 NTU	158.6 mV	9.38 ft	92.00 ml/min
9/5/2018 4:25 PM	03:00	6.92 pH	68.51 °F	1,467.5 µS/cm	0.96 mg/L	1.19 NTU	153.0 mV	9.55 ft	92.00 ml/min
9/5/2018 4:28 PM	06:00	6.90 pH	67.98 °F	1,472.3 µS/cm	1.01 mg/L	5.00 NTU	149.6 mV	9.55 ft	92.00 ml/min
9/5/2018 4:31 PM	09:00	6.89 pH	67.65 °F	1,478.6 µS/cm	1.12 mg/L	0.49 NTU	148.8 mV	9.55 ft	92.00 ml/min
9/5/2018 4:34 PM	12:00	6.89 pH	67.56 °F	1,481.0 µS/cm	1.19 mg/L	1.20 NTU	147.8 mV	9.55 ft	92.00 ml/min

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 9/6/2018 9:46:02 AM
Project: SB/MW-9-12
Operator Name: LLL/TNV

Location Name: SB/MW-9-12 Well Diameter: 2 in Casing Type: PVC Screen Length: 5 ft Top of Screen: 7 ft Total Depth: 15.35 ft Initial Depth to Water: 9.58 ft	Pump Type: Peristaltic Tubing Type: HDPE 0.17" ID Pump Intake From TOC: 12.5 ft Estimated Total Volume Pumped: 690 ml Flow Cell Volume: 130 ml Final Flow Rate: 30 ml/min Final Draw Down: 0.72 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:
Drawdown exceeded during low flow, continued with test.

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5	
9/6/2018 9:46 AM	00:00	6.92 pH	65.38 °F	2,132.0 µS/cm	2.51 mg/L	19.98 NTU	33.6 mV	9.87 ft	50.00 ml/min
9/6/2018 9:49 AM	03:00	6.91 pH	63.37 °F	2,170.1 µS/cm	0.60 mg/L	18.31 NTU	8.3 mV	9.95 ft	30.00 ml/min
9/6/2018 9:52 AM	06:00	6.91 pH	62.93 °F	2,177.4 µS/cm	0.52 mg/L	31.97 NTU	5.2 mV	10.02 ft	30.00 ml/min
9/6/2018 9:55 AM	09:00	6.90 pH	62.17 °F	2,180.5 µS/cm	0.46 mg/L	24.20 NTU	3.1 mV	10.07 ft	30.00 ml/min
9/6/2018 9:58 AM	12:00	6.89 pH	61.58 °F	2,179.9 µS/cm	0.39 mg/L	33.82 NTU	2.2 mV	10.12 ft	30.00 ml/min
9/6/2018 10:01 AM	15:00	6.89 pH	61.11 °F	2,182.2 µS/cm	0.35 mg/L	43.75 NTU	1.2 mV	10.18 ft	30.00 ml/min
9/6/2018 10:04 AM	18:00	6.88 pH	60.73 °F	2,185.0 µS/cm	0.34 mg/L	54.51 NTU	1.1 mV	10.28 ft	30.00 ml/min
9/6/2018 10:07 AM	21:00	6.88 pH	60.28 °F	2,178.9 µS/cm	0.30 mg/L	51.13 NTU	0.4 mV	10.30 ft	30.00 ml/min

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 9/6/2018 11:03:37 AM
Project: SB/MW-15-14
Operator Name: LLL/TNV

Location Name: SB/MW-15-14 Well Diameter: 2 in Casing Type: PVC Screen Length: 5 ft Top of Screen: 13.5 ft Total Depth: 21.74 ft Initial Depth to Water: 7.05 ft	Pump Type: Peristaltic Tubing Type: HDPE 0.17" ID Pump Intake From TOC: 19.5 ft Estimated Total Volume Pumped: 1218 ml Flow Cell Volume: 130 ml Final Flow Rate: 58 ml/min Final Draw Down: 0.57 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:
Drawdown exceeded during low flow, continued with test.

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5	
9/6/2018 11:03 AM	00:00	7.31 pH	63.09 °F	2,040.1 µS/cm	3.16 mg/L	0.35 NTU	154.0 mV	7.34 ft	58.00 ml/min
9/6/2018 11:06 AM	03:00	7.29 pH	61.47 °F	2,058.2 µS/cm	0.66 mg/L	0.00 NTU	133.8 mV	7.40 ft	58.00 ml/min
9/6/2018 11:09 AM	06:00	7.28 pH	61.03 °F	2,066.1 µS/cm	0.48 mg/L	0.00 NTU	112.9 mV	7.46 ft	58.00 ml/min
9/6/2018 11:12 AM	09:00	7.27 pH	60.64 °F	2,088.2 µS/cm	0.42 mg/L	0.00 NTU	82.0 mV	7.53 ft	58.00 ml/min
9/6/2018 11:15 AM	12:00	7.26 pH	59.99 °F	2,098.5 µS/cm	0.35 mg/L	0.00 NTU	53.5 mV	7.53 ft	58.00 ml/min
9/6/2018 11:18 AM	15:00	7.26 pH	59.62 °F	2,111.5 µS/cm	0.31 mg/L	0.00 NTU	32.6 mV	7.57 ft	58.00 ml/min
9/6/2018 11:21 AM	18:00	7.25 pH	59.48 °F	2,118.7 µS/cm	0.30 mg/L	0.00 NTU	20.1 mV	7.62 ft	58.00 ml/min
9/6/2018 11:24 AM	21:00	7.25 pH	59.39 °F	2,131.2 µS/cm	0.28 mg/L	0.00 NTU	8.8 mV	7.62 ft	58.00 ml/min

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 9/6/2018 11:44:42 AM
Project: TMW-6
Operator Name: LLL/TNV

Location Name: TMW-6 Well Diameter: 1 in Casing Type: PVC Screen Length: 5 ft Top of Screen: 8 ft Total Depth: 12.9 ft Initial Depth to Water: 7.89 ft	Pump Type: Peristaltic Tubing Type: HDPE 0.17" ID Pump Intake From TOC: 10.5 ft Estimated Total Volume Pumped: 1260 ml Flow Cell Volume: 130 ml Final Flow Rate: 60 ml/min Final Draw Down: 2.06 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:
Drawdown exceeded during filling of flow cell, continued with low flow test.

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5	
9/6/2018 11:44 AM	00:00	6.90 pH	62.80 °F	1,814.8 µS/cm	3.62 mg/L	1.20 NTU	-14.9 mV	8.76 ft	60.00 ml/min
9/6/2018 11:47 AM	03:00	6.85 pH	60.99 °F	1,834.3 µS/cm	0.60 mg/L	0.00 NTU	-14.8 mV	8.88 ft	60.00 ml/min
9/6/2018 11:50 AM	06:00	6.85 pH	60.25 °F	1,861.7 µS/cm	0.59 mg/L	2.12 NTU	-23.8 mV	9.45 ft	60.00 ml/min
9/6/2018 11:53 AM	09:00	6.86 pH	59.96 °F	1,864.5 µS/cm	0.96 mg/L	8.80 NTU	-20.4 mV	9.95 ft	60.00 ml/min
9/6/2018 11:56 AM	12:00	6.86 pH	59.83 °F	1,916.1 µS/cm	0.86 mg/L	5.24 NTU	-22.3 mV	9.95 ft	60.00 ml/min
9/6/2018 11:59 AM	15:00	6.88 pH	59.96 °F	1,908.7 µS/cm	1.95 mg/L	4.26 NTU	-20.9 mV	9.95 ft	60.00 ml/min
9/6/2018 12:02 PM	18:00	6.91 pH	60.88 °F	1,927.6 µS/cm	3.74 mg/L	3.99 NTU	-13.5 mV	9.95 ft	60.00 ml/min
9/6/2018 12:05 PM	21:00	6.94 pH	61.56 °F	1,728.4 µS/cm	4.69 mg/L	4.55 NTU	-5.5 mV	9.95 ft	60.00 ml/min

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 9/6/2018 12:33:39 PM
Project: SW-3
Operator Name: LLL/TNV

Location Name: SW-3	Flow Cell Volume: 130 ml	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:
SW north/downstream of RR culverts

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.3	+/- 10	+/- 10	+/- 5
9/6/2018 12:33 PM	00:00	7.89 pH	69.33 °F	995.56 µS/cm	8.69 mg/L	49.74 NTU	97.6 mV	
9/6/2018 12:34 PM	00:30	7.91 pH	69.71 °F	992.72 µS/cm	8.11 mg/L	40.14 NTU	90.7 mV	
9/6/2018 12:34 PM	01:00	7.91 pH	69.85 °F	990.06 µS/cm	8.01 mg/L	42.76 NTU	89.1 mV	
9/6/2018 12:35 PM	01:30	7.91 pH	69.94 °F	989.09 µS/cm	7.99 mg/L	36.69 NTU	89.4 mV	
9/6/2018 12:35 PM	02:00	7.91 pH	70.00 °F	988.00 µS/cm	7.99 mg/L	35.04 NTU	89.4 mV	

Samples

Sample ID:	Description:
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APPENDIX 4

LABORATORY ANALYTICAL RESULTS

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton

4101 Shuffel Street NW

North Canton, OH 44720

Tel: (330)497-9396

TestAmerica Job ID: 240-100973-1

Client Project/Site: Racer-Davison Road, Burton, MI

For:

Environmental Resources Group, LLC

28003 Center Oaks Ct.

Suite 106

Wixom, Michigan 48393

Attn: Susan Graves



Authorized for release by:

9/28/2018 2:12:05 PM

Kris Brooks, Project Manager II

(330)966-9790

kris.brooks@testamericainc.com

LINKS

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results through

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Visit us at:

www.testamericainc.com

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

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

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Definitions/Glossary

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Case Narrative

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Job ID: 240-100973-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Environmental Resources Group, LLC

Project: Racer-Davison Road, Burton, MI

Report Number: 240-100973-1

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

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

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

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

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

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

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

RECEIPT

The samples were received on 9/8/2018 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.3° C.

DISSOLVED METALS (ICPMS)

Samples PW-1 (240-100973-1) and PW-2 (240-100973-2) were analyzed for dissolved metals (ICPMS) in accordance with EPA SW-846 Method 6020. The samples were prepared on 09/10/2018 and analyzed on 09/26/2018.

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

TOTAL RECOVERABLE METALS (ICPMS)

Samples PW-1 (240-100973-1), PW-2 (240-100973-2) and EQ BLANK (240-100973-3) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020. The samples were prepared on 09/10/2018 and analyzed on 09/26/2018.

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

Case Narrative

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Job ID: 240-100973-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

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Method Summary

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Method	Method Description	Protocol	Laboratory
6020	Metals (ICP/MS)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

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

Laboratory References:

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

Sample Summary

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-100973-1	PW-1	Water	09/04/18 14:00	09/08/18 09:45
240-100973-2	PW-2	Water	09/04/18 15:25	09/08/18 09:45
240-100973-3	EQ BLANK	Water	09/06/18 17:30	09/08/18 09:45

Detection Summary

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Client Sample ID: PW-1

Lab Sample ID: 240-100973-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.76	J	5.0	0.75	ug/L	1		6020	Total Recoverable

Client Sample ID: PW-2

Lab Sample ID: 240-100973-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	6.8		5.0	0.75	ug/L	1		6020	Total Recoverable

Client Sample ID: EQ BLANK

Lab Sample ID: 240-100973-3

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Client Sample Results

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Client Sample ID: PW-1

Date Collected: 09/04/18 14:00

Date Received: 09/08/18 09:45

Lab Sample ID: 240-100973-1

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.76	J	5.0	0.75	ug/L	—	09/10/18 14:00	09/26/18 16:53	1

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.75	U	5.0	0.75	ug/L	—	09/10/18 14:00	09/26/18 16:58	1

Client Sample Results

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Client Sample ID: PW-2

Date Collected: 09/04/18 15:25

Date Received: 09/08/18 09:45

Lab Sample ID: 240-100973-2

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.8		5.0	0.75	ug/L	—	09/10/18 14:00	09/26/18 17:02	1

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.75	U	5.0	0.75	ug/L	—	09/10/18 14:00	09/26/18 17:07	1

Client Sample Results

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Client Sample ID: EQ BLANK

Date Collected: 09/06/18 17:30

Date Received: 09/08/18 09:45

Lab Sample ID: 240-100973-3

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.75	U	5.0	0.75	ug/L	—	09/10/18 14:00	09/26/18 17:12	1

QC Sample Results

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 240-344653/1-A
Matrix: Water
Analysis Batch: 347488

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 344653

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.75	U	5.0	0.75	ug/L	-	09/10/18 14:00	09/26/18 16:44	1

Lab Sample ID: LCS 240-344653/3-A
Matrix: Water
Analysis Batch: 347488

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 344653

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1000	1000		ug/L	-	100	80 - 120

QC Association Summary

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Metals

Prep Batch: 344653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-100973-1	PW-1	Dissolved	Water	3005A	
240-100973-1	PW-1	Total Recoverable	Water	3005A	
240-100973-2	PW-2	Dissolved	Water	3005A	
240-100973-2	PW-2	Total Recoverable	Water	3005A	
240-100973-3	EQ BLANK	Total Recoverable	Water	3005A	
MB 240-344653/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-344653/3-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 347488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-100973-1	PW-1	Dissolved	Water	6020	344653
240-100973-1	PW-1	Total Recoverable	Water	6020	344653
240-100973-2	PW-2	Dissolved	Water	6020	344653
240-100973-2	PW-2	Total Recoverable	Water	6020	344653
240-100973-3	EQ BLANK	Total Recoverable	Water	6020	344653
MB 240-344653/1-A	Method Blank	Total Recoverable	Water	6020	344653
LCS 240-344653/3-A	Lab Control Sample	Total Recoverable	Water	6020	344653

Lab Chronicle

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Client Sample ID: PW-1

Date Collected: 09/04/18 14:00

Date Received: 09/08/18 09:45

Lab Sample ID: 240-100973-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			344653	09/10/18 14:00	MBB	TAL CAN
Dissolved	Analysis	6020		1	347488	09/26/18 16:58	DSH	TAL CAN
Total Recoverable	Prep	3005A			344653	09/10/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020		1	347488	09/26/18 16:53	DSH	TAL CAN

Client Sample ID: PW-2

Date Collected: 09/04/18 15:25

Date Received: 09/08/18 09:45

Lab Sample ID: 240-100973-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			344653	09/10/18 14:00	MBB	TAL CAN
Dissolved	Analysis	6020		1	347488	09/26/18 17:07	DSH	TAL CAN
Total Recoverable	Prep	3005A			344653	09/10/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020		1	347488	09/26/18 17:02	DSH	TAL CAN

Client Sample ID: EQ BLANK

Date Collected: 09/06/18 17:30

Date Received: 09/08/18 09:45

Lab Sample ID: 240-100973-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			344653	09/10/18 14:00	MBB	TAL CAN
Total Recoverable	Analysis	6020		1	347488	09/26/18 17:12	DSH	TAL CAN

Laboratory References:

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

Accreditation/Certification Summary

Client: Environmental Resources Group, LLC
Project/Site: Racer-Davison Road, Burton, MI

TestAmerica Job ID: 240-100973-1

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton

Regulatory Program:		DW	NPDES	RCRA	Other
Project Manager: Sue Graves Tel/Fax: 248-766-1648					
Site Contact: Laura Lambert Date: 9/4-9/6/18 Lab Contact: Kris Brooks Carrier:					
COC No: 288471 #1 of 2 COCs					
Sampler:					
For Lab Use Only: Walk-in Client: Lab Sampling:					
Job / SDG No.:					
Sample Specific Notes:					
240-100973 Chain of Custody					
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months					
Cooler Temp. ("C): Obs'd: _____ Therm ID No.: _____					
Received by: SAMPLE FRIDGE Company: EEC Date/Time: 9/6/18 1900					
Received by: JPH Date/Time: 9/7/18 10:55 Company: TAL					
Received by: SULLIVAN Date/Time: 9/8/18 9:45 Company: DUC					
Relinquished by: Taylor Vargi Jay May Relinquished by: Sample Fridge Relinquished by: Ed Bhat					
Company Name: ERG Address: 28003 Center Oaks Ct #106 City/State/Zip: Wixom, MI 48393 Phone: 248-773-7980 Fax:					
Project Name: RACER-DAVISON Rd Industrial Site: Landfill, Burton, MI PO #					
Analysis Turnaround Time ☐ CALENDAR DAYS ☐ WORKING DAYS TAT if different from Below ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day					
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.
PW-1	9/4/18	1500	G	GW	2
PW-2	9/4/18	1525	I	I	I
DUP of PW					
EQ BLANK	9/6/18	1730	I	L	1
Preservation Used: 1= Ice, 2= HCl; 3= H ₂ SO ₄ ; 4=HNO ₃ ; 5=NaOH; 6= Other					
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.					
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown					
Special Instructions/QC Requirements & Comments:					
Custody Seals Intact: ☐ Yes ☐ No					
Relinquished by: Taylor Vargi Jay May Relinquished by: Sample Fridge Relinquished by: Ed Bhat					
Company: ERG Date/Time: 9/6/18 1900					
Company: EEC Date/Time: 9/7/18 10:55					
Company: TAL Date/Time: 9/8/18 9:45					

TestAmerica Canton Sample Receipt Form/Narrative

Login #: 100973

Canton Facility

Client Eug Site Name alsis Cooler unpacked by: Bill Brown
 Cooler Received on 9/8/16 Opened on 9/8/16
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time

Storage Location

TestAmerica Cooler # TL Mich Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
 IR GUN# IR-8 (CF +0.9 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.3 °C
 IR GUN #36 (CF +0.6 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
 4. Did custody papers accompany the sample(s)? Yes No
 5. Were the custody papers relinquished & signed in the appropriate place? Yes No
 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 7. Did all bottles arrive in good condition (Unbroken)? Yes No
 8. Could all bottle labels be reconciled with the COC? Yes No
 9. Were correct bottle(s) used for the test(s) indicated? Yes No
 10. Sufficient quantity received to perform indicated analyses? Yes No
 11. Are these work share samples? Yes No
 If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC849161
 13. Were VOAs on the COC? Yes No NA
 14. Were air bubbles >6 mm in any VOA vials? Yes No NA Larger than this.
 15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
 16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not
checked for pH by
Receiving:

VOAs
Oil and Grease
TOC

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

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

Jr

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____

Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container</u> <u>pH</u>	<u>Preservative</u> <u>Added (mls)</u>	<u>Lot #</u>
PW-1	240-100973-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
PW-1	240-100973-B-1	Plastic 250ml - w/nitric - dis	<2	_____	_____
PW-2	240-100973-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
PW-2	240-100973-B-2	Plastic 250ml - w/nitric - dis	<2	_____	_____
EQ BLANK	240-100973-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____

APPENDIX 5

SOIL BORINGS



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB/MW-1-12

BORING LOCATION: NW corner of site

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/17/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Graves

CITY: Burton **COUNTY:** Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.0) Brown, Dry, SILT; with sand			1SS 0-1'			<1	
					2SS 1-2'			<1	
		(2.0 - 5.0) Brown, Dry, SILT; with clay, gravel			3SS 2-3'			<1	
					4SS 3-4'			<1	
					5SS 4-5'			<1	
-5.0	5	(5.0 - 7.0) Brown/Gray, Moist, SILT, CLAY and SAND; trace gravel			6SS 5-6'			<1	
					7SS 6-7'			<1	
		(7.0 - 11.0) Brown, Moist, SILT and FINE SAND			8SS 7-8'			<1	Collected sample at 7-7.5'
					9SS 8-9'			<1	
-10.0	10				10SS 9-10'			<1	
		(11.0 - 12.0) Gray, Wet, SILT			11SS 10-11'			<1	
					12SS 11-12'			<1	
-15.0	15								

GROUNDWATER OBSERVATIONS

☒ DURING DRILLING: 7.5'

☒ AT COMPLETION OF DRILLING: NR

☒ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB/MW-2-12

BORING LOCATION: East of MW-1

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/16/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 4.0) Brown, Dry, Silty SAND			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	
					4SS 3-4'			<1	
		(4.0 - 7.0) Brown, Very Moist, Silty SAND			5SS 4-5'			1	
-5.0	5				6SS 5-6'			<1	
					7SS 6-7'			<1	
		(7.0 - 11.0) Gray, Moist, CLAY			8SS 7-8'			<1	
					9SS 8-9'			<1	
-10.0	10				10SS 9-10'			<1	
					11SS 10-11'			<1	
		(11.0 - 16.0) Gray, Moist, SILT; trace clay			12SS 11-12'			<1	
					13SS 12-13'			<1	
					14SS 13-14'			<1	
-15.0	15				15SS 14-15'			<1	Collected sample at 14-15'
					16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

∞ DURING DRILLING: NE

▼ AT COMPLETION OF DRILLING: NR

▼ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB/MW-3-12

BORING LOCATION: West side of creek

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/19/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 1.0) Dark Brown, Dry, TOPSOIL, SAND and SILT; trace organics and gravel			1SS 0-1'			<1	
		(1.0 - 4.0) Brown, Dry, Sandy SILT; some organics, few gravel			2SS 1-2'			<1	
					3SS 2-3'			<1	
					4SS 3-4'			<1	Collected sample at 3-4'
		(4.0 - 8.0) Gray, Wet, Silty SAND			5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
					7SS 6-7'			<1	
					8SS 7-8'			<1	
		(8.0 - 12.0) Gray, Wet, SILT; some clay			9SS 8-9'			<1	
-10.0	10				10SS 9-10'			<1	
					11SS 10-11'			<1	
					12SS 11-12'			<1	
		(12.0 - 16.0) Gray, Wet, Clayey SILT			13SS 12-13'			<1	
					14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15				16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 5'

▼ AT COMPLETION OF DRILLING: NR

▼ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill
CLIENT: Racer Trust
BORING NO: SB/MW-4-12
BORING LOCATION: NW of MW-7, north of creek
METHOD OF DRILLING: Auger
GROUND ELEVATION: NR
NOTES:

DATE DRILLED: 07/19/12
JOB NUMBER: 10496.00004
DRILLER/HELPER: Ludwick/MacMurray
DRILL RIG: AMS
LOGGED BY: Lambert
CITY: Burton **COUNTY:** Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.0) Black, Moist, TOPSOIL, Fine to Medium SAND and SILT; some organics			1SS 0-1'			<1	
					2SS 1-2'			<1	
		(2.0 - 4.0) Brown, Moist, Fine to Medium SAND and SILT			3SS 2-3'			<1	Collected sample at 2-3'
					4SS 3-4'			<1	
-5.0	5	(4.0 - 6.0) Brown, Moist, Fine to Coarse SAND; some gravel, few cobbles			5SS 4-5'			<1	Collected sample at 4-5'
					6SS 5-6'			<1	
		(6.0 - 8.0) Gray, Wet, Silty CLAY			7SS 6-7'			<1	
					8SS 7-8'			<1	
		(8.0 - 12.5) Gray, Wet, CLAY			9SS 8-9'			<1	
-10.0	10				10SS 9-10'			<1	
					11SS 10-11'			<1	
					12SS 11-12'			<1	
					13SS 12-13'			<1	
		(12.5 - 16.0) Gray, Wet, Silty CLAY			14SS 13-14'			<1	
-15.0	15				15SS 14-15'			<1	
					16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 6'
▼ AT COMPLETION OF DRILLING: NR
≡ AFTER NR HOURS: NR
NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR
AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index
*St = Hand Torvane Shear Strength
*Qp = Pocket Penetrometer
*Qu = Unconfined Compression Machine



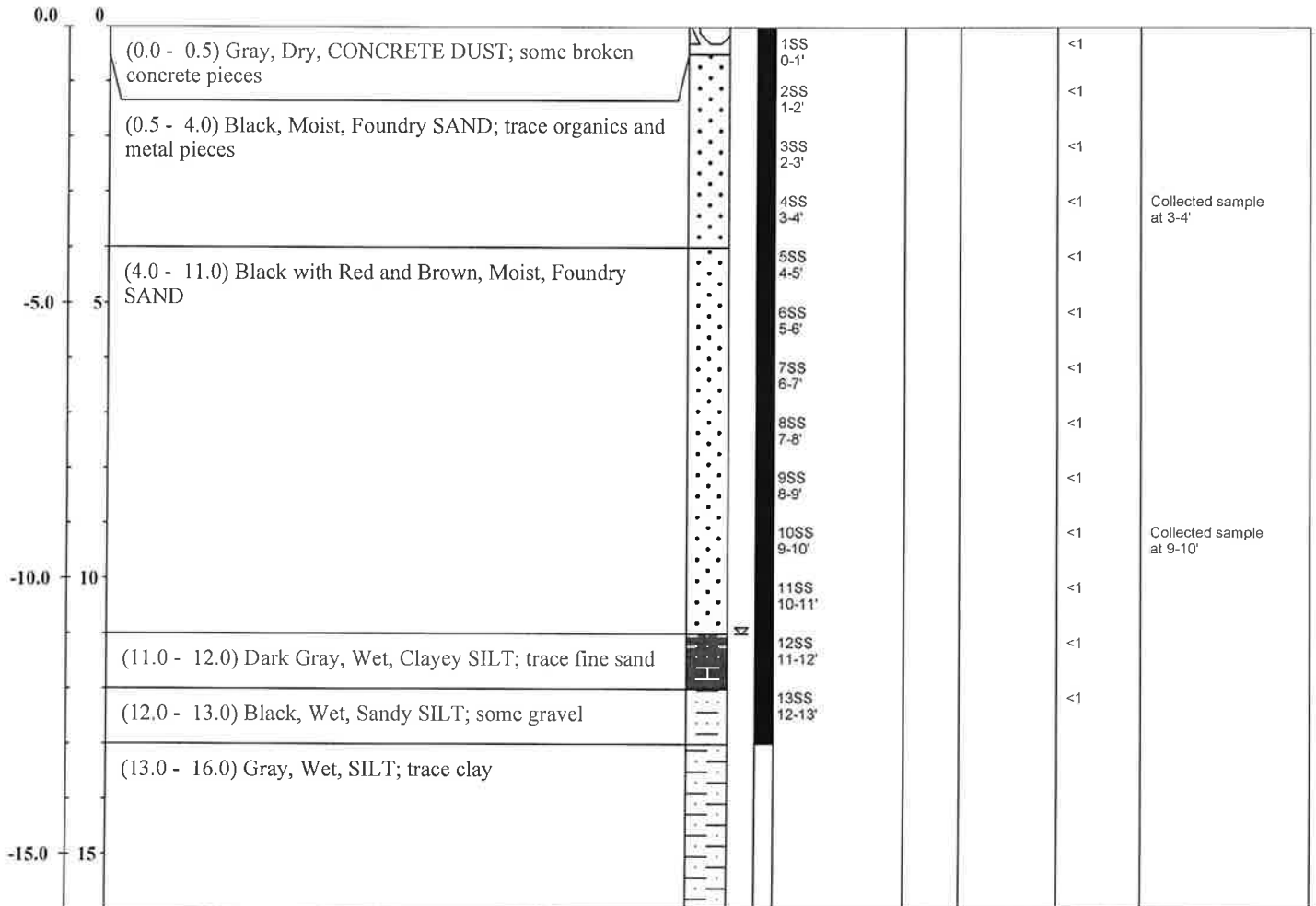
SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill
CLIENT: Racer Trust
BORING NO: SB/MW-5-12
BORING LOCATION: 273' west of FA-8, along path
METHOD OF DRILLING: Auger
GROUND ELEVATION: NR
NOTES:

DATE DRILLED: 07/20/12
JOB NUMBER: 10496.00004
DRILLER/HELPER: Ludwick/MacMurray
DRILL RIG: AMS
LOGGED BY: Lambert
CITY: Burton **COUNTY:** Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
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GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 11'
▼ AT COMPLETION OF DRILLING: NR
≡ AFTER NR HOURS: NR
NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR
AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index
*St = Hand Torvane Shear Strength
*Qp = Pocket Penetrometer
*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB/MW-6-12

BORING LOCATION:

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/17/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Graves

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 4.0) Hard, Brown, Dry SILT; with clay and coarse sand			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	
					4SS 3-4'			<1	
		(4.0 - 9.0) Brown, SILT; trace coarse sand			5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
					7SS 6-7'			<1	
					8SS 7-8'			<1	
					9SS 8-9'			<1	
-10.0	10	(9.0 - 15.0) Gray, Moist, CLAY			10SS 9-10'			<1	
					11SS 10-11'			<1	
					12SS 11-12'			<1	
					13SS 12-13'			<1	
					14SS 13-14'			<1	
		(15.0 - 15.5) Gray, Wet, Fine to Medium SAND			15SS 14-15'			<1	Collected sample at 14-15'
-15.0	15	Obstruction at 15.5'			16SS 15-15.5'			<1	

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 15'

▼ AT COMPLETION OF DRILLING: NR

≡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill
CLIENT: Racer Trust
BORING NO: SB/MW-7-12
BORING LOCATION: Midstream along Gilkey Creek
METHOD OF DRILLING: Auger
GROUND ELEVATION: NR
NOTES:

DATE DRILLED: 07/19/12
JOB NUMBER: 10496.00004
DRILLER/HELPER: Ludwick/MacMurray
DRILL RIG: AMS
LOGGED BY: Lambert
CITY: Burton **COUNTY:** Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 0.5) Black, Moist, TOPSOIL; some organics			1SS 0-1'			<1	
		(0.5 - 3.8) Brown, Moist, Fine SAND; some silt			2SS 1-2'			<1	
					3SS 2-3'			<1	Collected sample at 2-3'
		(3.8 - 4.0) Brown, Moist, Fine to Medium SAND; some silt			4SS 3-4'			<1	
		(4.0 - 5.0) Brown, Moist, SILT; trace gravel			5SS 4-5'			<1	Collected sample at 4-5'
-5.0	5	(5.0 - 6.0) Brown, Very Moist, Fine to Medium SAND			6SS 5-6'			<1	
		(6.0 - 8.0) Gray, Moist, CLAY			7SS 6-7'			<1	
					8SS 7-8'			<1	
		(8.0 - 10.5) Brown, Wet, Fine to Medium SAND			9SS 8-9'			<1	
					10SS 9-10'			<1	
-10.0	10	(10.5 - 12.0) Gray, Moist, CLAY			11SS 10-11'			<1	
					12SS 11-12'			<1	
		(12.0 - 16.0) Gray, Saturated/Wet, SILT			13SS 12-13'			<1	
					14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15				16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

☒ DURING DRILLING: NE
☒ AT COMPLETION OF DRILLING: NR
☒ AFTER NR HOURS: NR
NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR
AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

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*St = Hand Torvane Shear Strength
*Qp = Pocket Penetrometer
*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB/MW-8-12

BORING LOCATION:

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/18/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 4.0) Mottled Brown/Orange, Moist, Sandy SILT; trace gravel			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	
					4SS 3-4'			<1	
		(4.0 - 7.0) Brown, Dry, Sandy SILT; trace gravel			5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	Collected sample at 5-6'
					7SS 6-7'			<1	
		(7.0 - 8.0) Gray and Pink Mottled, SILT; some clay			8SS 7-8'			<1	
					9SS 8-9'			<1	
		(8.0 - 16.0) Gray, Wet, SILT; some clay			10SS 9-10'			<1	
-10.0	10				11SS 10-11'			<1	
					12SS 11-12'			<1	
					13SS 12-13'			<1	
					14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15				16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 8.5'

▼ AT COMPLETION OF DRILLING: NR

≡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill
CLIENT: Racer Trust
BORING NO: SB/MW-9-12
BORING LOCATION: near creek, west of MW-10
METHOD OF DRILLING: Auger
GROUND ELEVATION: NR
NOTES:

DATE DRILLED: 07/18/12
JOB NUMBER: 10496.00004
DRILLER/HELPER: Ludwick/MacMurray
DRILL RIG: AMS
LOGGED BY: Lambert
CITY: Burton **COUNTY:** Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.5) Mottled Brown/Orange, Dry, Sandy SILT; trace organics			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	
		(2.5 - 3.5) Moist, Fine SAND; some silt			4SS 3-4'			<1	
		(3.5 - 4.0) Brown, Moist, SILT; some clay			5SS 4-5'			<1	
-5.0	5	(4.0 - 6.0) Brown, Moist, SILT; trace clay			6SS 5-6'			<1	
		(6.0 - 8.0) Gray, Moist, SILT and CLAY			7SS 6-7'			<1	Collected sample at 6-8'
					8SS 7-8'			<1	
		(8.0 - 12.0) Gray, Wet, SILT; some clay			9SS 8-9'			<1	
-10.0	10				10SS 9-10'			<1	
					11SS 10-11'			<1	
					12SS 11-12'			<1	
		(12.0 - 15.0) Gray, Wet, SILT			13SS 12-13'			<1	
					14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15	(15.0 - 16.0) Gray, Wet, Fine to Medium SAND			16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

☒ DURING DRILLING: 10'
☒ AT COMPLETION OF DRILLING: NR
☒ AFTER NR HOURS: NR
NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR
AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index
*St = Hand Torvane Shear Strength
*Qp = Pocket Penetrometer
*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB/MW-10-12

BORING LOCATION: east of MW-9

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/18/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton **COUNTY:** Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 1.0) Brown, Dry, SAND and SILT; some organics			1SS 0-1'			<1	
		(1.0 - 4.0) Mottled Brown/Orange, Moist to Wet, Sandy SILT			2SS 1-2'			<1	
					3SS 2-3'			<1	Collected sample at 2-3'
					4SS 3-4'			<1	
-5.0	5	(4.0 - 6.0) Brown, Moist to Wet, Sandy SILT			5SS 4-5'			<1	
					6SS 5-6'			<1	
		(6.0 - 7.0) Gray, Wet, Sandy SILT			7SS 6-7'			<1	
		(7.0 - 8.0) Gray, Wet, SILT; some clay			8SS 7-8'			<1	
		(8.0 - 12.0) Gray, Saturated, SILT			9SS 8-9'			<1	
-10.0	10				10SS 9-10'			<1	
					11SS 10-11'			<1	
					12SS 11-12'			<1	
-15.0	15								

GROUNDWATER OBSERVATIONS

☐ DURING DRILLING: 5'
▼ AT COMPLETION OF DRILLING: NR
▼ AFTER NR HOURS: NR
NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR
AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index
*St = Hand Torvane Shear Strength
*Qp = Pocket Penetrometer
*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB/MW-11-12

BORING LOCATION: SW corner of site

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/19/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.0) Brown, Dry, SILT, SAND and FOUNDRY FILL; trace organics			1SS 0-1'			<1	
					2SS 1-2'			<1	
		(2.0 - 3.0) Mottled Brown and Red, Dry, SILT and Fine SAND; trace organics			3SS 2-3'			<1	Collected sample at 2-3'
		(3.0 - 4.0) Mottled Brown and Gray, Dry, SILT			4SS 3-4'			<1	
		(4.0 - 7.5) Mottled Brown and Orange, Moist, SILT and Fine SAND			5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
		(7.5 - 8.0) Gray, Moist, Sandy SILT; trace organics			7SS 6-7'			<1	Collected sample at 6-7'
		(8.0 - 9.0) Brown, Wet, Silty SAND			8SS 7-8'			<1	
		(9.0 - 12.0) Gray, Wet, CLAY; trace silt with a coarse sand lense at 10.75'			9SS 8-9'			<1	
-10.0	10				10SS 9-10'			<1	
					11SS 10-11'			<1	
					12SS 11-12'			<1	
		(12.0 - 16.0) Gray, Wet, SILT; some clay			13SS 12-13'			<1	
					14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15				16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 8.5'

▼ AT COMPLETION OF DRILLING: NR

≡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB/MW-12-12

BORING LOCATION:

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/17/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Graves

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 7.5) Brown, Dry, SILT and SAND; with concrete and gravel			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	
					4SS 3-4'			<1	
					5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
					7SS 6-7'			<1	
		(7.0 - 8.5) Brown, SILT and CLAY; with coarse sand			8SS 7-8'			<1	
		(8.5 - 10.5) Black, Moist, CLAY; with silt and debris (rubber & organics)			9SS 8-9'			<1	Collected sample at 8.5-9.5'
-10.0	10	(10.5 - 14.0) Gray, Moist, SILT and Fine SAND			10SS 9-10'			<1	
					11SS 10-11'			<1	
					12SS 11-12'			<1	
					13SS 12-13'			<1	
					14SS 13-14'			<1	
		(14.0 - 15.0) Gray, Moist, Medium to Coarse SAND			15SS 14-15'			<1	
-15.0	15	(15.0 - 16.0) Gray, Moist, CLAY			16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 14'

▼ AT COMPLETION OF DRILLING: NR

≡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

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*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill
CLIENT: Racer Trust
BORING NO: SB/MW-13-12
BORING LOCATION: along south property line
METHOD OF DRILLING: Auger
GROUND ELEVATION: NR
NOTES:

DATE DRILLED: 07/17/12
JOB NUMBER: 10496.00004
DRILLER/HELPER: Ludwick/MacMurray
DRILL RIG: AMS
LOGGED BY: Graves
CITY: Burton **COUNTY:** Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 3.0) Brown, Dry, SILT and SAND; with concrete and slag			1SS 0-1'			<1	Collected sample at 5-1.5'
					2SS 1-2'			<1	
					3SS 2-3'			<1	
		(3.0 - 6.0) Brown, Dry, SILT; with fine sand, clay and gravel			4SS 3-4'			<1	
					5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
		(6.0 - 7.5) Brown, Moist, Fine SAND			7SS 6-7'			<1	
		(7.5 - 8.0) Brown, SILT			8SS 7-8'			<1	
		(8.0 - 12.0) Gray, Moist, SILT and CLAY; with plastic			9SS 8-9'			<1	
-10.0	10				10SS 9-10'			<1	
					11SS 10-11'			<1	
					12SS 11-12'			<1	
-15.0	15								

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 6.5'
▼ AT COMPLETION OF DRILLING: NR
▼ AFTER NR HOURS: NR
NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR
AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index
*St = Hand Torvane Shear Strength
*Qp = Pocket Penetrometer
*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB/MW-14-12

BORING LOCATION: SE corner of site

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/17/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Graves

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.0) Brown, Dry, SILT; with fine sand and coarse sand			1SS 0-1'			<1	
					2SS 1-2'			<1	
		(2.0 - 6.5) Hard, Brown, Dry, SILT; with clay and coarse sand			3SS 2-3'			<1	
					4SS 3-4'			<1	
					5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
		(6.5 - 7.0) Brown, Moist, Fine SAND; trace coarse sand			7SS 6-7'			<1	Collected sample at 6.5-7'
		(7.0 - 12.0) Brown, Wet, Fine to Medium SAND			8SS 7-8'			<1	
					9SS 8-9'			<1	
					10SS 9-10'			<1	
-10.0	10				11SS 10-11'			<1	
					12SS 11-12'			<1	
-15.0	15								

GROUNDWATER OBSERVATIONS

⊗ DURING DRILLING: 7'

▼ AT COMPLETION OF DRILLING: NR

⊗ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill
CLIENT: Racer Trust
BORING NO: SB-15-12
BORING LOCATION: On hill, by path to air strip
METHOD OF DRILLING: Auger
GROUND ELEVATION: NR
NOTES:

DATE DRILLED: 07/20/12
JOB NUMBER: 10496.00004
DRILLER/HELPER: Ludwick/MacMurray
DRILL RIG: AMS
LOGGED BY: Lambert
CITY: Burton **COUNTY:** Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 4.0) Black Mottled Red and Brown, Dry, Foundry SAND; some organics			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	
					4SS 3-4'			<1	
					5SS 4-5'			<1	
-5.0	5	(4.0 - 7.8) Black Mottled Red and Brown, Moist, Foundry SAND; some organics			6SS 5-6'			<1	Collected sample at 5-6'
					7SS 6-7'			<1	
		(7.8 - 8.0) Brown, Moist, Sandy SILT			8SS 7-8'			<1	
		(8.0 - 9.0) Black, Moist, Foundry SAND			9SS 8-9'			<1	
-10.0	10	(9.0 - 10.5) Brownish Orange, Moist, SILT; some fine to medium sand; trace organics			10SS 9-10'			<1	
		(10.5 - 12.0) Brown, Moist, SILT			11SS 10-11'			<1	Collected sample at 11-12'
		(12.0 - 13.0) Black, Moist, Foundry SAND			12SS 11-12'			<1	
		(13.0 - 14.0) Brown, Wet, SILT			13SS 12-13'			<1	
		(14.0 - 16.0) Gray, Moist, CLAY; trace silt			14SS 13-14'			<1	
-15.0	15				15SS 14-15'			<1	
					16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 14'
▼ AT COMPLETION OF DRILLING: NR
▼ AFTER NR HOURS: NR
NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR
AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index
*St = Hand Torvane Shear Strength
*Qp = Pocket Penetrometer
*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-16-12

BORING LOCATION: Northerly low lying area, near SB-15

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/19/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.5) Brown, Moist, SILT; trace gravel, fine sand and organics			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	Collected sample at 2-3'
		(2.5 - 4.0) Brown, Moist, SILT			4SS 3-4'			<1	
					5SS 4-5'			<1	
-5.0	5	(4.0 - 5.0) Brown, Moist, Fine to Medium SAND; some silt			6SS 5-6'			<1	Collected sample at 5-6'
		(5.0 - 6.0) Brown, Moist, SILT; some fine to medium sand			7SS 6-7'			<1	
		(6.0 - 6.5) Brown, Moist, Fine to Coarse SAND; some gravel			8SS 7-8'			<1	
		(6.5 - 9.5) Gray, Wet, Fine to Medium SAND; some silt			9SS 8-9'			<1	
-10.0	10	(9.5 - 12.0) Gray, Wet, CLAY; trace silt			10SS 9-10'			<1	
					11SS 10-11'			<1	
					12SS 11-12'			<1	
		(12.0 - 16.0) Gray, Wet, SILT; some clay			13SS 12-13'			<1	
					14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15				16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 7'

☛ AT COMPLETION OF DRILLING: NR

≡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-17-12

BORING LOCATION: End of SB-16

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/19/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.0) Black, Moist, TOPSOIL, SILT and SAND; some organics			1SS 0-1'			<1	
		(2.0 - 2.5) Brown, Moist, Sandy SILT; trace organics			2SS 1-2'			<1	
		(2.5 - 3.8) Brown, Wet, SILT			3SS 2-3'			<1	Collected sample at 2-2.5'
		(3.8 - 10.0) Gray, Wet, Fine to Medium SAND; trace silt			4SS 3-4'			<1	
-5.0	5				5SS 4-5'			<1	
					6SS 5-6'			<1	
					7SS 6-7'			<1	
					8SS 7-8'			<1	
					9SS 8-9'			<1	
-10.0	10	(10.0 - 12.0) Gray, Wet, SILT; some clay			10SS 9-10'			<1	
					11SS 10-11'			<1	
					12SS 11-12'			<1	
-15.0	15								

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 3.5'

☛ AT COMPLETION OF DRILLING: NR

≡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-18-12

BORING LOCATION: Off trail near FA-8

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/20/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 3.0) Black, Dry, Foundry FILL; trace organics			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	Collected sample at 2-3'
		(3.0 - 4.0) Brown, Dry, Sand and Silt FILL; trace gravel			4SS 3-4'			<1	
		(4.0 - 6.5) Moist, Foundry FILL			5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
		(6.5 - 8.0) Brown, Dry, SILT			7SS 6-7'			<1	
					8SS 7-8'			<1	
		(8.0 - 11.0) Brown, Moist, SILT; some clay			9SS 8-9'			<1	Collected sample at 8-9'
-10.0	10				10SS 9-10'			<1	
					11SS 10-11'			<1	
		(11.0 - 14.0) Gray, Wet, SILT; some clay			12SS 11-12'			<1	
					13SS 12-13'			<1	
					14SS 13-14'			<1	
-15.0	15	(14.0 - 16.0) Gray, Wet, SILT; trace clay			15SS 14-15'			<1	
					16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 11'

☛ AT COMPLETION OF DRILLING: NR

≡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-19-12

BORING LOCATION: Off trail near FA-8

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/20/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 3.0) Black, Dry, Foundry FILL; trace coal pieces			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	
		(3.0 - 4.0) Brown, Moist, SAND and SILT; trace organics			4SS 3-4'			<1	Collected sample at 3-4'
		(4.0 - 8.0) Brown, Moist, Sandy SILT; with silt lenses throughout			5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
					7SS 6-7'			<1	
					8SS 7-8'			<1	
		(8.0 - 9.0) Brown, Moist, SILT; trace clay			9SS 8-9'			<1	
		(9.0 - 10.0) Gray Mottled Red, Moist, SILT; some gravel			10SS 9-10'			<1	
-10.0	10	(10.0 - 11.0) Brown, Moist, SILT			11SS 10-11'			<1	
		(11.0 - 12.0) Gray Mottled Red, Moist, SILT			12SS 11-12'			<1	Collected sample at 11-12'
		(12.0 - 16.0) Gray, Wet, SILT			13SS 12-13'			<1	
					14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15				16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

⊘ DURING DRILLING: 13'

☛ AT COMPLETION OF DRILLING: NR

⊘ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-20-12

BORING LOCATION: Off trail near FA-8

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/20/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 1.0) Black, Moist, Foundry Sand FILL; some organics			1SS 0-1'			<1	
		(1.0 - 2.0) Brown, Sandy Silt FILL; some organics			2SS 1-2'			<1	Collected sample at 1-2'
		(2.0 - 8.0)			3SS 2-3'			<1	
					4SS 3-4'			<1	
					5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
					7SS 6-7'			<1	
					8SS 7-8'			<1	
		(8.0 - 9.0) Brown, Moist, SILT			9SS 8-9'			<1	
		(9.0 - 9.5) Brown/Black, Foundry SAND			10SS 9-10'			<1	Collected sample at 9-9.5'
-10.0	10	(9.5 - 11.0) Brown, SILT; some clay			11SS 10-11'			<1	
		(11.0 - 12.5) Brown, Dry, SILT; with foundry sand			12SS 11-12'			<1	
		(12.5 - 13.0) Gray, Wet, SILT			13SS 12-13'			<1	
-15.0	15								

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 13'

▼ AT COMPLETION OF DRILLING: NR

≡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-21-12

BORING LOCATION: Near fence on east central part of site

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/17/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Graves

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.0) Brown, Dry, SILT; with fine sand and coarse sand			1SS 0-1'			<1	Collected sample at 0-2'
					2SS 1-2'			<1	
		(2.0 - 6.0) Hard, Brown, Dry, SILT; with clay and fine sand, trace coarse sand			3SS 2-3'			<1	
					4SS 3-4'			<1	
					5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
		(6.0 - 7.5) Brown, Moist to Wet, Fine SAND			7SS 6-7'			<1	Collected sample at 6-6.5"
		(7.5 - 8.0) Hard, Brown, Dry, CLAY			8SS 7-8'			<1	
		(8.0 - 13.5) Hard, Gray, Dry, CLAY			9SS 8-9'			<1	
					10SS 9-10'			<1	
-10.0	10				11SS 10-11'			<1	
					12SS 11-12'			<1	
					13SS 12-13'			<1	
					14SS 13-14'			<1	
		(13.5 - 14.5) Gray, Moist, Fine SAND			15SS 14-15'			<1	
-15.0	15	(14.5 - 15.5) Gray, Moist, Silty Fine SAND			16SS 15-16'			<1	
		(15.5 - 16.0) Gray, Moist, Fine SAND							

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 6.5'

☞ AT COMPLETION OF DRILLING: NR

≡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-22-12

BORING LOCATION:

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/17/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

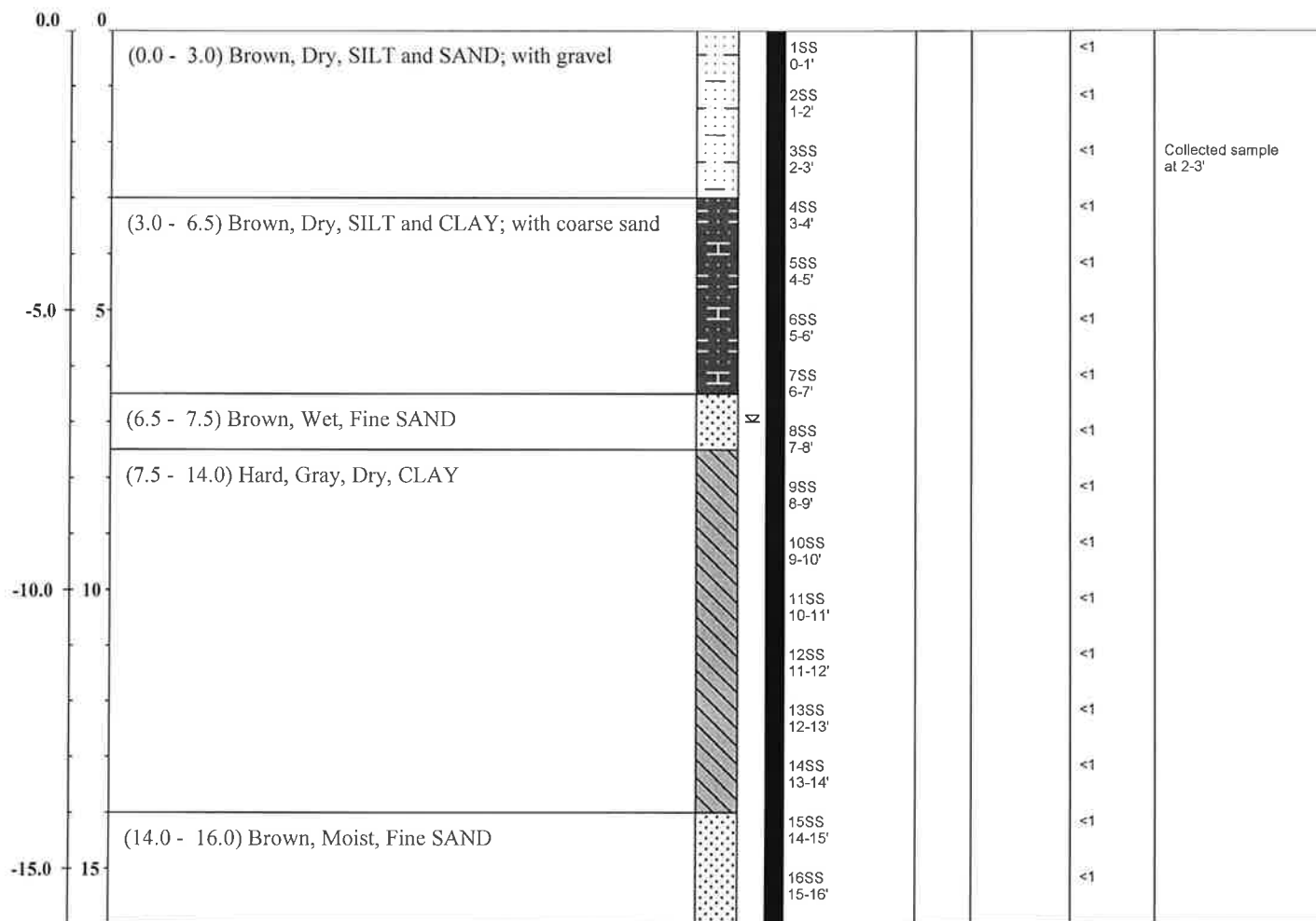
DRILL RIG: AMS

LOGGED BY: Graves

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
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GROUNDWATER OBSERVATIONS

⚡ DURING DRILLING: 7'

⚡ AT COMPLETION OF DRILLING: NR

⚡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-23-12

BORING LOCATION:

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/17/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Graves

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 7.0) Brown, Dry, SILT and SAND; with concrete pieces			1SS 0-1'			<1	
		Obstruction at 1'			2SS 1-2'			<1	
					3SS 2-3'			<1	
					4SS 3-4'			<1	
					5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
					7SS 6-7'			<1	
		(7.0 - 9.0) Hard, Dry, Brown, SILT and CLAY; with coarse sand			8SS 7-8'			<1	
					9SS 8-9'			<1	
		(9.0 - 9.5) Brown, Moist, Fine SAND and SILT			10SS 9-10'			<1	
-10.0	10	(9.5 - 10.0) Brown, Wet, Fine SAND and SILT			11SS 10-11'			<1	
		(10.0 - 13.0) Gray, Moist, SILT			12SS 11-12'			<1	
					13SS 12-13'			<1	
		(13.0 - 16.0) Gray, Moist, CLAY			14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15				16SS 15-16'			<1	

Collected sample
at 1.5-2.5'

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 9.5'

▼ AT COMPLETION OF DRILLING: NR

≡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-24-12

BORING LOCATION: Near MW-2

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/16/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.0) Dark Brown, Dry, Foundry FILL; with silt and organics, some gravel			1SS 0-1'			<1	
					2SS 1-2'			1.9	
		(2.0 - 4.0) Dark Brown-Black, Dry, Foundry FILL; with silt and organics, some gravel			3SS 2-3'			<1	
		(4.0 - 4.5) Gray, Moist, CLAY; with silt, trace gravel			4SS 3-4'			12.9	Collected sample at 3-4'
		(4.5 - 12.0) Gray/Brown, Moist, SILT; trace clay and gravel			5SS 4-5'			1	
-5.0	5				6SS 5-6'			<1	
					7SS 6-7'			<1	
					8SS 7-8'			<1	
		Evidence of foundry debris from 7.5-12'			9SS 8-9'			<1	
					10SS 9-10'			<1	
-10.0	10				11SS 10-11'			<1	
					12SS 11-12'			<1	
		(12.0 - 16.0) No recovery - was unable to collect a sample.			13SS 12-13'			<1	
-15.0	15								

GROUNDWATER OBSERVATIONS

∞ DURING DRILLING: NE
 ⚡ AT COMPLETION OF DRILLING: NR
 ∞ AFTER NR HOURS: NR
 NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR
 AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index
 *St = Hand Torvane Shear Strength
 *Qp = Pocket Penetrometer
 *Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-25-12

BORING LOCATION: Near MW-2

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/16/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Graves

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.5) Brown, Dry, SAND and SILT; trace gravel			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	
		(2.5 - 5.0) Dark Brown, Dry, Fine SAND and SILT; with concrete pieces			4SS 3-4'			<1	
		Driller reported rocks/concrete from 3-5'			5SS 4-5'			<1	
-5.0	5	(5.0 - 12.0) Black, Dry, SILT and SAND; trace foundry sand, concrete and debris			6SS 5-6'			<1	
					7SS 6-7'			<1	
					8SS 7-8'			<1	
		Driller reported concrete at 8.5'			9SS 8-9'			<1	
					10SS 9-10'			<1	
-10.0	10	White pasty clay material with slight odor encountered from 11-11.5'			11SS 10-11'			<1	
					12SS 11-12'			<1	Collected sample at 11-12'
		(12.0 - 15.0) Gray, CLAY; with silt			13SS 12-13'			<1	
					14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15	(15.0 - 16.0) Gray, Wet, Fine SAND			16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

⊘ DURING DRILLING: 15.5'

☛ AT COMPLETION OF DRILLING: NR

⊘ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-26-12

BORING LOCATION: Near MW-2

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/16/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Graves

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.5) Brown, Dry, Sandy SILT; trace gravel			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	
		(2.5 - 5.0) Dark Brown, Dry, Fine SAND and SILT; trace broken glass and gravel			4SS 3-4'			<1	
					5SS 4-5'			<1	
-5.0	5	(5.0 - 10.0) Black, Moist, SILT and SAND; trace foundry sand			6SS 5-6'			<1	
					7SS 6-7'			1.2	
					8SS 7-8'			1.9	Collected sample at 7-8'
					9SS 8-9'			1	
					10SS 9-10'			1	
-10.0	10	(10.0 - 13.0) Gray, Moist, SILT and CLAY; trace coarse sand			11SS 10-11'			1	
					12SS 11-12'			1	
					13SS 12-13'			1	
		(13.0 - 16.0) Gray, Wet, Fine SAND becoming more coarse with depth			14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15				16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 13.5'

☞ AT COMPLETION OF DRILLING: NR

≡ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-27-12

BORING LOCATION: West of SB-28, north of MW-13

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/20/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton **COUNTY:** Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 4.0) Brown, Dry becoming Moist, Sand and Silt FILL; some organics, cobbles, slag, and concrete pieces			1SS 0-1'			<1	
					2SS 1-2'			<1	
					3SS 2-3'			<1	Collected sample at 2-3'
					4SS 3-4'			<1	
		(4.0 - 6.0) Moist, Sand and Silt FILL; some cobbles and slag			5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
		(6.0 - 8.0) Dark Brown Mottled Red, Moist, Clayey SILT; some slag, cobbles and wood debris			7SS 6-7'			<1	Collected sample at 6-7'
					8SS 7-8'			<1	
		(8.0 - 11.0) Gray, Wet, Sandy SILT; trace gravel			9SS 8-9'			<1	
					10SS 9-10'			<1	
-10.0	10				11SS 10-11'			<1	
		(11.0 - 15.8) Gray, Wet, SILT; some sand			12SS 11-12'			<1	
					13SS 12-13'			<1	
					14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15	(15.8 - 16.0) Gray, Moist, CLAY			16SS 15-16'			<1	

GROUNDWATER OBSERVATIONS

≡ DURING DRILLING: 8.5'

▼ AT COMPLETION OF DRILLING: NR

▼ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine



SOIL BORING LOG

5859 Sherman Road
Saginaw, MI 48604
989-752-6500
989-752-6600 fax

PROJECT: Davison Road Industrial Landfill

CLIENT: Racer Trust

BORING NO: SB-28-12

BORING LOCATION: Far east soil boring, north of MW-14

METHOD OF DRILLING: Auger

GROUND ELEVATION: NR

NOTES:

DATE DRILLED: 07/19/12

JOB NUMBER: 10496.00004

DRILLER/HELPER: Ludwick/MacMurray

DRILL RIG: AMS

LOGGED BY: Lambert

CITY: Burton

COUNTY: Genesee

Elevation	Depth (ft)	Material Description	Soil Type	Water Level	Sample #/Type Sample Depth SPT Results (N-Value) % REC.	Moisture %	Unconfined Comp. Strength* (tsf)	PID (ppm)	Analytical Parameters
0.0	0	(0.0 - 2.0) Brown, Dry, SAND and SILT; trace plastic debris and concrete			1SS 0-1'			<1	
					2SS 1-2'			<1	
		(2.0 - 4.0) Brown, Dry, SILT and SAND; trace gravel			3SS 2-3'			<1	Collected sample at 2-3'
					4SS 3-4'			<1	
		(4.0 - 6.0) Brown, Moist, SILT and SAND; trace organics and cobbles			5SS 4-5'			<1	
-5.0	5				6SS 5-6'			<1	
		(6.0 - 8.0) Brown/Orange, Moist, Fine to Medium SAND			7SS 6-7'			<1	Collected sample at 6-7'
					8SS 7-8'			<1	
		(8.0 - 10.5) Brown, Wet, SILT			9SS 8-9'			<1	
					10SS 9-10'			<1	
-10.0	10				11SS 10-11'			<1	
		(10.5 - 15.0) Gray, Wet, Silty CLAY			12SS 11-12'			<1	
					13SS 12-13'			<1	
					14SS 13-14'			<1	
					15SS 14-15'			<1	
-15.0	15				16SS 15-16'			<1	
		(15.0 - 16.0) Gray, CLAY; trace silt							

GROUNDWATER OBSERVATIONS

⊘ DURING DRILLING: 9'

☛ AT COMPLETION OF DRILLING: NR

⊘ AFTER NR HOURS: NR

NE - Not Encountered NR - Not Recorded

HOLE COLLAPSE

AT COMPLETION: NR

AFTER NR HOURS: NR

BACKFILL: Native Soils and/or Bentonite Chips

*LL = Liquid Limit - PI = Plasticity Index

*St = Hand Torvane Shear Strength

*Qp = Pocket Penetrometer

*Qu = Unconfined Compression Machine

Project: Davison Road Landfill		Project Number: 1119.001		Client: Racer Trust		Boring No.: SB/MW-15-14		
Address, City, State: Davison Rd and Donegal, Burton, Michigan				Drilling Contractor: FiberTec		Drill Rig Type: 7822 DT		
Logged By: C. Badgerow		Date	Started: 9/23/2014		Bit Type: N/A		Hole Diameter: 4"	
Drill Crew: Ryan/Josh			Completed: 9/23/2014		Hammer Type: N/A		Well Diameter: 2"	
Comments: sampled soil @ 12:00			Backfilled: Sand & bentonite chips		Hammer Weight: N/A		Hammer Drop: N/A	
			Groundwater Depth: N/A		Elevation: N/A		Total Depth of Boring: 20 Feet	

Depth (feet)	Sample Type	% Recovery	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	PID	Well Construction	Well Construction Details
2		80		Brown, clay, some silt, trace organics (roots), moist	0.3		Protector/ Concrete
4				Brownish gray, soft clay and fine sand	0.7		
6					0.6		Bentonite
8		65		Gray clay, soft, moist	0.7		
10				Saturated			
12		85			0.8		Sand
14				Gray, Sand and Clay	0.4		
16				Saturated	0.6		
18		95		Gray, Clay, Hard, Dry	0.5		
20				Soft, Some Gravel, Moist	0.7		2"x5"x10 slot PVC well screen
				EOB			

 Standard Penetration Split Spoon Sampler (SPT)	 Soil Gas Sample Screen Interval
 Direct Push Sampler	 Stabilized Ground water
 Water Sample	 Groundwater At time of Drilling
HA Hand Auger	S.A.A Same As Above

Project: Davison Road Landfill		Project Number: 1119.001		Client: Racer Trust		Boring No.: SB/MW-16-14		
Address, City, State: Davison Rd and Donegal, Burton, Michigan				Drilling Contractor: FiberTec		Drill Rig Type: 7822 DT		
Logged By: C. Badgerow		Date	Started: 9/23/2014		Bit Type: N/A		Hole Diameter: 4"	
Drill Crew: Ryan/Josh			Completed: 9/23/2014		Hammer Type: N/A		Well Diameter: 2"	
Comments: sampled soil @ 14:28			Backfilled: Sand & bentonite chips		Hammer Weight: N/A		Hammer Drop: N/A	
			Groundwater Depth: N/A		Elevation: N/A		Total Depth of Boring: 15 Feet	

Depth (feet)	Sample Type	Recovery (feet)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	PID	Well Construction	Well Construction Details
2		70		Brown, Fine to Medium Sand, Some Gravel, Damp	0.5		Protector/ Concrete
4				Brown, Fine Sand and Clay, Moist	0.5		Bentonite
6					0.7		Sand
8		80		Brown, Fine to Coarse Sand, Some Gravel, Saturated			
10				Brown, Medium to Coarse Sand, Some Gravel, Very Moist	1.4		2"x5"x#10 slot PVC well screen
12		80		Gray, Clay, Moist	0.8		
14				S.A.A Very Moist	1.0		
				S.A.A. Moist			
EOB							

	Standard Penetration Split Spoon Sampler (SPT)		Soil Gas Sample Screen Interval
	Direct Push Sampler		Stabilized Ground water
	Water Sample		Groundwater At time of Drilling
HA	Hand Auger		S.A.A Same As Above

APPENDIX 6

SITE PHOTOGRAPHS



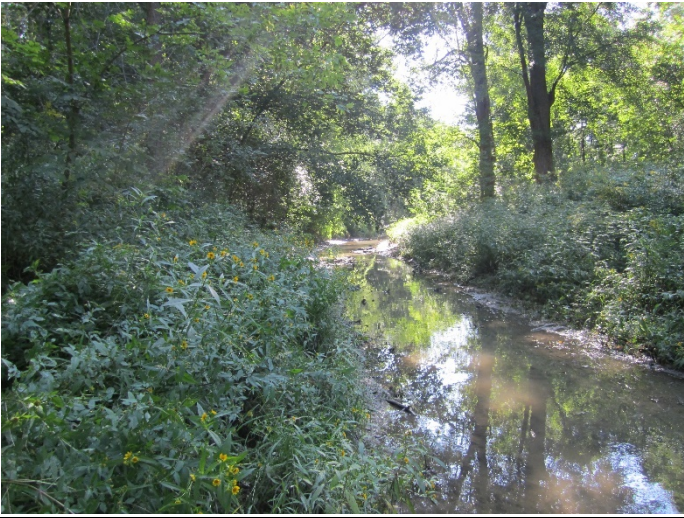
1. Representative pore water sampling set up along the bank of Gilkey Creek. A peristaltic pump is being used to purge porewater from the PushPoint Sampler.



2. ERG collecting soil samples with a 36" plastic liner.



3. Representative soil sample from the area of PW-1 and PW-2, consisting of an upper layer of brown sand, followed by a black, organic-rich, silty sand and a brown, gravelly sand.

	4. Gilkey Creek in the downstream section of Site.
	5. Silt-rich water occasionally capable of being purged from sediments around PW-3 through PW-14. ERG believes this was saturated silt that was liquified due to high pressures exerted by the syringe and peristaltic pump.
	6. Extremely silt-rich interstitial water purged from the upstream portion of Gilkey Creek within the Site.



7. Representative soil sample from the upstream section of Gilkey Creek in the Site, between PW-3 and PW-14. Soils generally consisted of brown silty sand, followed by black, organic-rich silty sand, and grey silt.



8. ERG gathering GPS data from porewater sampling points along Gilkey Creek.



9. ERG collecting groundwater parameter information using an InSitu Aquatroll 600 sonde from the monitoring wells near Gilkey Creek.