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September 16, 2013

Reference No. 012636-T12

Mr. Richard Conforti Hazardous Waste Section, Resource Management Division Michigan Department of Environmental Quality 525 W. Allegan (Constitution Hall) Lansing, Michigan U.S.A. 48933

Dear Mr. Conforti:

Re: Supplemental RFI Groundwater Investigation Work Plan and Groundwater Monitoring Plan Former Peregrine (US) Inc. (Peregrine) Coldwater Road Facility Genesee Township, Michigan

This letter, prepared by Conestoga-Rovers & Associates (CRA) on behalf of Revitalizing Auto Communities Environmental Response Trust (RACER), proposes the supplemental RCRA Facility Investigation (RFI) groundwater investigation and a groundwater monitoring plan (Plan) to be completed at the former Peregrine Coldwater Road Facility (Site) located at 1245E Coldwater Road in Genesee Township, near Flint, Michigan. The proposed additional investigation supplements the RCRA Facility Investigation.

Based on previous investigations, three additional groundwater data gaps have been identified which will be investigated to characterize water quality and quantity in the perched water bearing unit at the Site. Following the implementation of these investigations a quarterly groundwater monitoring program will be implemented at the Site for three years. Previous investigation results have identified both dissolved manganese and dissolved lead as Site related constituents with concentrations above generic Part 201 drinking water criteria and Site-specific background values in the perched water bearing unit.

In a meeting on June 11, 2013, RACER and MDEQ agreed to complete additional investigation in the vicinity of OBG MW-10, install and sample a monitoring well at BH-103, and additional utility corridor investigation and isolation. Following completion of the investigation activities a three year, quarterly, groundwater monitoring program will be conducted.

The remainder of this Plan is organized as followings:

- Section 1 Potential Groundwater Migration in the Vicinity of OBG MW-10
- Section 2 Monitoring Well Installation and Sampling BH-103
- Section 3 Additional Utility Corridor Investigation and Isolation
- Section 4 Groundwater Monitoring Program
- Section 5 Schedule





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# 1.0 POTENTIAL GROUNDWATER MIGRATION IN THE VICINITY OF OBG MW-10

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# 1.1 <u>BACKGROUN</u>D

Following completion of the initial groundwater monitoring program (2010 to 2012), two additional monitoring locations were identified along the western Site perimeter associated with the adjacent RACER property to the north. The locations (OBG MW-9 and OBG MW-10) were installed in 2011. Groundwater samples from these wells were collected and analyzed for total and dissolved manganese on November 4, 2011 and March 5, 2012. The locations and sample results for OBG MW-9 and OBG MW-10 are presented on Figure 1. A summary of the sample results for monitoring wells OBG MW-9 and OBG MW-10 are presented in Table 1. The stratigraphic logs and well completion details are presented in Attachment A.

Both dissolved manganese samples from OBG MW-9 (0.57 milligrams per Litre [mg/L] and 0.562 mg/L) marginally exceeded the MDEQ approved Site-specific background concentration for dissolved manganese (0.547 mg/L). Therefore, the dissolved manganese concentrations observed at OBG MW-9 are consistent with Site-specific background concentrations.

Both samples collected at OBG MW-10 reported exceedances of both dissolved and total manganese above Site-specific background (total manganese: 0.963 mg/L) and residential/non-residential drinking water criteria (0.05 mg/L[aesthetic]; 0.86 mg/L [residential health based]; and, 2.5 mg/L [non-residential health based]) at dissolved concentrations of 3.69 mg/L and 2.57 mg/L and total concentrations of 3.56 mg/L and 2.62 mg/L, respectively.

OBG MW-10 is located at the western property boundary, separated from the historic Site operations by a large parking lot. Additionally, OBG MW-10 exhibits the highest dissolved manganese concentration observed on-Site, yet based on stratigraphic logs of on-Site boreholes in the vicinity of OBG MW-10, the on-Site extent of the perched water bearing unit in the area around OBG MW-10 appears to be separate from the historic operations at the Site as presented in Figure 1.

# 1.2 ADDITIONAL INVESTIGATION

In order to further delineate the extent of the perched water bearing unit in the area around OBG MW-9 and OBG MW-10, on- and off-Site soil borings will be advanced until groundwater is encountered or to a maximum depth of 20 feet below ground surface, and borehole water samples will be collected (if water is present). Samples will be analyzed for total (if low flow sampling turbidity requirements can be achieved) and dissolved manganese (field filtered).



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The approximate locations of the proposed boreholes are presented on Figure 1; additional borings may be completed depending on the presence of water at the proposed locations. RACER will obtain appropriate approvals prior to drilling in the road right of way.

Dissolved metals analysis will be performed on all samples collected on/off Site for comparison with Site-specific background values, consistent with MDEQ correspondence dated December 13, 2012:

"It is also the DEQ's contention that the BVs calculated for dissolved inorganics are the most appropriate for use at the former Peregrine site. This is due to the fact that groundwater in both the shallow and deep aquifers is historically turbid, with turbidity values typically much higher than 5 NTU despite significant efforts to ensure turbidity is minimized during sampling. The larger data set used to generate the BVs for several of the significant inorganic constituents also supports this position. In light of this, site groundwater samples should be analyzed for dissolved inorganic constituents for purposes of comparison to the proposed BVs."

If low flow sampling yields low flow turbidity limits (10 NTU or less), total metals analysis will also be performed.

Following receipt of the results, the data will be evaluated to determine whether additional activities are required (e.g. additional well installations for inclusion in Section 4.0 – Groundwater Monitoring Plan). The sample results and any additional proposed activities will be submitted to the MDEQ for review and approval.

# 2.0 MONITORING WELL INSTALLATION AND SAMPLING - BH-103

The perimeter investigation was completed between December 5 and 8, 2011. As part of this investigation, boring BH-103 was advanced approximately 5 feet (ft) into native clay and a borehole water sample was collected and analyzed for total and dissolved metals, VOCs, and amenable cyanide.

Total manganese, dissolved manganese and dissolved iron were identified at concentrations exceeding Site-specific background values and Residential and/or Nonresidential Drinking Water Aesthetic Criteria.

In order to confirm the sample results collected at BH-103, a monitoring well will be installed, developed, and sampled at the BH-103 location, as presented on Figure 2. The monitoring well (MW-17-13) will be constructed of 2-inch diameter PVC well casing with 5-foot of 0.010-inch slot well screen screened within the perched water bearing unit. The sample will be analyzed



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for total (if applicable) and dissolved metals, VOCs, and amenable cyanide in accordance with the Groundwater Monitoring Plan presented in Section 4.0.

# 3.0 ADDITIONAL UTILITY CORRIDOR INVESTIGATION AND ISOLATION

# 3.1 BACKGROUND

The initial utility corridor investigation was completed between December 5 and 8, 2011. Two borings (BH-101 and BH-111) were advanced though the sewer bedding material and approximately 5 feet into native clay. Only one groundwater sample was collected from BH-101 as no groundwater was present at BH-111. An additional borehole (BH-112) was advanced on March 28, 2012 and a groundwater sample was collected. The analytical results are presented in Table 2. Borehole details are presented in Table 3.

Thirteen total metals (aluminum, arsenic, beryllium, cadmium, chromium, cobalt, iron, lead, manganese, nickel, selenium, thallium, and vanadium) and dissolved manganese were identified at concentrations exceeding Site-specific background values and Residential and/or Nonresidential Drinking Water Criteria.

Eight total metals (arsenic, chromium, cobalt, mercury, selenium, silver, thallium, and vanadium) were identified at concentrations exceeding Site-specific background values and Groundwater/Surface water Interface Criteria.

There were no exceedances of Groundwater Contact Criteria, Residential Groundwater Volatilization to Indoor Air Inhalation Criteria, or Nonresidential Groundwater Volatilization to Indoor Air Inhalation Criteria.

At the time of the borehole installations, the adjacent sewers were checked for dry flow. If water was present, a sample was collected. One sample was collected from the storm sewer adjacent to borehole BH-112. No constituents were reported at concentrations exceeding Site-specific background values.

An additional utility corridor was identified north-east of BH-112 following the utility corridor investigation, as presented on Figure 2. Based on the results at the other utility corridors and as discussed with the MDEQ during the September 5, 2012 conference call, the third location will be treated in the same manner as the two utility corridors investigated.

The results of the utility corridors investigation are presented in Table 2.



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## 3.2 MONITORING WELL INSTALLATION AND SAMPLING - UTILITY CORRIDORS

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RACER submitted a letter to the MDEQ on February 1, 2013 proposing that the three utility corridors be isolated to prevent groundwater migration, if any. In a meeting on June 11, 2013, RACER and MDEQ agreed that the corridors should be isolated and that RACER would submit a plan to isolate the corridors. However, since that meeting and following a review of the utility corridor analytical results presented above, along with the MDEQ confirmation that dissolved inorganics are most appropriate for use at the Site (MDEQ, December 13, 2012) and that only dissolved constituent detected above Site-specific background and/or drinking water criteria was dissolved manganese, RACER proposes to delay the isolation of the utility corridors and instead install monitoring wells at the utility corridors and develop and sample the new wells.

In order to confirm the previous borehole water sample results, three new monitoring wells will be installed and developed on-site, up-pipe of the location that the utilities cross the property boundary. Sufficient space will be left between the monitoring wells and the property boundary in the event that isolation is required. The monitoring wells will be constructed of 2-inch diameter PVC well casing with 5-ft of 0.010-inch slot well screen screened within the utility corridor bedding. Water samples will be collected and analyzed for total (if turbidity is <10 NTUs) and dissolved metals, VOCs, and amenable cyanide. Monitoring wells will also be used to establish baseline water levels within the utility corridors in the event that utility completed.

Sewer water samples will also be collected, if water is present in the sewer, at the same time as the sewer bedding water sampling. Sewer samples will be collected from the closest manhole to each monitoring well. In addition, a sewer water sample will be collected from the sewer as it leaves the RACER property. Sewer water samples will be collected and analyzed for total and dissolved metals, VOCs, and amenable cyanide.

# 4.0 <u>GROUNDWATER MONITORING PLAN</u>

Following completion of the activities identified in Sections 1.0 to 3.0 above, a quarterly groundwater monitoring plan will be initiated for up to 3 years. The purpose of the groundwater monitoring program will be to collect sufficient groundwater data to confirm current results and to support a Corrective Measures Study.

The 3 year groundwater monitoring program will consist of an annual comprehensive groundwater sampling event and three focused quarterly groundwater sampling events per year.



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The comprehensive annual event will be conducted at 13 perched water bearing unit locations (B-9, MW-1, MW-2, MW-4-02, PFW-2, PFW-4, PFW-9, PFW-10, PFW-11, and MW-17-13, MW-18-13, MW-19-13, MW-20-13 [new locations proposed in Sections 1.0 to 3.0]) and four drift aquifer wells (B-27D, MW-15-10, MW-16-10, and PFW-1) as presented in Figure 3. Pending the results of the borehole investigation in the vicinity of OBG MW-10 additional perched water bearing unit locations may be added to the Plan, in consultation with the MDEQ. Perched groundwater samples would be analyzed for total (if applicable) and dissolved metals, VOCs, and amenable cyanide. Drift aquifer groundwater sampled will be analyzed for total (if applicable) and dissolved metals, VOCs, and amenable cyanide. Table 4 presents a summary of the annual groundwater monitoring program.

The three quarterly events will consist of an 8 well subset of the wells sampled annually (B-9, MW-4-02, PFW-2, PFW-9, MW-17-13, MW-18-13, MW-19-13, MW-20-13) as presented on Figure 3. Pending the results of the borehole investigation in the vicinity of OBG MW-10 additional perched water bearing unit locations may be add to the Plan, in consultation with the MDEQ. Groundwater samples will be analyzed for site constituents' manganese and lead; both total (if applicable) and dissolved. This parameter list may be updated annual based on the results of the comprehensive annual sampling event. Table 4 presents a summary of the quarterly groundwater monitoring program.

All groundwater samples will be collected using low flow sampling procedures. Samples will be collected following the stabilization of field parameters (pH, turbidity, temperature, conductivity, and dissolved oxygen). If low flow sampling yields turbidity readings of 10 NTU or less, total metals analysis will also be performed; dissolved metals analysis will be performed on all samples.

Perched monitoring wells will be purged with a submersible (whale) pump approximately two weeks before each event that the well is scheduled to be sampled.

Groundwater levels will be collected during each event at all event sample locations.

Groundwater results will be submitted to the MDEQ annually following the comprehensive annual events. Annual monitoring reports will include: a table of all groundwater results as of the date of the report, laboratory reports for the latest 4 quarters of data, field observations (field notes, field parameters, water elevations, etc.), a description of activities competed on-Site, a figure with groundwater elevations, a figure with databoxes with all available results for select parameters, and recommendations for modifications to the monitoring program, as applicable.

MDEQ will be notified approximately two weeks prior to each sampling event.



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## 5.0 <u>SCHEDULE</u>

The task described in the previous sections will be completed in the following order.

- 1) Complete borehole investigation in the vicinity of OBG MW-10 (Section 1.2).
- 2) Submit borehole investigation results and recommendations to the MDEQ (e.g. installation of new wells, etc.).
- 3) Install and develop propose monitoring locations (Sections 2.0 and Section 3.2) and as proposed in 2) above.

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- 4) Complete initial comprehensive groundwater monitoring event.
- 5) Submit the results of the comprehensive groundwater monitoring event including a summary of monitoring well installation activities.
- 6) Complete three quarterly events followed by a comprehensive annual event.
- 7) Submit first complete annual monitoring report.

Should you have any questions on the above, please do not hesitate to contact Mr. David Favero with RACER or the undersigned.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Michael R. Tomka, P.E.

RC/kf/17 Encl.

cc: David Favero/Grant Trigger, RACER Trust (PDF) Jack Schinderle/John McCabe/Joe Rogers, MDEQ William Yocum, MDEQ





NOTES: THIS DRAWING IS FOR REFERENCE ONLY AND IS NEITHER COMPLETE NOR TO EXACTING SCALE. AERIAL PHOTO FROM NAIP, 2009. ADDITIONAL INVESTIGATION - VICINITY OF OBG MW-10 FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY *Genesee Township, Michigan* 

12636-T12(CONF017)GN-WA001 AUG 7/2013



NOTES: THIS DI COMPL

THIS DRAWING IS FOR REFERENCE ONLY AND IS NEITHER COMPLETE NOR TO EXACTING SCALE. BOREHOLE WATER SAMPLE RESULTS FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY *Genesee Township, Michigan* 

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12636-T12(CONF017)GN-WA003 SEP 11/2013

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## TABLE 1

# SUMMARY OF OBG MW-9 AND OBG MW-10 DATA FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY GENESEE TOWNSHIP, MICHIGAN

Monitoring	Ground Surface	Top of Casing		Water	Water	Managanese Analytical Results		
Well	Elevation (ft AMSL)	Elevation (ft AMSL)	Date	Level (ft BTOC)	Elevation (ft AMSL)	Total (mg/L) BV= 0.963	Dissolved (mg/L) BV=0.547	
OBG MW-9	806.94	809.97	11/4/2011	5.25	804.72	0.565	0.57	
			3/5/2012			0.591	0.562	
			4/5/2012	5.24	804.73			
OBG MW-10	808.70	811.54	11/4/2011	5.58	805.96	3.56	3.69	
			3/5/2012			2.62	2.57	
			4/5/2012	6.2	805.34			

### Notes

All data presented in this table was collected and provided by OBG.

BV - Former Peregrine Coldwater Road Facility Background Values

ft AMSL - feet Above Mean Sea Level

ft BTOC - feet Below Top Of Casing

#### ANALYTICAL RESULTS SUMMARY FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY GENESEE TOWNSHIP, MICHIGAN

Sample Location:					BH-101	BH-112	Storm sewer
Sample ID:					GW-12636-120511-SH-BH101	GW-12636-032812-SH-008	SW-12636-032812-SH-001
Sample Date:					12/5/2011	3/28/2012	3/28/2012
Parameters: Unit	BG_Shallow	b	d	f			
Volatile Organic Compounds							
1,1,1-Trichloroethane mg/		0.2	0.2	0.089	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane mg/	L -	0.035	0.0085	0.078	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane mg/	L -	0.005	0.005	0.33	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane mg/	L -	2.5	0.88	0.74	0.00081 J	0.001 U	0.001 U
1,1-Dichloroethene mg/		0.007	0.007	0.13	0.001 U	0.001 U	0.001 U
1,2,4-Trichlorobenzene mg/		0.07	0.07	0.099	0.001 U	0.001 U	0.001 U
1,2,4-Trimethylbenzene mg/		0.063	0.063	0.017	0.001 U	0.001 U	0.001 U
1,2-Dibromo-3-chloropropane (DBCP) mg/	L -	0.0002	0.0002	-	0.001 U	0.001 U	0.001 U
1,2-Dibromoethane (Ethylene dibromide) mg/	L -	0.00005	0.00005	0.0057	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene mg/	L -	0.6	0.6	0.013	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane mg/	L -	0.005	0.005	0.36	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane mg/	L -	0.005	0.005	0.23	0.001 U	0.001 U	0.001 U
1,3,5-Trimethylbenzene mg/	L -	0.072	0.072	0.045	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene mg/	L -	0.019	0.0066	0.028	0.001 U	0.001 U	0.001 U
1,4-Dichlorobenzene mg/	L -	0.075	0.075	0.017	0.001 U	0.001 U	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK) mg/		38	13	2.2	0.01 U	0.00082 J	0.01 U
2-Hexanone mg/	L -	2.9	1	-	0.01 U	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) mg/	L -	5.2	1.8	-	0.01 U	0.01 U	0.01 U
Acetone mg/	L -	2.1	0.73	1.7	0.01 U	0.01 U	0.01 U
Benzene mg/	L -	0.005	0.005	0.2	0.001 U	0.00029 J	0.001 U
Bromodichloromethane mg/	L -	0.08	0.08	-	0.001 U	0.001 U	0.001 U
Bromoform mg/	L -	0.08	0.08	-	0.001 U	0.001 U	0.001 U
Bromomethane (Methyl bromide) mg/	L -	0.029	0.01	0.035	0.001 U	0.001 U	0.001 U
Carbon disulfide mg/	L -	2.3	0.8	-	0.005 U	0.00013 J	0.005 U
Carbon tetrachloride mg/	L -	0.005	0.005	0.045	0.001 U	0.001 U	0.001 U
Chlorobenzene mg/	L -	0.1	0.1	0.025	0.001 U	0.001 U	0.001 U
Chloroethane mg/	L -	1.7	0.43	1.1	0.001 U	0.001 U	0.001 U
Chloroform (Trichloromethane) mg/	L -	0.08	0.08	0.35	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl chloride) mg/		1.1	0.26	-	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene mg/		0.07	0.07	0.62	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene mg/		-	-	-	0.001 U	0.001 U	0.001 U
Cyclohexane mg/		-	-	-	0.001 U	0.00025 J	0.001 U
Dibromochloromethane mg/		0.08	0.08	-	0.001 U	0.001 U	0.001 U
Dichlorodifluoromethane (CFC-12) mg/		4.8	1.7	-	0.001 U	0.001 U	0.001 U
Ethylbenzene mg/	L -	0.074	0.074	0.018	0.001 U	0.001 U	0.001 U
Isopropyl benzene mg/	L _	2.3	0.8	0.028	0.001 U	0.001 U	0.001 U
Methyl acetate mg/	L -	_	-	_	0.01 U	0.01 U	0.01 U
Methyl cyclohexane mg/	L _	-	-	-	0.001 U	0.00024 J	0.001 U
Methyl tert butyl ether (MTBE) mg/	L -	0.04	0.04	7.1	0.005 U	0.005 U	0.005 U

#### ANALYTICAL RESULTS SUMMARY FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY GENESEE TOWNSHIP, MICHIGAN

Sample Location:						BH-101	BH-112	Storm sewer
Sample ID:						GW-12636-120511-SH-BH101	GW-12636-032812-SH-008	SW-12636-032812-SH-001
Sample Date:						12/5/2011	3/28/2012	3/28/2012
Parameters:	Units	BG_Shallow	b	d	f			
Methylene chloride	mg/L	-	0.005	0.005	1.5	0.005 U	0.005 U	0.005 U
Styrene	mg/L	-	0.1	0.1	0.08	0.001 U	0.001 U	0.001 U
Tetrachloroethene	mg/L	-	0.005	0.005	0.06	0.001 U	0.001 U	0.001 U
Toluene	mg/L	-	0.79	0.79	0.27	0.001 U	0.00057 J	0.001 U
trans-1,2-Dichloroethene	mg/L	-	0.1	0.1	1.5	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	mg/L	-	-	-	-	0.001 U	0.001 U	0.001 U
Trichloroethene	mg/L	-	0.005	0.005	0.2	0.001 U	0.001 U	0.001 U
Trichlorofluoromethane (CFC-11)	mg/L	-	7.3	2.6	-	0.001 U	0.001 U	0.001 U
Trifluorotrichloroethane (Freon 113)	mg/L	-	170	170	0.032	0.001 U	0.001 U	0.001 U
Vinyl chloride	mg/L	-	0.002	0.002	0.013	0.001 U	0.001 U	0.001 U
Xylenes (total)	mg/L	-	0.28	0.28	0.041	0.002 U	0.002 U	0.002 U
Metals								
Aluminum	mg/L	10.47	0.05	0.05	-	53 <sup>0a</sup>	140 <sup>ba</sup>	0.12
Aluminum (dissolved)	mg/L	3.515	0.05	0.05	-	0.89	0.05 U	0.05 U
Antimony	mg/L	0.002 U	0.006	0.006	0.13	0.00059 I	0.003	0.0004 I
Antimony (dissolved)	mg/L	0.002 U	0.006	0.006	0.13	0.002 U	0.002 U	0.00037 I
Arsenic	mg/L	0.00972	0.01	0.01	0.01	0.028 <sup>bar</sup>	0.33 <sup>bar</sup>	0.005 U
Arsenic (dissolved)	mg/L	0.00724	0.01	0.01	0.01	0.005 U	0.005 U	0.005 U
Barium	mg/L	0.152	2	2	-	0.86	1.9	0.048 J
Barium (dissolved)	mg/L	0.1	2	2	-	0.16	0.24	0.048 J
Beryllium	mg/L	0.001 U	0.004	0.004	-	0.0045 <sup>ba</sup>	0.0092 <sup>ba</sup>	0.001 U
Beryllium (dissolved)	mg/L	0.001 U	0.004	0.004	- '	0.001 U	0.001 U	0.001 U
Cadmium	mg/L	0.001 U	0.005	0.005	-	0.0072 <sup>ba</sup>	0.0071 <sup>ba</sup>	0.001 U
Cadmium (dissolved)	mg/L	0.001 U	0.005	0.005	- '	0.001 U	0.001 U	0.001 U
Chromium	mg/L	0.0314	0.1	0.1	0.011	0.11 <sup>bar</sup>	0.35 <sup>bar</sup>	0.01
Chromium (dissolved)	mg/L	0.0104	0.1	0.1	0.011	0.005 U	0.005 U	0.011
Cobalt	mg/L	0.00765	0.1	0.04	0.1	0.049 <sup>a</sup>	0.19 <sup>bar</sup>	0.007 U
Cobalt (dissolved)	mg/L	0.007 U	0.1	0.04	0.1	0.0058 J	0.0034 J	0.007 U
Copper	mg/L	0.00996	1	1	-	0.09	0.48	0.002 U
Copper (dissolved)	mg/L	0.00742	1	1	-	0.002 U	0.002 U	0.002 U
Iron	mg/L	32.58	0.3	0.3	-	74 <sup>8a</sup>	540 <sup>ba</sup>	0.14
Iron (dissolved)	mg/L	4.002	0.3	0.3	-	1.7	0.1 U	0.1 U
Lead	mg/L	0.00351	0.004	0.004	-	0.068 <sup>ba</sup>	0.35 <sup>ba</sup>	0.003 U
Lead (dissolved)	mg/L	0.003	0.004	0.004	-	0.003 U	0.003 U	0.003 U
Manganese	mg/L	0.963	0.05	0.05		3.8 <sup>pa</sup>	14 <sup>ba</sup>	0.0068 I
Manganese (dissolved)	mg/L	0.547	0.05	0.05	-	1.5 <sup>ba</sup>	1.2 <sup>ba</sup>	0.0046 J
Mercury	mg/L	0.0002 U	0.002	0.002	0.0000013	0.00032 <sup>r</sup>	0.0011 <sup>r</sup>	0.0002 U
Mercury (dissolved)	mo/L	0.0002U	0.002	0.002	0.0000013	0.0002 U	0.0002 U	0.0002 U
Nickel	mg/L	0.0258	0.1	0.1	-	0.12 <sup>oa</sup>	0.44 <sup>pa</sup>	0.02 U
	1116/ L	0.0200	0.1	0.1				0.02 0

#### ANALYTICAL RESULTS SUMMARY FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY GENESEE TOWNSHIP, MICHIGAN

Sample Location: Sample ID: Sample Date:						BH-101 GW-12636-120511-SH-BH101 12/5/2011	BH-112 GW-12636-032812-5H-008 3/28/2012	Storm sewer SW-12636-032812-SH-001 3/28/2012
Parameters:	Units	BG_Shallow	b	d	f			
Nickel (dissolved)	mg/L	0.0185	0.1	0.1	-	0.0063 J	0.0077 J	0.02 U
Selenium	mg/L	0.005 U	0.05	0.05	0.005	0.005 U	0.14 <sup>bar</sup>	0.005 U
Selenium (dissolved)	mg/L	0.005 U	0.05	0.05	0.005	0.005 U	0.005 U	0.005 U
Silver	mg/L	0.00053	0.098	0.034	0.0002	0.00015 J	0.00087 <sup>r</sup>	0.0002 U
Silver (dissolved)	mg/L	0.0002 U	0.098	0.034	0.0002	0.0002 U	0.0002 U	0.0002 U
Thallium	mg/L	0.001 U	0.002	0.002	0.0037	0.001 U	0.0042 <sup>bar</sup>	0.00032 J
Thallium (dissolved)	mg/L	0.00118	0.002	0.002	0.0037	0.001 U	0.0002 J	0.00027 J
Vanadium	mg/L	0.0258	0.062	0.0045	0.012	0.14 <sup>bar</sup>	0.49 <sup>bar</sup>	0.00085 J
Vanadium (dissolved)	mg/L	0.0089	0.062	0.0045	0.012	0.00093 J	0.004 U	0.0011 J
Zinc	mg/L	0.039 U	5	2.4	-	0.28	2.3	0.02 U
Zinc (dissolved)	mg/L	0.0505	5	2.4	-	0.015 J	0.02 U	0.02 U
General Chemistry								
Cyanide (amenable)	mg/L	-	0.2	0.2	-	0.0050 U	0.0050 U	0.0050 U
Cyanide (total)	mg/L	-	0.2	0.2	0.0052	0.0050 U	0.0050 U	0.0050 U

#### Notes:

J - Estimated concentration.

U - Not present at or above the associated value.

- - Not analyzed.

Criteria:

BG\_Shallow - Shallow background groundwater concentration

a - Groundwater Contact Criteria (2011) (GCC[A]) - Not Shown

b - Non-Residential Drinking Water Criteria (2011) (NRDWC[B])

c - Non-Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (2011) (NRGVIAIC[C]) - Not Shown

d - Residential Drinking Water Criteria (2011) (RDWC[D])

e - Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (2011) (RGVIAIC[E]) - Not Shown

f - Groundwater Surface Water Interface (2011) (GSI[F])

# **BOREHOLE COMPLETION DETAILS** FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY GENESEE TOWNSHIP, MICHIGAN

Boring	Installation	Ground Surface	Depth of	Depth to	Screen	Sample
Location	Date	Elevation <sup>(1)</sup> (ft AMSL)	Boring (ft bgs)	Clay (ft bgs)	Interval (ft bgs)	Collected
BH-101	12/5/2011	791.33	15	8	5 to 9	Cyanide, Metals, VOCs
BH-111	12/7/2011	807.43	20	10.5	(2)	No Water Present
BH-112	3/28/2012	-	25	21	15 to 20	Cyanide, Metals, VOCs

## Notes:

Metals - Total and Dissolved Metals

Cyanide - Amenable cyanide

<sup>(1)</sup> Surveyed December 9, 2011

<sup>(2)</sup> No water present, screen not required

## MONITORING WELL NETWORK FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY GENESEE TOWNSHIP, MICHIGAN

		Ground	Top of	Reference			
Monitoring	Screened	Surface	Casing	Elevation		<u>Monitorin</u>	<u>g Event</u>
Well	Interval	Elevation "	Elevation "	(Top of Rise	r)	<u>Quarterly Sampling</u>	<u>Annual Sampling</u>
	(ft AMSL)	(ft AMSL)	(ft AMSL)	(ft AMSL)			
Shallow Water Bea	aring Unit						
B-9	788.67 to 783.67	806.77	808.32	807.67	(2)	Metals (Manganese/Lead)	Metals, VOCs, Cyanide
MW-1	791.08 to 781.08	806.29	806.35	806.08	(2)		Metals, VOCs, Cyanide
MW-2	791.9 to 781.9	807.22	806.90	806.90			Metals, VOCs, Cyanide
MW-4-02	800.76 to 795.76	807.93	810.77	810.76	(3)	Metals (Manganese/Lead)	Metals, VOCs, Cyanide
PFW-2	797.52 to 795.02	807.04	809.94	809.43	(4)	Metals (Manganese/Lead)	Metals, VOCs, Cyanide
PFW-4	799.32 to 794.32	808.17	807.72	807.72			Metals, VOCs, Cyanide
PFW-9	803.34 to 800.84	807.41	810.49	810.05	(2)	Metals (Manganese/Lead)	Metals, VOCs, Cyanide
PFW-10	794.28 to 791.78	808.85	808.48	808.48		Metals (Manganese/Lead)	Metals, VOCs, Cyanide
PFW-11	801.3 to 798.8	809.63	809.40	809.40			Metals, VOCs, Cyanide
MW-17-13	- New location to	o be installed a	at BH-103			Metals (Manganese/Lead)	Metals, VOCs, Cyanide
MW-18-13	- New location to	o be installed a	at BH-101			Metals (Manganese/Lead)	Metals, VOCs, Cyanide
MW-19-13	- New location to	o be installed a	at BH-112			Metals (Manganese/Lead)	Metals, VOCs, Cyanide
MW-20-13	- New location to	o be installed 1	northeast of BI	H-112		Metals (Manganese/Lead)	Metals, VOCs, Cyanide
<u>Drift Aquifer</u>							
B-27D	731.7 to 726.7	810.27	813.15	813.00	(2)		Metals, VOCs, Cyanide
MW-15-10	727.11 to 722.11	804.89	808.75	808.41	(2)		Metals, VOCs, Cyanide
MW-16-10	717.6 to 712.6	795.99	799.23	798.90	(2)		Metals, VOCs, Cyanide
PFW-1	728.46 to 723.46	807.83	809.78	809.77	(4)		Metals, VOCs, Cyanide

### Notes:

Cyanide - Amenable cyanide

Metals - Both total (if applicable) and dissolved metals

VOCs - Total Volitile Organic Compounds

<sup>(1)</sup> Surveyed March 25, 2004, unless otherwise noted

<sup>(2)</sup> Surveyed December 2010/January 2011

<sup>(3)</sup> Surveyed December 2010/January 2011 for top of riser elevation only

<sup>(4)</sup> Surveyed by O'Brien & Gere

ATTACHMENT A



O'BRIEN & GERE					SOIL BORING LOG	REPORT OF BORING: OBG MW-9					
CLIENT: RACER Trust PROJECT NAME: Former WWTP Investigation			RACER Trust	Investigation	Boring Location: NW corner of Peregrine Property, near entrance gate to landfill   Drilling equipment: Mini Sonic track-mounted ATV rig   Sampling equipment: 4" x 5' sonic core	Surface Elev Northing: Easting:	PAGE ation:	<u>1</u> OF	1		
PROJ	IECT L	OCATION: FILE NO.:	Coldwater Road 15388/47850	Landfill, Flint	Borehole Diameter: 6" Total Depth: 15 ft bg	Depth to gro	und water:				
BORING COMPANY: Boart Longyear FOREMAN: Walter Tidwell OBG GEOLOGIST: Mike Robison			Boart Longyear Walter Tidwell Mike Robison		Start date: 10/10/2011   Completion date: 10/10/2011	LEGEND:	/ Cement/g Sand Pac Bentonite	rout === k	Screen Riser		
DEPTH		CORE	PENETRATION/	Analytical Sample		STRATUM CHANGE	Equipment Installed	Fie Test	ild tina		
BELOW	Na	INTERVAL	RECOVERY	Interval	SAMPLE DESCRIPTION	GENERAL		PID	USCS		
GRADE	NO.	(π bg)	(ft bg)	(n bg)	Asphalt	DESCRIPT	1	Reading	symbol		
0		0-3	3/3		Olive arey damp silty CLAY little fine to medium sand and medium aravel	2"			CI		
1						-			02		
							1				
2								0.0			
3					-						
					4						
4					same as above, changes to olive brown, some medium gravel	4'		0.0			
5	2	5 - 10	5/5		Olive arey moist-wet soft sandy CLAY with organics (thin roots)	5'			CI		
		0 10	0,0		same as above, wet	Ŭ			02		
6					Olive grey, wet, silty SAND, little clay and small gravel	6'	====	0.0	SM		
						7'	====				
7					Olive brown w/ orange mottling, damp, firm, silty CLAY, trace small gravel		====		CL		
					4		====				
8					-		===	0.0			
٩					4						
10	3	10 - 15	5/5				====	0.0			
							====				
11					same as above, stiff	11'	====				
					4		====				
12					4		====	0.0			
12					-						
10											
14							====	0.0			
					same as above, changes to olive grey	14.5'	====				
15	4	15 - 20	5/5		EOB @ 15 ft bg						
					4						
16					-						
17					4						
17											
18					]						
19	-				4						
					4						
20	+				4						
21					1						
~ 1	1				1						
22					]						
					4						
23					4						
					4						
24	-				4						
Notes:	<u> </u>	1	1	1	1	<u> </u>			<u> </u>		
	PID (	(MiniRae)	readings shown ir	n parts per mil	llion. Background reading = 0.0 ppm. diameter schedule 40 PVC with 0.010" slot well screen extending from 5-15". Well completed (	as stick-up with r	protective cove	٩r			



OBRIEN 5 GERE					SOIL BORING LOG	REPORT	REPORT OF BORING: OBG MW-10					
CLIENT: RACER Trust PROJECT NAME: Former WWTP Investigation PROJECT LOCATION: Coldwater Road Landfill, Flint FILE NO.: 15388/47850			RACER Trust Former WWTP Coldwater Road 15388/47850	Investigation I Landfill, Flint	Boring Location: NW area of Peregrine Property near fenceline along Horton, approx. 100 ft south of OBG-MW-9   Drilling equipment: Mini Sonic track-mounted ATV rig   Sampling equipment: 4" x 5' sonic core   Borehole Diameter: 6"   Total Depth: 15 ft bg	Surface Elev Northing: Easting: Depth to gro	PAGE <u>1</u> OF					
BOF	RING ( F BG GE	COMPANY: FOREMAN: EOLOGIST:	Boart Longyear Walter Tidwell Mike Robison		Start date: 10/10/2011   Completion date: 10/10/2011	LEGEND:	/ Cement/g Sand Pac Bentonite	rout === k	Screen Riser			
DEPTH BELOW	Na	CORE INTERVAL	PENETRATION/ RECOVERY	Analytical Sample Interval	SAMPLE DESCRIPTION		Equipment Installed	Fie Test PID Booding	Id ting USCS			
	NO.	(n bg)	(ft bg) 5/5	(it bg)	Asphalt	DESCRIPT	/ /	Reading	Symbol			
			0,0		Dark brown, dry, silty SAND, some medium gravel	2"	/ /		SM			
1					Moderate yellowish brown, damp, silty SAND, some medium gravel	1'	/ /					
					-		/ /					
2								0.0				
3												
5					- Moderate vellowish brown, moist, clavev SAND, little medium gravel	3.5'			SC			
4						0.0		0.0				
5	2	5 - 10	5/5		same as above, wet	5'	====					
							====					
6					Moderate yellowish brown, wet, very fine SAND, some silt, trace small gravel	6'	====	0.0	SM			
7												
							====					
8							====	0.0				
					-		====					
9							====					
10	2	10 15	E/E		same as above, moist	9.5	====	0.0	80			
10	3	10 - 15	5/5		moderate yellowish brown, damp, dayey SAND, trace small gravel	10		0.0	SC			
11							====					
							====					
12							====	0.0				
12					Olive gray, damp, firm, silty CLAY, little fine sand, trace small gravel	12.5'	====		CL			
15												
14					same as above, stiff	14'	====	0.0				
15	4	15 - 20	5/5		EOB @ 15 ft bg							
- 10												
16												
17												
18	<b> </b>				4							
	<u> </u>				4							
19	<u> </u>				4							
20		1										
21					4							
	<u> </u>				4							
22					4							
23	-				1							
	L	L			]							
24												
Nett												
Notes:	PID	(MiniRae)	readings shown i	n parts per mil	lion. Background reading = 0.0 ppm.							
	Moni	itoring well	OBG MW-10 co	nstructed of 2"	diameter schedule 40 PVC with 0.010" slot well screen extending from 5-15'. Well completed	as stick-up with	protective cov	/er.				