RESOURCE CONSERVATION AND RECOVERY ACT ENVIRONMENTAL INDICATORS (CA725 AND CA750) SUPPORTING DOCUMENTATION

FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY GENESEE TOWNSHIP, MICHIGAN

U.S. EPA ID# MIR 000 020 743

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AUGUST 2010
REF. NO. 012636 (35)

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1.0 INTRODUCTION

1.1 BACKGROUND

This Resource Conservation and Recovery Act (RCRA) Environmental Indicators (EI) Supporting Documentation (Report) was prepared by Conestoga-Rovers & Associates, Inc. (CRA) on behalf of Motors Liquidation Company (MLC) [formerly known as General Motors Corporation (GM)], for the Former Peregrine (US) Inc. (Peregrine) Coldwater Road Facility (Facility or Site) located in Genesee Township, Michigan. The Facility was formerly owned by Remediation and Liability Management Company Inc. (REALM), a subsidiary of GM. Effective July 10, 2009, as a result of GM's bankruptcy, non-continuing assets (including the Facility) remain the property of the MLC, in its capacity as a debtor in possession in the bankruptcy case. This Report was prepared in conjunction with the RCRA Corrective Actions being conducted at the Facility. The Facility's EPA Identification Number is MIR 000 020 743. As part of the RCRA Corrective Action, MLC set performance goals for itself to complete the EI determinations for current human exposures under control (CA725) and migration of contaminated groundwater under control (CA750).

The Facility is bordered on the north by MLC property (i.e., the closed landfill), on the south by East Coldwater Road and commercial facilities, on the west by Horton Street, and on the east by CSX Transportation property and railroad tracks. The Facility is currently zoned industrial and has been historically utilized for industrial activities since 1952. The Facility is located in an area classified by Genesee Township as Heavy Industrial (I-2), as described in Sections 1200, 1201, 1202, and 1203 of the Genesee Township Zoning Ordinance.

Future land use plans contemplate the continued industrial designation of the Facility.

MLC performed the following activities as part of the RCRA Corrective Action work to characterize the nature and extent of releases of hazardous waste and/or hazardous constituents at the Facility:

- **Description of Current Conditions Report (CRA, 2000a)** - identified 21 areas of interest (AOIs) at the Facility, and described the physical conditions, historical operations, and any previous investigation or remedial action at each AOI. The AOIs included all the solid waste management units (SWMUs) and areas of concern (AOCs) identified in United States Environmental Protection Agency's (USEPA) 1998 "Preliminary Assessment/Visual Site Inspection" report, and other areas at the Facility for which GM had knowledge of past management of hazardous waste or

hazardous constituents. The Description of Current Conditions Report evaluated each AOI and identified those where additional investigation was warranted. Rationale for not further investigating other AOIs was also provided in the Description of Current Conditions Report.

- **RCRA Facility Investigation (RFI) Work Plan (CRA, 2000b)** - Based on the information in the Description of Current Conditions Report, GM identified 13 of the 21 AOIs for further investigation. A total of 12 AOIs were investigated under the scope of the RCRA Facility Investigation (RFI) and 1 AOI was investigated pursuant to a separate work plan (see below). The RFI Work Plan described the objectives, approach, rationale, and procedures for these investigations. The objective of the RFI field investigations was to collect data for determining whether a significant release of hazardous constituents had occurred at each area, and to characterize the extent of any release for determining whether the release poses unacceptable risk under current and reasonably expected future land use, or has adversely affected groundwater quality. The RFI sampling locations are shown on Figure 2 of the Revised RFI Report (CRA, 2010), which also shows the boundaries of the areas investigated during the RFI.
- **RFI Work Plan Addendum #1 (CRA, 2001)** - A subsequent phase of investigation was conducted in the Building 44 basement (AOI 9).
- **RFI Work Plan Addendum #2 (CRA, 2002)** - A subsequent phase of investigation included additional soil investigation at AOI 2, AOI 9, and AOI 11, and additional groundwater sampling.
- **Closure Plan and Post-Closure Plan (OBG 1989) and Final Closure Certification Documentation Package, Drum Storage Area and Waste Pile Pad (Weston, 1999)** - A supplemental soil investigation was also completed at AOI 1 (the Former Drum Storage Area) to address the MDEQ-WHMD denial of closure in its letter dated March 26, 1998. Additional investigation and remediation activities were conducted pursuant to a separate work plan and therefore AOI 1 was not included as part of the Facility RFI. Sampling results were submitted in the Closure Certification Report by O'Brien and Gere Engineers (OBG) on January 24, 2005. The MDEQ approved closure in their letter dated March 24, 2005.

The RFI Work Plan and associated addenda were submitted to and reviewed with USEPA and Michigan Department of Environmental Quality (MDEQ) (now referred to as the Michigan Department of Natural Resources and Environment - MDNRE) prior to their implementation. The field investigations were conducted in accordance with the work plan and addenda, except where field conditions necessitated changes as discussed in the Revised RFI Report. The data collected during the RFI and the details of the data collection activities are provided in the Revised RFI Report.

In addition to the work conducted under the RCRA corrective action, the following Interim Measures (IM) were completed to address exceedances of Act 451, Part 201 generic industrial criteria (see Section 1.2), which is summarized in the Interim Measures Completion Report (IM Report) (CRA, 2010b):

- Approximately 90 cubic yards of soil were excavated from an area approximately 21 feet by 19 feet by 6 feet deep, in the Building 44 basement, in June 2001. This soil was excavated due to exceedances of IDCC and PSIC at BH-9-26-00.
- Coal fines were removed from the former powerhouse area in June 2002.
- Based on the 2002 soil delineation sampling, soil was excavated at sample locations K-35, BH-2-3-00, BH-9-23-00, and BH-11-1-00 due to exceedances of IDCC, PSIC, and/or SVIAIC. Approximately 30 cubic yards of soil was removed from each of the K-35, BH-2-3-00, and BH-9-23-00 locations, and approximately 60 cubic yards was removed from the BH-11-1-00 location. Impacted concrete and soil from the Building 44 slab, and soil from the former Drum Storage Area, were also excavated. The excavation was conducted in March 2004 and April 2004. The excavations were backfilled with clean soil. Site restoration was conducted between April 2004 and September 2004.
- A small release of oily water was discovered on the building slab and cleaned up in April 2009. Asphalt and a broken pipe were disrupted by a snow plow, and oily water was found on the ground. The broken asphalt was placed into drums along with other solids (PPE, plastic, absorbent booms). The water was containerized in a tanker truck. The water and solids were characterized as non-hazardous. The pipe was cut below grade and grouted with cement mix. As of August 2010, there has been no reoccurrence.

In addition, concrete and soil removal was conducted at AOI 1 (the Former Drum Storage Area) in March 2004. A description of the IM activities and the verification results are included in the Closure Certification Report for the Former Drum Storage Area and approved by the MDEQ in a letter dated March 24, 2005.

The purpose of this Report is to summarize information from the RFI Report and IM Report that specifically relates to the RCRA Corrective Action CA725 and CA750 determinations of whether current human exposures are under control and whether migration of contaminated groundwater is under control, respectively.

1.2 SCREENING CRITERIA

Generic risk-based industrial cleanup criteria are specified in Part 201 of Michigan's Natural Resources and Environmental Protection Act, Public Act 451, and outlined in the MDEQ RRD Operational Memorandum No. 1, updated January 23, 2006, pursuant to 1994 PA 451 as amended.

Soil sample analytical data were compared to the generic risk-based industrial criteria presented below:

- Background Values, as identified in Section 1.3
- Industrial Direct Contact Criteria
- Particulate Soil Inhalation Criteria
- Soil Volatilization to Indoor Air Inhalation Criteria
- Industrial Drinking Water Protection Criteria
- Infinite Source Soil Inhalation Criteria.

Groundwater sample analytical data were compared to the following generic industrial risk-based industrial criteria:

- Groundwater Contact Criteria
- Industrial Drinking Water Criteria
- Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria

The analytical data was not compared to Groundwater Surface Water Interface Criteria since the groundwater surface interface pathway is incomplete.

1.3 FACILITY-SPECIFIC BACKGROUND VALUES

Inorganic background values were determined on a Facility-specific basis by collecting eight samples of geologic media within the shallow silty sand and glacial clay till at the four background boreholes. The Background Values used for the Facility are a combination of Site-specific background concentrations calculated in accordance with *Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria* (S^3TM) (MDEQ, 2002) and statewide default background concentrations (outlined in the generic industrial criteria). The determination of the Background Values is presented in the RFI Report (CRA, 2010a).

1.4 REPORT ORGANIZATION

The remainder of this Report is organized as follows:

- Section 2.0 - Current Human Exposures Under Control (CA725)
- Section 3.0 - Migration of Contaminated Groundwater Under Control (CA750)
- Section 4.0 - References

2.0 CURRENT HUMAN EXPOSURES UNDER CONTROL (CA725)

The completed CA725 form is presented in Appendix A. The remainder of this section provides justification for how the form has been completed.

2.1 INFORMATION REVIEWED

Question 1 on the CA725 form asks, "*Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?*"

All relevant information has been considered in preparing this Report. Specifically, information from the following sources was reviewed to support the evaluation of whether current human exposures at the Facility are under control:

- Description of Current Conditions Report (CRA, 2000a)
- RFI Work Plan (CRA, 2000b)
- RFI Work Plan Addendum #1 (CRA, 2001)
- RFI Work Plan Addendum #2 (CRA, 2002)
- RFI Report (CRA, 2010a)
- IM Report (CRA, 2010b)

2.2 PRESENCE OF CONTAMINATION

Question 2 on the CA725 form asks, "*Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be "contaminated" above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?*"

According to the CA725 form:

> *"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).*"

In this Report, the presence of "contamination" is identified as site characterization results for soil and groundwater above the generic risk-based screening criteria discussed in Section 1.2, that are potentially relevant to current human exposures. These generic screening criteria and the contamination identified using these criteria are discussed in the following subsections.

The results used in the comparisons include site characterization data as follows:

- All soil data collected at the Facility during pre-RFI, RFI, and post-IM sampling (1996 to 2002); only data for remaining soil were used (i.e., soil that remains at the Site and has not been excavated).
- Groundwater data collected during the RFI (2000 to 2002) were used; for locations which were not sampled during the RFI, historical pre-RFI data (1996 to 1997) were used.

Concentrations among duplicate pairs have been averaged to obtain a representative concentration for each pair.

The analytical data for all samples are provided in the RFI Report (CRA, 2010a) and the IM report (CRA, 2010b).

2.2.1 SOIL

The soil characterization data for each area are summarized in Table 2.1the detected constituents, their detection frequencies, ranges of detected concentrations, and the ratios of the highest measured concentrations to the screening criteria. The screening criteria for soil are the criteria based on direct contact and vapor and particulate inhalation, which are the only pathways that are potentially relevant to current human exposures (see Section 2.3).

The primary soil screening criteria are discussed in Section 1.2. The specific Part 201 criteria used here for identifying soil contamination are:

- Industrial Direct Contact Criteria
- Particulate Soil Inhalation Criteria
- Soil Volatilization to Indoor Air Inhalation Criteria
- Infinite Source Soil Inhalation Criteria

The generic industrial criteria were derived by MDNRE using a target cancer risk of 10E-5 and a target hazard quotient of 1.

As discussed in the RFI Report (CRA, 2010a), there are no exceedances of any of the above listed criteria in soils remaining at the Facility.

Presence of Contamination

All detected concentrations on site, with the exception of inorganic constituents [i.e., metals, which could be considered background as addressed in the RFI Report (CRA, 2010a)], are assumed to be Facility-related for the purposes of identifying "contamination".

In order to determine if remaining surface or subsurface soil in a given area (AOI) at the Facility meets the definition of "contaminated", the ratio of the highest Facility-related concentration (for each constituent) to the screening criteria, was calculated. Ratios higher than 1 are considered to meet the definition of "contamination".

The ratios are presented in Table 2.1. No ratio is higher than 1 at any area. Therefore, no soil at the Facility is considered to meet the definition of "contamination".

2.2.2 GROUNDWATER

Groundwater characterization data collected from on-Site monitoring wells are summarized in Table 2.2. The locations of the monitoring wells are shown on Figure 2.1. Table 2.2 shows the detected constituents, their detection frequencies and range of detected concentrations for the on-Site monitoring wells, and the ratios of the highest measured concentrations to the screening criteria.

The primary groundwater screening criteria are discussed in Section 1.2. The specific Part 201 criteria used here for identifying groundwater contamination are:

- Groundwater Contact Criteria
- Industrial Drinking Water Criteria
- Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria

Exceedances of Criteria

As discussed in the RFI Report (CRA, 2010a), although there were historical exceedances of Industrial Drinking Water Criteria for VOCs and metals, there are no current exceedances of any of the above listed criteria in the RFI samples, with the exception of arsenic. There were three locations where total arsenic exceeded the Industrial Drinking Water Criteria in historical perched water samples. These historical arsenic concentrations were below the 2002 criterion of 0.05 mg/L, but now exceed the 2006 criterion of 0.01 mg/L. There have been no subsequent RFI samples to determine current status. The three exceedances are:

- A historical MW-3 total arsenic detection (0.013 mg/L) in 1996; total arsenic was not detected in the second 1996 historical sample
- A historical MW-4 total arsenic detection (0.016 mg/L) in 1996; that total arsenic was not detected in the second 1996 historical sample
- The drift aquifer well PFW-1 detected total arsenic (0.04 mg/L) in the 1997

Monitoring wells MW-14 and DSA_MW-01 are located in the Former Drum Storage Area (AOI 1). DSA_MW-01 and MW-14 groundwater data were discussed in the Closure Certification Report for the Former Drum Storage Area, submitted under a separate cover and approved by the MDEQ in their letter dated March 24, 2005. However, for the purposes of a risk analysis, results from the Former Drum Storage Area are included in the scope of this document.

Presence of Contamination

In order to determine if groundwater in a given area (AOI) at the Facility meets the definition of "contaminated", the ratio of the highest Facility-related concentration (for each constituent) to the screening criteria, was calculated. Ratios higher than 1 are considered to meet the definition of "contamination".

The ratios are presented in Table 2.2. With two exceptions described below, no ratio is higher than 1 at any area. Therefore, no groundwater at the Facility is considered to meet the definition of "contamination". The two exceptions are:

- Trichloroethene and cis-1,2-dichloroethene in AOI 1 (Former Drum Storage Area) had historical concentrations that are higher than Industrial Drinking Water Criteria; however, soil has since been excavated from AOI 1 and groundwater data were discussed in the Closure Certification Report for the Former Drum Storage Area,

submitted under a separate cover. Closure of this area has since been approved by the MDEQ in their letter dated March 24, 2005.

- Arsenic in PFW-1 (the Drift Aquifer well), historically had a concentration (0.04 mg/L) higher than Industrial Drinking Water Criteria (0.01 mg/L).

Given the remedial measures already taken for the trichloroethene and cis-1,2-dichloroethene-affected soil, and only a slight exceedance (i.e., no "unacceptable" human exposures) of the screening level for naturally-occurring arsenic, the historical results do not detract from concluding that there is no "contamination" in groundwater. Nevertheless, as outlined in the RFI (CRA, 2010a), a deed restriction on the potable use of groundwater will be implemented to ensure enhanced protection of potential receptors.

2.3 EXPOSURE PATHWAYS

Question 3 of the CA725 form asks, "*Are there complete pathways between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?*"

As discussed in Section 2.2, no environmental medium at the Facility meets the definition of "contamination". Therefore, this question is not relevant to this CA725 determination as there are incomplete exposure pathways between each exposure medium and receptors.

For informational purposes, current Facility conditions and the potential for the presence of human receptors at the Facility is summarized in the following subsections.

2.3.1 SOIL

As discussed in Section 2.2.1, no soil at the Facility is considered to meet the definition of "contamination". Also, it should be noted that all buildings at the Site have been demolished and no routine commercial/industrial activities are taking place at the Site.

2.3.2 GROUNDWATER

Groundwater is not used as a potable or non-potable water supply at the Facility. Previously, the Facility obtained water from the City of Flint and the Beecher

Metropolitan District System. Therefore, no exposure to groundwater via potable or non-potable use currently exists at the Facility.

Potential exposure to constituents in groundwater is not possible via vapor intrusion, as all former buildings at the Facility have been decommissioned and demolished. Therefore, a vapor intrusion pathway does not currently exist on Site.

Potential exposure of construction workers via contact with groundwater during on-Site construction activities that extend into the water table is not reasonably expected since the Facility has been decommissioned and the only activities that could put workers in contact with groundwater are associated with environmental remediation. Any such activities are covered by the Facility's health and safety plan, which would prevent significant exposure during such activities. Therefore, no pathway exists for significant exposure of workers to groundwater.

2.3.3 AIR

The indoor air pathway is not complete because there are no buildings left at the Site. The outdoor (ambient) air pathway is complete but is addressed in Section 2.2.1. As presented in Table 2.1, remaining soil at the Site does not exceed Particulate Soil Inhalation Criteria, Soil Volatilization to Indoor Air Inhalation Criteria, or Infinite Source Soil Inhalation Criteria. As presented in Table 2.2, remaining groundwater at the Site does not exceed Groundwater Volatilization to Indoor Air Inhalation Criteria.

2.3.4 SURFACE WATER AND SEDIMENT

There is no surface water or sediment at the Site, therefore their associated exposure pathways are incomplete.

2.3.5 GROUNDWATER TO SURFACE WATER INTERFACE

The groundwater surface interface pathway is incomplete.

2.4 CONCLUSION

The presence of "contamination" at the Facility was determined by comparing the Site characterization data for soil and groundwater with generic risk-based screening criteria. No soil or groundwater that currently remains at the Facility is considered to meet the definition of "contamination" or is associated with "unacceptable" human exposures. Also, the Facility has been decommissioned and there is no commercial/industrial activity currently at the Facility. Therefore, the data collected at the Facility to characterize current conditions (i.e., soil that remains at the Site and has not been excavated) support a determination that all current human exposures to "contamination" at the Facility are under control.

3.0 MIGRATION OF CONTAMINATED GROUNDWATER UNDER CONTROL (CA750)

The completed CA750 form is presented in Appendix B. The remainder of this section provides justification for how the form has been completed.

3.1 INFORMATION REVIEWED

Question 1 of the CA750 form asks, "*Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?*"

All relevant information has been considered in preparing this Report. Specifically, information from the following sources was reviewed to support the evaluation of whether migration of contaminated groundwater at the Facility is under control:

- Description of Current Conditions Report (CRA, 2000a)
- RFI Work Plan (CRA, 2000b)
- RFI Work Plan Addendum #1 (CRA, 2001)
- RFI Work Plan Addendum #2 (CRA, 2002)
- RFI Report (CRA, 2010a)
- IM Report (CRA, 2010b).

3.2 PRESENCE OF CONTAMINATED GROUNDWATER

Question 2 of the CA750 form asks, "*Is groundwater known or reasonably suspected to be "contaminated" above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?*"

According to the CA750 form:

> "*Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).*"

As discussed in Section 2.2.2, given the remedial measures already taken for the trichloroethene and cis-1,2-dichloroethene-affected soil, and only a slight exceedance (i.e., no "unacceptable" human exposures) of the screening level for naturally-occurring arsenic, the historical results do not detract from the conclusion of no "contamination" in groundwater.

Because no contaminated groundwater exists at the Facility, Questions 3 to 7 of the CA750 form are not relevant to this CA750 determination.

3.3 CONCLUSIONS

Groundwater is not considered to meet the definition of "contaminated" at the Facility. Therefore, it has been determined that the migration of contaminated groundwater at the Facility is under control.

4.0 REFERENCES

Conestoga-Rovers & Associates (CRA), 2000a. Description of Current Conditions. Report, Former Peregrine (US), Inc., Coldwater Road Facility, Genesee Township, Michigan. March.

Conestoga-Rovers & Associates (CRA), 2000b. RCRA Facility Investigation Work Plan. Former Peregrine (US), Inc., Coldwater Road Facility, Genesee Township, Michigan. May.

Conestoga-Rovers & Associates (CRA), 2001. RCRA Facility Investigation Work Plan Addendum #1, Former Peregrine (US), Inc., Coldwater Road Facility, Genesee Township, Michigan. April.

Conestoga-Rovers & Associates (CRA), 2002. RCRA Facility Investigation Work Plan Addendum #2, Former Peregrine (US), Inc., Coldwater Road Facility, Genesee Township, Michigan. March.

Conestoga-Rovers & Associates (CRA), 2010a. Revised RCRA Facility Investigation (RFI) Report, Former Peregrine (US), Inc., Coldwater Road Facility, Genesee Township, Michigan. August.

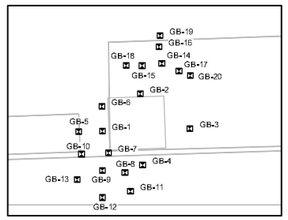
Conestoga-Rovers & Associates (CRA), 2010b. Interim Measures (IM) Completion Report, Former Peregrine (US), Inc., Coldwater Road Facility, Genesee Township, Michigan. August.

Michigan Department of Natural Resources and Environment (MDNRE), 2006. Administrative Rules for Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as Amended. Generic Cleanup Criteria and Screening Levels. January.

O'Brien and Gere Engineers, 1989. Closure Plan and Post-Closure Plan (Volumes I and II). August.

O'Brien and Gere Engineers, 2005. Closure Certification Report for the Former Drum Storage Area. January 24.

Weston, 1999. Final Closure Certification Documentation Package, Drum Storage Area and Waste Pile Pad, Coldwater Road Plant, Flint, Michigan. June.



DETAIL
SCALE 1"=30'

AOI DESCRIPTION

AOI #2	FORMER WASTE PILE PAD
AOI #3	FORMER USTs
AOI #6	FORMER SCRAP METAL STORAGE AREA
AOI #8	FORMER PLATING AREAS
AOI #9	FORMER COAL STORAGE AREA
AOI #11	FORMER CAUSTIC TANKS
AOI #12	FORMER HEADLINER ADHESIVE TANKS
AOI #13	FORMER INCINERATOR
AOI #14	SUBSTATION DRAINAGE SUMP
AOI #17	FORMER INACTIVE EQUIPMENT RESERVE YARD
AOI #18	FORMER PRESS ROOM
AOI #19	FORMER TOOL ROOM
AOI #20	POWERHOUSE FUEL OIL STORAGE TANKS
AOI #21	

NOTE:
THERE IS NO SPECIFIC LOCATION
FOR AOI#4 AND AOI #7.

NO.	Revision	Date	Initial

0 50 150ft

LEGEND

- ASPHALT LINE
- BUILDING
- CURB
- DITCH
- FENCELINE
- GRAVEL LINE
- GUARDRAIL
- RAILROAD
- ROAD
- SIDEWALK
- SHORELINE
- TRAIL
- CATCH BASIN
- FIRE HYDRANT
- MANHOLE
- TANK
- VEGETATION
- BH-18-4+00 — BOREHOLE LOCATION
- MW-1 — STUDY 2 MONITORING WELL LOCATION AND NUMBER
- PFW-1 — STUDY 4 MONITORING WELL LOCATION AND NUMBER
- B-9 — GENERAL MOTORS RCRA UNIT CLOSURE MONITORING WELL LOCATION AND NUMBER
- PFB-7 — STUDY 4 SOIL BORING LOCATION AND NUMBER
- SB-2 — STUDY 2 SOIL BORING LOCATION AND NUMBER
- GR1 — STUDY 1 GEOPROBE LOCATION AND NUMBER
- Q-34 — STUDY 2 GEOPROBE LOCATION AND NUMBER
- H-192 — WOOD BLOCK SAMPLE LOCATION
- WIPE 3A — WIPE SAMPLE LOCATION
- TANK 22 VENT — TCLP SAMPLE LOCATION
- SOIL SAMPLE LOCATION
- DSA_MW-1 — FORMER DRUM STORAGE AREA MONITORING WELL LOCATION AND NUMBER

NOTES:
1) Reference System:
Vertical - NAVD 1988.
Horizontal - NAD 83(1994)
Michigan South zone 2113.

2) Aerial Photo Date: 3/25/00
Date of Mapping: April 2000

3) Boreholes surveyed, received July 3, 2000.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

FORMER PEREGRINE (US), INC.
COLDWATER ROAD FACILITY

MLC

BOREHOLE AND MONITORING
WELL LOCATIONS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
NOVA CONSULTANTS, INC. MAY 26, 2000

Project Manager:	Reviewed By:	Date:	
G. T.	R. M.	AUGUST 2010	
Scale: 1"=150'	Project No.: 12636-T03	Report No.: 035	Drawing No.: 2.1

12636-T03(035)GN-WA001 AUG 05/2010

TABLE 2.1

SOIL SCREENING RESULTS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Area	*Chemical Group*	*Chemical*	*CAS Registry Number*	*Total Analyzed*	*Total Detected*	*Min Detected (mg/kg)*	*Max Detected (mg/kg)*	*Min QL (mg/kg)*	*Max QL (mg/kg)*	*Criteria a*	*Criteria b*	*Criteria c*	*Criteria d*	*Ratio of Max:a*	*Ratio of Max:b*	*Ratio of Max:c*	*Ratio of Max:d*
AOI 1	Metals	Chromium (total)	7440-47-3T	1	1	1.25E+01	1.25E+01	NA	NA	NA	NA	2.40E+02	9.20E+03	NC	NC	5.21E-02	1.36E-03
AOI 1	Metals	Lead	7439-92-1T	1	1	7.00E+00	7.00E+00	NA	NA	NA	NA	4.40E+04	9.00E+02	NC	NC	1.59E-04	7.78E-03
AOI 1	VOAs	1,4-Dichlorobenzene	106-46-7	10	1	5.00E-02	5.00E-02	NA	NA	1.00E+02	2.60E+02	5.70E+05	1.90E+03	5.00E-04	1.92E-04	8.77E-08	2.63E-05
AOI 1	VOAs	Methylene chloride	75-09-2	12	1	3.00E-01	3.00E-01	NA	NA	2.40E+02	7.00E+02	8.30E+06	2.30E+03	1.25E-03	4.29E-04	3.61E-08	1.30E-04
AOI 1	VOAs	Tetrachloroethene	127-18-4	12	1	1.60E-03	1.60E-03	NA	NA	6.00E+01	6.00E+02	6.80E+06	8.80E+01	2.67E-05	2.67E-06	2.35E-10	1.82E-05
AOI 1	VOAs	Toluene	108-88-3	12	2	1.10E-03	2.70E-03	NA	NA	2.50E+02	3.30E+03	1.20E+07	2.50E+02	1.08E-05	8.18E-07	2.25E-10	1.08E-05
AOI 1	VOAs	Trichloroethene	79-01-6	13	1	8.63E-02	8.63E-02	NA	NA	3.70E+01	2.60E+02	2.30E+06	5.00E+02	2.33E-03	3.32E-04	3.75E-08	1.73E-04
AOI 1	VOAs	Xylene (total)	1330-20-7	2	1	1.00E-03	1.00E-03	NA	NA	1.50E+02	5.40E+04	1.30E+08	1.50E+02	6.67E-06	1.85E-08	7.69E-12	6.67E-06
AOI 2	Metals	Aluminum	7429-90-5T	2	2	7.24E+03	7.54E+03	3.50E+00	3.70E+00	NA	NA	NA	3.70E+05	NC	NC	NC	2.04E-02
AOI 2	Metals	Arsenic	7440-38-2T	7	7	3.50E+00	8.90E+00	8.50E-03	2.28E-02	NA	NA	9.10E+02	3.70E+01	NC	NC	9.78E-03	2.41E-01
AOI 2	Metals	Barium	7440-39-3T	3	3	5.21E+01	6.40E+01	1.30E-01	1.40E-01	NA	NA	1.50E+05	1.30E+05	NC	NC	4.27E-04	4.92E-04
AOI 2	Metals	Beryllium	7440-41-7T	2	2	3.80E-01	3.95E-01	2.60E-03	2.70E-03	NA	NA	5.90E+02	1.60E+03	NC	NC	6.69E-04	2.47E-04
AOI 2	Metals	Cadmium	7440-43-9T	3	3	1.20E-01	2.10E-01	3.00E-03	3.20E-03	NA	NA	2.20E+03	2.10E+03	NC	NC	9.55E-05	1.00E-04
AOI 2	Metals	Calcium	7440-70-2T	2	2	3.50E+04	5.32E+04	3.60E+00	3.80E+00	NA	NA	NA	NA	NC	NC	NC	NC
AOI 2	Metals	Chromium (total)	7440-47-3T	3	3	1.16E+01	1.44E+01	3.70E-02	4.00E-02	NA	NA	2.40E+02	9.20E+03	NC	NC	6.00E-02	1.57E-03
AOI 2	Metals	Cobalt	7440-48-4T	2	2	6.50E+00	6.70E+00	2.50E-03	2.60E-03	NA	NA	5.90E+03	9.00E+03	NC	NC	1.14E-03	7.44E-04
AOI 2	Metals	Copper	7440-50-8T	3	3	1.33E+01	1.60E+01	6.90E-02	7.20E-02	NA	NA	5.90E+04	7.30E+04	NC	NC	2.71E-04	2.19E-04
AOI 2	Metals	Iron	7439-89-6T	2	2	1.70E+04	2.10E+04	2.20E+00	2.40E+00	NA	NA	NA	5.80E+05	NC	NC	NC	3.62E-02
AOI 2	Metals	Lead	7439-92-1T	3	3	1.00E+01	1.04E+01	2.20E-02	2.40E-02	NA	NA	4.40E+04	9.00E+02	NC	NC	2.35E-04	1.15E-02
AOI 2	Metals	Magnesium	7439-95-4T	2	2	1.18E+04	1.80E+04	1.70E+00	1.80E+00	NA	NA	2.90E+06	1.00E+06	NC	NC	6.21E-03	1.80E-02
AOI 2	Metals	Manganese	7439-96-5T	2	2	4.58E+02	5.11E+02	1.60E-01	1.60E-01	NA	NA	1.50E+03	9.00E+04	NC	NC	3.41E-01	5.68E-03
AOI 2	Metals	Mercury	7439-97-6T	3	2	1.60E-02	3.45E-02	4.10E-03	4.40E-03	8.90E+01	6.20E+01	8.80E+03	5.80E+02	3.88E-04	5.56E-04	3.92E-06	5.95E-05
AOI 2	Metals	Nickel	7440-02-0T	2	2	1.86E+01	1.96E+01	1.20E-02	1.30E-02	NA	NA	1.60E+04	1.50E+05	NC	NC	1.23E-03	1.31E-04
AOI 2	Metals	Potassium	7440-09-7T	2	2	1.14E+03	1.49E+03	3.41E+01	3.60E+01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 2	Metals	Selenium	7782-49-2T	3	2	2.20E-01	3.00E-01	2.00E-02	2.10E-02	NA	NA	5.90E+04	9.60E+03	NC	NC	5.08E-06	3.13E-05
AOI 2	Metals	Silver	7440-22-4T	3	2	6.40E-02	7.40E-02	2.20E-03	2.40E-03	NA	NA	2.90E+03	9.00E+03	NC	NC	2.55E-05	8.22E-06
AOI 2	Metals	Sodium	7440-23-5T	2	2	2.83E+02	3.21E+02	1.34E+02	1.41E+02	NA	NA	NA	1.00E+06	NC	NC	NC	3.21E-04
AOI 2	Metals	Thallium	7440-28-0T	2	2	1.20E-01	1.70E-01	2.20E-03	2.40E-03	NA	NA	NA	1.30E+02	NC	NC	NC	1.31E-03
AOI 2	Metals	Vanadium	7440-62-2T	2	2	2.18E+01	2.40E+01	3.90E-01	4.10E-01	NA	NA	NA	5.50E+03	NC	NC	NC	4.36E-03
AOI 2	Metals	Zinc	7440-66-6T	3	3	4.90E+01	1.20E+02	1.40E-01	1.50E-01	NA	NA	NA	6.30E+05	NC	NC	NC	1.90E-04
AOI 2	SVOAs	Acenaphthene	83-32-9	2	1	1.32E-01	1.32E-01	5.00E-02	5.30E-02	3.50E+05	9.70E+04	6.20E+06	1.30E+05	3.76E-07	1.36E-06	2.12E-08	1.01E-06
AOI 2	SVOAs	Anthracene	120-12-7	2	1	1.20E-01	1.20E-01	4.10E-02	4.40E-02	1.00E+06	1.60E+06	2.90E+07	7.30E+05	1.20E-07	7.50E-08	4.14E-09	1.64E-07
AOI 2	SVOAs	Benzo(a)anthracene	56-55-3	2	2	9.00E-02	2.19E-01	5.00E-02	5.30E-02	NA	NA	NA	8.00E+01	NC	NC	NC	2.74E-03
AOI 2	SVOAs	Benzo(a)pyrene	50-32-8	2	2	8.50E-02	1.80E-01	4.10E-02	4.40E-02	NA	NA	1.90E+03	8.00E+00	NC	NC	9.47E-05	2.25E-02
AOI 2	SVOAs	Benzo(b)fluoranthene	205-99-2	2	2	1.20E-01	2.10E-01	5.80E-02	6.10E-02	NA	NA	NA	8.00E+01	NC	NC	NC	2.63E-03
AOI 2	SVOAs	Benzo(g,h,i)perylene	191-24-2	2	2	6.30E-02	1.58E-01	4.60E-02	4.80E-02	NA	NA	3.50E+05	7.00E+03	NC	NC	4.50E-07	2.25E-05
AOI 2	SVOAs	Benzo(k)fluoranthene	207-08-9	2	2	4.10E-02	1.58E-01	3.60E-02	3.80E-02	NA	NA	NA	8.00E+02	NC	NC	NC	1.97E-04
AOI 2	SVOAs	Chrysene	218-01-9	2	2	7.40E-02	1.70E-01	4.00E-02	4.20E-02	NA	NA	NA	8.00E+03	NC	NC	NC	2.13E-05
AOI 2	SVOAs	Fluoranthene	206-44-0	2	2	1.80E-01	4.65E-01	4.40E-02	4.60E-02	1.00E+06	8.90E+05	4.10E+06	1.30E+05	4.65E-07	5.22E-07	1.13E-07	3.58E-06
AOI 2	SVOAs	Fluorene	86-73-7	2	1	1.33E-01	1.33E-01	4.90E-02	5.20E-02	1.00E+06	1.50E+05	4.10E+06	8.70E+04	1.33E-07	8.83E-07	3.23E-08	1.52E-06
AOI 2	SVOAs	Indeno(1,2,3-cd)pyrene	193-39-5	2	1	1.68E-01	1.68E-01	5.70E-02	6.00E-02	NA	NA	NA	8.00E+01	NC	NC	NC	2.09E-03
AOI 2	SVOAs	Phenanthrene	85-01-8	2	2	1.20E-01	3.40E-01	4.40E-02	4.60E-02	5.10E+03	1.90E+02	2.90E+03	5.20E+03	6.67E-05	1.79E-03	1.17E-04	6.54E-05
AOI 2	SVOAs	Pyrene	129-00-0	2	2	1.60E-01	3.95E-01	4.60E-02	4.80E-02	1.00E+06	7.80E+05	2.90E+06	8.40E+04	3.95E-07	5.06E-07	1.36E-07	4.70E-06
AOI 2	VOAs	1,1,1-Trichloroethane	71-55-6	4	1	1.04E-02	1.04E-02	1.00E-04	1.10E-04	4.60E+02	4.50E+03	2.90E+07	4.60E+02	2.26E-05	2.31E-06	3.59E-10	2.26E-05
AOI 2	VOAs	1,1-Dichloroethane	75-34-3	4	2	3.10E-03	3.38E-02	1.70E-04	1.90E-04	4.30E+02	2.50E+03	1.50E+07	8.90E+02	7.86E-05	1.35E-05	2.25E-09	3.80E-05
AOI 2	VOAs	1,1-Dichloroethene	75-35-4	4	2	1.20E-03	1.73E-03	1.70E-04	1.90E-04	3.30E-01	3.70E+00	7.80E+04	5.70E+02	5.23E-03	4.66E-04	2.21E-08	3.03E-06
AOI 2	VOAs	Methylene chloride	75-09-2	4	2	1.70E-02	6.67E-02	2.40E-04	2.60E-04	2.40E+02	7.00E+02	8.30E+06	2.30E+03	2.78E-04	9.53E-05	8.04E-09	2.90E-05

TABLE 2.1

SOIL SCREENING RESULTS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Area	*Chemical Group*	*Chemical*	*CAS Registry Number*	*Total Analyzed*	*Total Detected*	*Min Detected (mg/kg)*	*Max Detected (mg/kg)*	*Min QL (mg/kg)*	*Max QL (mg/kg)*	*Criteria a*	*Criteria b*	*Criteria c*	*Criteria d*	*Ratio of Max:a*	*Ratio of Max:b*	*Ratio of Max:c*	*Ratio of Max:d*
AOI 3	Metals	Arsenic	7440-38-2T	1	1	1.00E+01	1.00E+01	NA	NA	NA	NA	9.10E+02	3.70E+01	NC	NC	1.10E-02	2.70E-01
AOI 3	Metals	Barium	7440-39-3T	1	1	7.40E+01	7.40E+01	NA	NA	NA	NA	1.50E+05	1.30E+05	NC	NC	4.93E-04	5.69E-04
AOI 3	Metals	Cadmium	7440-43-9T	9	2	2.20E-01	8.10E-01	4.70E-02	5.00E-02	NA	NA	2.20E+03	2.10E+03	NC	NC	3.68E-04	3.86E-04
AOI 3	Metals	Chromium (total)	7440-47-3T	9	9	5.80E+00	2.00E+01	4.20E-01	4.40E-01	NA	NA	2.40E+02	9.20E+03	NC	NC	8.33E-02	2.17E-03
AOI 3	Metals	Copper	7440-50-8T	1	1	1.60E+01	1.60E+01	NA	NA	NA	NA	5.90E+04	7.30E+04	NC	NC	2.71E-04	2.19E-04
AOI 3	Metals	Lead	7439-92-1T	9	9	3.30E+00	3.45E+01	2.60E-01	2.80E-01	NA	NA	4.40E+04	9.00E+02	NC	NC	7.84E-04	3.83E-02
AOI 3	Metals	Silver	7440-22-4T	1	1	9.00E-01	9.00E-01	NA	NA	NA	NA	2.90E+03	9.00E+03	NC	NC	3.10E-04	1.00E-04
AOI 3	Metals	Zinc	7440-66-6T	1	1	5.20E+01	5.20E+01	NA	NA	NA	NA	NA	6.30E+05	NC	NC	NC	8.25E-05
AOI 3	VOAs	1,1,1-Trichloroethane	71-55-6	9	1	4.60E-01	4.60E-01	6.30E-04	2.10E-02	4.60E+02	4.50E+03	2.90E+07	4.60E+02	1.00E-03	1.02E-04	1.59E-08	1.00E-03
AOI 3	VOAs	1,1-Dichloroethane	75-34-3	9	4	4.90E-03	4.30E+00	5.60E-04	2.30E-02	4.30E+02	2.50E+03	1.50E+07	8.90E+02	1.00E-02	1.72E-03	2.87E-07	4.83E-03
AOI 3	VOAs	Chloroethane	75-00-3	9	1	4.60E-01	4.60E-01	8.10E-04	3.50E-02	9.50E+02	3.60E+04	2.90E+08	9.50E+02	4.84E-04	1.28E-05	1.59E-09	4.84E-04
AOI 3	VOAs	Tetrachloroethene	127-18-4	9	1	3.10E-01	3.10E-01	6.50E-04	1.80E-02	6.00E+01	6.00E+02	6.80E+06	8.80E+01	5.17E-03	5.17E-04	4.56E-08	3.52E-03
AOI 3	VOAs	Toluene	108-88-3	9	1	8.70E-01	8.70E-01	6.60E-04	2.10E-02	2.50E+02	3.30E+03	1.20E+07	2.50E+02	3.48E-03	2.64E-04	7.25E-08	3.48E-03
AOI 3	VOAs	Xylene (total)	1330-20-7	8	1	4.80E-01	4.80E-01	1.80E-03	6.30E-02	1.50E+02	5.40E+04	1.30E+08	1.50E+02	3.20E-03	8.89E-06	3.69E-09	3.20E-03
AOI 7	Metals	Arsenic	7440-38-2T	5	5	4.40E+00	1.00E+01	NA	NA	NA	NA	9.10E+02	3.70E+01	NC	NC	1.10E-02	2.70E-01
AOI 7	Metals	Barium	7440-39-3T	5	5	3.70E+01	1.10E+02	NA	NA	NA	NA	1.50E+05	1.30E+05	NC	NC	7.33E-04	8.46E-04
AOI 7	Metals	Cadmium	7440-43-9T	5	3	8.50E-02	8.60E-01	NA	NA	NA	NA	2.20E+03	2.10E+03	NC	NC	3.91E-04	4.10E-04
AOI 7	Metals	Chromium (total)	7440-47-3T	5	5	1.10E+01	2.40E+01	NA	NA	NA	NA	2.40E+02	9.20E+03	NC	NC	1.00E-01	2.61E-03
AOI 7	Metals	Copper	7440-50-8T	5	4	6.30E+00	1.70E+01	NA	NA	NA	NA	5.90E+04	7.30E+04	NC	NC	2.88E-04	2.33E-04
AOI 7	Metals	Lead	7439-92-1T	5	5	8.07E+00	1.80E+01	NA	NA	NA	NA	4.40E+04	9.00E+02	NC	NC	4.09E-04	2.00E-02
AOI 7	Metals	Selenium	7782-49-2T	5	1	2.70E-01	2.70E-01	NA	NA	NA	NA	5.90E+04	9.60E+03	NC	NC	4.58E-06	2.81E-05
AOI 7	Metals	Silver	7440-22-4T	5	1	1.00E+00	1.00E+00	NA	NA	NA	NA	2.90E+03	9.00E+03	NC	NC	3.45E-04	1.11E-04
AOI 7	Metals	Zinc	7440-66-6T	5	4	2.05E+01	5.80E+01	NA	NA	NA	NA	NA	6.30E+05	NC	NC	NC	9.21E-05
AOI 7	Pesticides	Total PCBs	1336-36-3	7	1	2.79E-01	2.79E-01	NA	NA	1.60E+04	8.10E+02	6.50E+03	1.60E+01	1.74E-05	3.44E-04	4.29E-05	1.74E-02
AOI 7	Petrl Prod	Petroleum hydrocarbons	PHC	3	3	4.80E+02	5.76E+02	NA	NA	NA	NA	NA	NA	NC	NC	NC	NC
AOI 7	SVOAs	Benzo(a)anthracene	56-55-3	7	2	3.26E-02	4.00E-01	NA	NA	NA	NA	NA	8.00E+01	NC	NC	NC	5.00E-03
AOI 7	SVOAs	Benzo(a)pyrene	50-32-8	7	1	2.61E-02	2.61E-02	NA	NA	NA	NA	1.90E+03	8.00E+00	NC	NC	1.37E-05	3.26E-03
AOI 7	SVOAs	Benzo(b)fluoranthene	205-99-2	7	2	4.06E-02	4.50E-01	NA	NA	NA	NA	NA	8.00E+01	NC	NC	NC	5.63E-03
AOI 7	SVOAs	Benzo(k)fluoranthene	207-08-9	7	1	1.31E-02	1.31E-02	NA	NA	NA	NA	NA	8.00E+02	NC	NC	NC	1.64E-05
AOI 7	SVOAs	Chrysene	218-01-9	3	1	4.60E-01	4.60E-01	NA	NA	NA	NA	NA	8.00E+03	NC	NC	NC	5.75E-05
AOI 7	SVOAs	Fluoranthene	206-44-0	3	1	1.30E+00	1.30E+00	NA	NA	1.00E+06	8.90E+05	4.10E+06	1.30E+05	1.30E-06	1.46E-06	3.17E-07	1.00E-05
AOI 7	SVOAs	Phenanthrene	85-01-8	3	1	1.30E+00	1.30E+00	NA	NA	5.10E+03	1.90E+02	2.90E+03	5.20E+03	2.55E-04	6.84E-03	4.48E-04	2.50E-04
AOI 7	SVOAs	Pyrene	129-00-0	3	1	1.40E+00	1.40E+00	NA	NA	1.00E+06	7.80E+05	2.90E+06	8.40E+04	1.40E-06	1.79E-06	4.83E-07	1.67E-05
AOI 7	VOAs	Ethylbenzene	100-41-4	5	1	1.30E-03	1.30E-03	NA	NA	1.40E+02	2.40E+03	1.30E+07	1.40E+02	9.29E-06	5.42E-07	1.00E-10	9.29E-06
AOI 7	VOAs	Methylene chloride	75-09-2	5	1	1.93E-02	1.93E-02	NA	NA	2.40E+02	7.00E+02	8.30E+06	2.30E+03	8.04E-05	2.76E-05	2.33E-09	8.39E-06
AOI 7	VOAs	Xylene (total)	1330-20-7	2	1	1.40E-02	1.40E-02	NA	NA	1.50E+02	5.40E+04	1.30E+08	1.50E+02	9.33E-05	2.59E-07	1.08E-10	9.33E-05
AOI 8	Metals	Aluminum	7429-90-5T	6	6	2.39E+03	9.47E+03	3.30E+00	3.70E+00	NA	NA	NA	3.70E+05	NC	NC	NC	2.56E-02
AOI 8	Metals	Arsenic	7440-38-2T	11	11	2.50E+00	3.20E+01	4.00E-02	4.50E-02	NA	NA	9.10E+02	3.70E+01	NC	NC	3.52E-02	8.65E-01
AOI 8	Metals	Barium	7440-39-3T	11	11	1.29E+01	7.50E+01	1.30E-01	1.40E-01	NA	NA	1.50E+05	1.30E+05	NC	NC	5.00E-04	5.77E-04
AOI 8	Metals	Beryllium	7440-41-7T	6	6	1.20E-01	6.40E-01	1.20E-02	1.60E-01	NA	NA	5.90E+02	1.60E+03	NC	NC	1.08E-03	4.00E-04
AOI 8	Metals	Cadmium	7440-43-9T	11	8	6.80E-02	8.20E-01	1.40E-02	1.60E-02	NA	NA	2.20E+03	2.10E+03	NC	NC	3.73E-04	3.90E-04
AOI 8	Metals	Calcium	7440-70-2T	6	6	1.58E+03	7.24E+04	3.40E+00	3.90E+00	NA	NA	NA	NA	NC	NC	NC	NC
AOI 8	Metals	Chromium (total)	7440-47-3T	11	11	7.00E+00	2.77E+01	1.80E-01	2.00E-01	NA	NA	2.40E+02	9.20E+03	NC	NC	1.15E-01	3.01E-03
AOI 8	Metals	Chromium VI (hexavalent)	18540-29-9T	6	2	1.77E+00	2.14E+00	NA	NA	NA	NA	2.40E+02	9.20E+03	NC	NC	8.93E-03	2.33E-04
AOI 8	Metals	Cobalt	7440-48-4T	6	6	1.70E+00	9.90E+00	1.20E-02	1.30E-02	NA	NA	5.90E+03	9.00E+03	NC	NC	1.68E-03	1.10E-03
AOI 8	Metals	Copper	7440-50-8T	11	9	6.60E+00	2.72E+01	3.30E-01	3.70E-01	NA	NA	5.90E+04	7.30E+04	NC	NC	4.61E-04	3.73E-04
AOI 8	Metals	Iron	7439-89-6T	6	6	7.67E+03	2.03E+04	2.10E+00	2.40E+00	NA	NA	NA	5.80E+05	NC	NC	NC	3.50E-02
AOI 8	Metals	Lead	7439-92-1T	11	11	4.50E+00	1.80E+01	1.10E-01	1.20E-01	NA	NA	4.40E+04	9.00E+02	NC	NC	4.09E-04	2.00E-02
AOI 8	Metals	Magnesium	7439-95-4T	6	6	7.42E+02	2.85E+04	1.60E+00	1.80E+00	NA	NA	2.90E+06	1.00E+06	NC	NC	9.83E-03	2.85E-02

TABLE 2.1

SOIL SCREENING RESULTS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Area	Chemical Group	Chemical	CAS Registry Number	Total Analyzed	Total Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Criteria a	Criteria b	Criteria c	Criteria d	Ratio of Max:a	Ratio of Max:b	Ratio of Max:c	Ratio of Max:d
AOI 8	Metals	Manganese	7439-96-5T	6	6	1.81E+02	3.37E+02	1.50E-01	1.70E-01	NA	NA	1.50E+03	9.00E+04	NC	NC	2.25E-01	3.74E-03
AOI 8	Metals	Mercury	7439-97-6T	11	4	4.70E-03	5.40E-02	3.90E-03	4.40E-03	8.90E+01	6.20E+01	8.80E+03	5.80E+02	6.07E-04	8.71E-04	6.14E-06	9.31E-05
AOI 8	Metals	Nickel	7440-02-0T	6	6	8.70E+00	3.71E+01	5.90E-02	6.60E-02	NA	NA	1.60E+04	1.50E+05	NC	NC	2.32E-03	2.47E-04
AOI 8	Metals	Potassium	7440-09-7T	6	5	3.82E+02	1.71E+03	3.25E+01	3.66E+01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 8	Metals	Selenium	7782-49-2T	11	6	1.00E-01	3.30E-01	9.60E-02	1.10E-01	NA	NA	5.90E+04	9.60E+03	NC	NC	5.59E-06	3.44E-05
AOI 8	Metals	Silver	7440-22-4T	11	8	2.20E-02	2.80E+00	1.10E-02	1.20E-02	NA	NA	2.90E+03	9.00E+03	NC	NC	9.66E-04	3.11E-04
AOI 8	Metals	Sodium	7440-23-5T	6	2	2.04E+02	5.10E+02	1.28E+02	1.44E+02	NA	NA	NA	1.00E+06	NC	NC	NC	5.10E-04
AOI 8	Metals	Thallium	7440-28-0T	6	5	5.70E-02	2.30E-01	1.10E-02	1.20E-02	NA	NA	NA	1.30E+02	NC	NC	NC	1.77E-03
AOI 8	Metals	Vanadium	7440-62-2T	6	6	7.80E+00	2.35E+01	3.70E-01	4.20E-01	NA	NA	NA	5.50E+03	NC	NC	NC	4.27E-03
AOI 8	Metals	Zinc	7440-66-6T	11	9	8.10E+00	1.50E+02	6.70E-01	7.50E-01	NA	NA	NA	6.30E+05	NC	NC	NC	2.38E-04
AOI 8	PCBs	Total PCBs	1336-36-3	5	2	3.00E-02	6.95E-02	5.30E-03	1.60E-02	1.60E+04	8.10E+02	6.50E+03	1.60E+01	4.34E-06	8.58E-05	1.07E-05	4.34E-03
AOI 8	Petrl Prod	Petroleum hydrocarbons	PHC	2	2	4.71E+02	9.45E+02	NA	NA	NA	NA	NA	NA	NC	NC	NC	NC
AOI 8	SVOAs	bis(2-Ethylhexyl)phthalate	117-81-7	5	1	4.00E-02	4.00E-02	3.90E-02	1.10E-01	NA	NA	8.90E+05	1.00E+04	NC	NC	4.49E-08	4.00E-06
AOI 8	VOAs	1,1,1-Trichloroethane	71-55-6	11	1	6.50E-03	6.50E-03	1.00E-04	1.30E-04	4.60E+02	4.50E+03	2.90E+07	4.60E+02	1.41E-05	1.44E-06	2.24E-10	1.41E-05
AOI 8	VOAs	2-Butanone	78-93-3	6	2	1.50E-03	4.05E-03	8.70E-04	1.10E-03	2.70E+04	3.50E+04	2.90E+07	2.70E+04	1.50E-07	1.16E-07	1.40E-10	1.50E-07
AOI 8	VOAs	cis-1,2-Dichloroethene	156-59-2	9	1	1.48E-03	1.48E-03	1.10E-04	1.40E-04	4.10E+01	2.10E+02	1.00E+06	6.40E+02	3.60E-05	7.02E-06	1.48E-09	2.30E-06
AOI 8	VOAs	Methylene chloride	75-09-2	11	1	8.30E-04	8.30E-04	2.40E-04	3.10E-04	2.40E+02	7.00E+02	8.30E+06	2.30E+03	3.46E-06	1.19E-06	1.00E-10	3.61E-07
AOI 8	VOAs	Toluene	108-88-3	11	1	1.14E-03	1.14E-03	2.20E-04	2.70E-04	2.50E+02	3.30E+03	1.20E+07	2.50E+02	4.54E-06	3.44E-07	9.46E-11	4.54E-06
AOI 9	Metals	Aluminum	7429-90-5T	38	38	1.90E+03	1.11E+04	3.20E+00	3.72E+00	NA	NA	NA	3.70E+05	NC	NC	NC	3.00E-02
AOI 9	Metals	Antimony	7440-36-0T	40	2	3.88E-02	3.16E-01	2.24E-02	1.20E-01	NA	NA	5.90E+03	6.70E+02	NC	NC	5.36E-05	4.72E-04
AOI 9	Metals	Arsenic	7440-38-2T	52	52	2.30E+00	1.35E+01	8.50E-03	6.11E-02	NA	NA	9.10E+02	3.70E+01	NC	NC	1.48E-02	3.65E-01
AOI 9	Metals	Barium	7440-39-3T	52	52	9.42E+00	1.26E+02	1.20E-01	1.44E-01	NA	NA	1.50E+05	1.30E+05	NC	NC	8.40E-04	9.69E-04
AOI 9	Metals	Beryllium	7440-41-7T	40	40	1.01E-01	8.20E-01	2.60E-03	1.60E-01	NA	NA	5.90E+02	1.60E+03	NC	NC	1.39E-03	5.13E-04
AOI 9	Metals	Cadmium	7440-43-9T	52	48	5.50E-02	1.20E+00	3.00E-03	1.60E-02	NA	NA	2.20E+03	2.10E+03	NC	NC	5.45E-04	5.71E-04
AOI 9	Metals	Calcium	7440-70-2T	38	38	9.19E+02	1.38E+05	3.30E+00	3.90E+00	NA	NA	NA	NA	NC	NC	NC	NC
AOI 9	Metals	Chromium (total)	7440-47-3T	52	52	3.60E+00	9.16E+02	3.76E-02	2.00E-01	NA	NA	2.40E+02	9.20E+03	NC	NC	3.82E+00	9.96E-02
AOI 9	Metals	Chromium VI (hexavalent)	18540-29-9T	37	8	1.18E-01	2.34E+00	4.03E-01	4.55E-01	NA	NA	2.40E+02	9.20E+03	NC	NC	9.74E-03	2.54E-04
AOI 9	Metals	Cobalt	7440-48-4T	40	40	2.00E+00	1.53E+01	2.50E-03	1.30E-02	NA	NA	5.90E+03	9.00E+03	NC	NC	2.58E-03	1.69E-03
AOI 9	Metals	Copper	7440-50-8T	52	48	3.50E+00	8.37E+01	2.33E-02	3.70E-01	NA	NA	5.90E+04	7.30E+04	NC	NC	1.42E-03	1.15E-03
AOI 9	Metals	Iron	7439-89-6T	38	38	5.68E+03	2.07E+04	2.00E+00	2.40E+00	NA	NA	NA	5.80E+05	NC	NC	NC	3.57E-02
AOI 9	Metals	Lead	7439-92-1T	56	54	3.41E+00	1.68E+02	4.80E-03	1.20E-01	NA	NA	4.40E+04	9.00E+02	NC	NC	3.82E-03	1.87E-01
AOI 9	Metals	Magnesium	7439-95-4T	38	38	9.82E+02	3.65E+04	1.60E+00	1.84E+00	NA	NA	2.90E+06	1.00E+06	NC	NC	1.26E-02	3.65E-02
AOI 9	Metals	Manganese	7439-96-5T	38	38	1.18E+02	3.76E+02	1.40E-01	1.70E-01	NA	NA	1.50E+03	9.00E+04	NC	NC	2.51E-01	4.18E-03
AOI 9	Metals	Mercury	7439-97-6T	52	31	4.00E-03	6.70E-02	3.00E-03	4.40E-03	8.90E+01	6.20E+01	8.80E+03	5.80E+02	7.53E-04	1.08E-03	7.61E-06	1.16E-04
AOI 9	Metals	Nickel	7440-02-0T	40	40	4.20E+00	2.49E+02	1.24E-02	6.70E-02	NA	NA	1.60E+04	1.50E+05	NC	NC	1.56E-02	1.66E-03
AOI 9	Metals	Potassium	7440-09-7T	38	29	2.45E+02	3.02E+03	3.12E+01	3.68E+01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 9	Metals	Selenium	7782-49-2T	52	32	3.28E-02	1.00E+00	2.02E-02	1.10E-01	NA	NA	5.90E+04	9.60E+03	NC	NC	1.69E-05	1.04E-04
AOI 9	Metals	Silver	7440-22-4T	52	46	1.30E-02	6.49E+00	2.20E-03	1.20E-02	NA	NA	2.90E+03	9.00E+03	NC	NC	2.24E-03	7.21E-04
AOI 9	Metals	Sodium	7440-23-5T	38	8	1.46E+02	1.42E+03	1.22E+02	1.44E+02	NA	NA	NA	1.00E+06	NC	NC	NC	1.42E-03
AOI 9	Metals	Thallium	7440-28-0T	40	38	1.20E-02	8.10E-01	2.20E-03	1.20E-02	NA	NA	NA	1.30E+02	NC	NC	NC	6.23E-03
AOI 9	Metals	Vanadium	7440-62-2T	40	40	8.10E+00	3.09E+01	3.60E-01	4.20E-01	NA	NA	NA	5.50E+03	NC	NC	NC	5.62E-03
AOI 9	Metals	Zinc	7440-66-6T	52	48	1.74E+01	8.10E+03	1.40E-01	7.50E-01	NA	NA	NA	6.30E+05	NC	NC	NC	1.29E-02
AOI 9	SVOAs	Benzo(a)anthracene	56-55-3	9	1	5.00E-02	5.00E-02	4.10E-02	9.20E-01	NA	NA	NA	8.00E+01	NC	NC	NC	6.25E-04
AOI 9	SVOAs	Chrysene	218-01-9	9	1	5.90E-02	5.90E-02	5.80E-02	1.30E+00	NA	NA	NA	8.00E+03	NC	NC	NC	7.38E-06
AOI 9	SVOAs	Dibenzofuran	132-64-9	2	1	4.40E-02	4.40E-02	4.20E-02	9.50E-01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 9	SVOAs	Fluoranthene	206-44-0	9	1	1.50E-01	1.50E-01	4.40E-02	1.00E+00	1.00E+06	8.90E+05	4.10E+06	1.30E+05	1.50E-07	1.69E-07	3.66E-08	1.15E-06
AOI 9	SVOAs	Phenanthrene	85-01-8	9	1	2.10E-01	2.10E-01	5.00E-02	1.10E+00	5.10E+03	1.90E+02	2.90E+03	5.20E+03	4.12E-05	1.11E-03	7.24E-05	4.04E-05
AOI 9	SVOAs	Pyrene	129-00-0	9	1	1.10E-01	1.10E-01	6.60E-02	1.50E+00	1.00E+06	7.80E+05	2.90E+06	8.40E+04	1.10E-07	1.41E-07	3.79E-08	1.31E-06
AOI 9	VOAs	1,1,1-Trichloroethane	71-55-6	47	2	4.20E-01	2.40E+00	9.90E-05	2.10E-02	4.60E+02	4.50E+03	2.90E+07	4.60E+02	5.22E-03	5.33E-04	8.28E-08	5.22E-03
AOI 9	VOAs	1,1-Dichloroethane	75-34-3	47	2	9.70E-02	1.20E+00	1.70E-04	1.20E-02	4.30E+02	2.50E+03	1.50E+07	8.90E+02	2.79E-03	4.80E-04	8.00E-08	1.35E-03

TABLE 2.1

SOIL SCREENING RESULTS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Area	*Chemical Group*	*Chemical*	*CAS Registry Number*	*Total Analyzed*	*Total Detected*	*Min Detected (mg/kg)*	*Max Detected (mg/kg)*	*Min QL (mg/kg)*	*Max QL (mg/kg)*	*Criteria a*	*Criteria b*	*Criteria c*	*Criteria d*	*Ratio of Max:a*	*Ratio of Max:b*	*Ratio of Max:c*	*Ratio of Max:d*
AOI 9	VOAs	1,1-Dichloroethene	75-35-4	51	13	4.10E-04	6.90E-02	1.70E-04	1.60E-02	3.30E-01	3.70E+00	7.80E+04	5.70E+02	2.09E-01	1.86E-02	8.85E-07	1.21E-04
AOI 9	VOAs	1,3-Dichlorobenzene	541-73-1	47	1	7.30E-04	7.30E-04	2.00E-04	1.20E-02	NA	NA	NA	1.70E+02	NC	NC	NC	4.29E-06
AOI 9	VOAs	1,4-Dichlorobenzene	106-46-7	47	2	4.00E-04	1.29E-03	2.60E-04	2.50E-02	1.00E+02	2.60E+02	5.70E+05	1.90E+03	1.29E-05	4.94E-06	2.25E-09	6.76E-07
AOI 9	VOAs	2-Butanone	78-93-3	40	2	4.10E-03	1.30E-02	8.30E-04	1.50E-01	2.70E+04	3.50E+04	2.90E+07	2.70E+04	4.81E-07	3.71E-07	4.48E-10	4.81E-07
AOI 9	VOAs	2-Hexanone	591-78-6	40	1	6.10E-03	6.10E-03	5.80E-04	1.80E-01	1.80E+03	1.30E+03	1.20E+06	2.50E+03	3.39E-06	4.69E-06	5.08E-09	2.44E-06
AOI 9	VOAs	4-Methyl-2-pentanone	108-10-1	40	1	5.90E+00	5.90E+00	3.80E-04	9.00E-02	2.70E+03	5.30E+04	6.00E+07	2.70E+03	2.19E-03	1.11E-04	9.83E-08	2.19E-03
AOI 9	VOAs	Acetone	67-64-1	40	13	2.60E-03	1.20E+00	1.50E-03	3.10E-01	1.10E+05	1.60E+05	1.70E+08	7.30E+04	1.09E-05	7.50E-06	7.06E-09	1.64E-05
AOI 9	VOAs	Benzene	71-43-2	47	1	8.00E-04	8.00E-04	2.10E-04	1.60E-02	8.40E+00	4.50E+01	4.70E+05	4.00E+02	9.52E-05	1.78E-05	1.70E-09	2.00E-06
AOI 9	VOAs	Carbon disulfide	75-15-0	40	1	1.68E-03	1.68E-03	2.90E-04	3.10E-02	1.40E+02	1.60E+03	2.10E+07	2.80E+02	1.20E-05	1.05E-06	7.98E-11	5.98E-06
AOI 9	VOAs	cis-1,2-Dichloroethene	156-59-2	45	3	6.10E-04	3.20E-03	1.10E-04	3.20E-04	4.10E+01	2.10E+02	1.00E+06	6.40E+02	7.80E-05	1.52E-05	3.20E-09	5.00E-06
AOI 9	VOAs	Ethylbenzene	100-41-4	47	2	2.30E-03	1.40E-02	2.20E-04	6.40E-03	1.40E+02	2.40E+03	1.30E+07	1.40E+02	1.00E-04	5.83E-06	1.08E-09	1.00E-04
AOI 9	VOAs	Isopropyl benzene	98-82-8	38	1	7.20E-04	7.20E-04	5.60E-04	1.30E-03	3.90E+02	2.00E+03	2.60E+06	3.90E+02	1.85E-06	3.60E-07	2.77E-10	1.85E-06
AOI 9	VOAs	Methylene chloride	75-09-2	47	16	4.80E-04	1.10E-01	2.30E-04	5.70E-02	2.40E+02	7.00E+02	8.30E+06	2.30E+03	4.58E-04	1.57E-04	1.33E-08	4.78E-05
AOI 9	VOAs	Styrene	100-42-5	40	1	2.28E-03	2.28E-03	2.00E-04	1.70E-02	5.20E+02	3.30E+03	6.90E+06	5.20E+02	4.38E-06	6.89E-07	3.30E-10	4.38E-06
AOI 9	VOAs	Tetrachloroethene	127-18-4	47	8	4.80E-04	4.90E-02	1.70E-04	1.80E-02	6.00E+01	6.00E+02	6.80E+06	8.80E+01	8.17E-04	8.17E-05	7.21E-09	5.57E-04
AOI 9	VOAs	Toluene	108-88-3	47	15	2.60E-04	2.80E-01	2.10E-04	7.10E-03	2.50E+02	3.30E+03	1.20E+07	2.50E+02	1.12E-03	8.48E-05	2.33E-08	1.12E-03
AOI 9	VOAs	Trichloroethene	79-01-6	47	5	1.20E-03	1.60E-02	1.90E-04	2.50E-02	3.70E+01	2.60E+02	2.30E+06	5.00E+02	4.32E-04	6.15E-05	6.96E-09	3.20E-05
AOI 9	VOAs	Xylene (total)	1330-20-7	40	6	6.80E-04	6.10E-02	5.90E-04	2.50E-02	1.50E+02	5.40E+04	1.30E+08	1.50E+02	4.07E-04	1.13E-06	4.69E-10	4.07E-04
AOI 9	Wet	Cyanide (total)	57-12-5T	42	4	2.91E-01	3.18E+01	1.96E-01	3.00E-01	NA	NA	2.50E+02	2.50E+02	NC	NC	1.27E-01	1.27E-01
AOI 11	Metals	Aluminum	7429-90-5T	5	5	8.22E+03	1.21E+04	3.40E+00	3.80E+00	NA	NA	NA	3.70E+05	NC	NC	NC	3.27E-02
AOI 11	Metals	Antimony	7440-36-0T	5	1	1.70E-01	1.70E-01	2.20E-02	2.40E-02	NA	NA	5.90E+03	6.70E+02	NC	NC	2.88E-05	2.54E-04
AOI 11	Metals	Arsenic	7440-38-2T	11	11	5.93E+00	2.01E+01	8.40E-03	2.16E-02	NA	NA	9.10E+02	3.70E+01	NC	NC	2.21E-02	5.43E-01
AOI 11	Metals	Barium	7440-39-3T	7	7	6.07E+01	8.87E+01	1.30E-01	1.50E-01	NA	NA	1.50E+05	1.30E+05	NC	NC	5.91E-04	6.82E-04
AOI 11	Metals	Beryllium	7440-41-7T	5	5	5.70E-01	7.20E-01	2.50E-03	2.80E-03	NA	NA	5.90E+02	1.60E+03	NC	NC	1.22E-03	4.50E-04
AOI 11	Metals	Cadmium	7440-43-9T	7	7	1.20E-01	1.90E+00	3.00E-03	3.30E-03	NA	NA	2.20E+03	2.10E+03	NC	NC	8.64E-04	9.05E-04
AOI 11	Metals	Calcium	7440-70-2T	5	5	3.20E+03	5.28E+04	3.60E+00	4.00E+00	NA	NA	NA	NA	NC	NC	NC	NC
AOI 11	Metals	Chromium (total)	7440-47-3T	7	7	1.56E+01	2.30E+01	3.70E-02	4.10E-02	NA	NA	2.40E+02	9.20E+03	NC	NC	9.58E-02	2.50E-03
AOI 11	Metals	Chromium VI (hexavalent)	18540-29-9T	5	1	2.91E+00	2.91E+00	NA	NA	NA	NA	2.40E+02	9.20E+03	NC	NC	1.21E-02	3.16E-04
AOI 11	Metals	Cobalt	7440-48-4T	5	5	7.60E+00	1.44E+01	2.40E-03	2.70E-03	NA	NA	5.90E+03	9.00E+03	NC	NC	2.44E-03	1.60E-03
AOI 11	Metals	Copper	7440-50-8T	7	7	1.39E+01	2.95E+01	6.80E-02	7.50E-02	NA	NA	5.90E+04	7.30E+04	NC	NC	5.00E-04	4.04E-04
AOI 11	Metals	Iron	7439-89-6T	5	5	1.80E+04	3.83E+04	2.20E+00	2.40E+00	NA	NA	NA	5.80E+05	NC	NC	NC	6.60E-02
AOI 11	Metals	Lead	7439-92-1T	7	7	8.30E+00	2.26E+01	2.20E-02	2.40E-02	NA	NA	4.40E+04	9.00E+02	NC	NC	5.14E-04	2.51E-02
AOI 11	Metals	Magnesium	7439-95-4T	5	5	2.84E+03	2.02E+04	1.70E+00	1.90E+00	NA	NA	2.90E+06	1.00E+06	NC	NC	6.97E-03	2.02E-02
AOI 11	Metals	Manganese	7439-96-5T	5	5	3.31E+02	3.84E+02	1.50E-01	1.70E-01	NA	NA	1.50E+03	9.00E+04	NC	NC	2.56E-01	4.27E-03
AOI 11	Metals	Mercury	7439-97-6T	7	5	1.40E-02	5.10E-02	4.10E-03	4.50E-03	8.90E+01	6.20E+01	8.80E+03	5.80E+02	5.73E-04	8.23E-04	5.80E-06	8.79E-05
AOI 11	Metals	Nickel	7440-02-0T	5	5	2.11E+01	3.75E+01	1.20E-02	1.40E-02	NA	NA	1.60E+04	1.50E+05	NC	NC	2.34E-03	2.50E-04
AOI 11	Metals	Potassium	7440-09-7T	5	5	1.43E+03	1.59E+03	3.38E+01	3.75E+01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 11	Metals	Selenium	7782-49-2T	7	5	6.40E-02	7.60E-01	2.00E-02	2.20E-02	NA	NA	5.90E+04	9.60E+03	NC	NC	1.29E-05	7.92E-05
AOI 11	Metals	Silver	7440-22-4T	7	6	5.70E-02	1.20E+00	2.20E-03	2.40E-03	NA	NA	2.90E+03	9.00E+03	NC	NC	4.14E-04	1.33E-04
AOI 11	Metals	Thallium	7440-28-0T	5	5	1.40E-01	3.00E-01	2.20E-03	2.40E-03	NA	NA	NA	1.30E+02	NC	NC	NC	2.31E-03
AOI 11	Metals	Vanadium	7440-62-2T	5	5	2.24E+01	3.17E+01	3.90E-01	4.30E-01	NA	NA	NA	5.50E+03	NC	NC	NC	5.76E-03
AOI 11	Metals	Zinc	7440-66-6T	7	7	4.50E+01	1.33E+02	1.40E-01	1.50E-01	NA	NA	NA	6.30E+05	NC	NC	NC	2.11E-04
AOI 11	SVOAs	Benzo(a)anthracene	56-55-3	7	1	2.20E+00	2.20E+00	5.00E-02	5.50E-01	NA	NA	NA	8.00E+01	NC	NC	NC	2.75E-02
AOI 11	SVOAs	Biphenyl (1,1-Biphenyl)	92-52-4	5	1	1.70E+00	1.70E+00	1.90E-02	2.10E-01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 11	SVOAs	Chrysene	218-01-9	7	1	4.80E+00	4.80E+00	4.00E-02	4.40E-01	NA	NA	NA	8.00E+03	NC	NC	NC	6.00E-04
AOI 11	SVOAs	Fluoranthene	206-44-0	7	1	9.60E+00	9.60E+00	4.30E-02	4.80E-01	1.00E+06	8.90E+05	4.10E+06	1.30E+05	9.60E-06	1.08E-05	2.34E-06	7.38E-05
AOI 11	SVOAs	Fluorene	86-73-7	7	2	1.50E+00	2.60E+00	4.90E-02	5.40E-01	1.00E+06	1.50E+05	4.10E+06	8.70E+04	2.60E-06	1.73E-05	6.34E-07	2.99E-05
AOI 11	SVOAs	Naphthalene	91-20-3	7	1	1.90E+00	1.90E+00	4.30E-02	4.80E-01	4.70E+02	3.50E+02	8.80E+04	5.20E+04	4.04E-03	5.43E-03	2.16E-05	3.65E-05
AOI 11	SVOAs	Phenanthrene	85-01-8	7	1	2.10E+00	2.10E+00	4.30E-02	4.80E-01	5.10E+03	1.90E+02	2.90E+03	5.20E+03	4.12E-04	1.11E-02	7.24E-04	4.04E-04
AOI 11	SVOAs	Pyrene	129-00-0	7	1	2.70E+01	2.70E+01	4.50E-02	5.00E-01	1.00E+06	7.80E+05	2.90E+06	8.40E+04	2.70E-05	3.46E-05	9.31E-06	3.21E-04

TABLE 2.1

SOIL SCREENING RESULTS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Area	*Chemical Group*	*Chemical*	*CAS Registry Number*	*Total Analyzed*	*Total Detected*	*Min Detected (mg/kg)*	*Max Detected (mg/kg)*	*Min QL (mg/kg)*	*Max QL (mg/kg)*	*Criteria a*	*Criteria b*	*Criteria c*	*Criteria d*	*Ratio of Max:a*	*Ratio of Max:b*	*Ratio of Max:c*	*Ratio of Max:d*
AOI 13	SVOAs	bis(2-Ethylhexyl)phthalate	117-81-7	3	1	5.10E-02	5.10E-02	4.20E-02	4.20E-02	NA	NA	8.90E+05	1.00E+04	NC	NC	5.73E-08	5.10E-06
AOI 13	VOAs	1,1,1-Trichloroethane	71-55-6	3	1	8.50E-02	8.50E-02	1.10E-04	1.10E-04	4.60E+02	4.50E+03	2.90E+07	4.60E+02	1.85E-04	1.89E-05	2.93E-09	1.85E-04
AOI 13	VOAs	1,1,2-Trichloroethane	79-00-5	3	1	2.30E-03	2.30E-03	1.80E-04	1.80E-04	2.40E+01	5.70E+01	2.50E+05	8.40E+02	9.58E-05	4.04E-05	9.20E-09	2.74E-06
AOI 13	VOAs	1,1-Dichloroethane	75-34-3	3	1	2.60E-02	2.60E-02	1.80E-04	1.80E-04	4.30E+02	2.50E+03	1.50E+07	8.90E+02	6.05E-05	1.04E-05	1.73E-09	2.92E-05
AOI 13	VOAs	1,1-Dichloroethene	75-35-4	3	1	7.40E-03	7.40E-03	1.80E-04	1.80E-04	3.30E-01	3.70E+00	7.80E+04	5.70E+02	2.24E-02	2.00E-03	9.49E-08	1.30E-05
AOI 13	VOAs	cis-1,2-Dichloroethene	156-59-2	3	1	7.00E-04	7.00E-04	1.20E-04	1.20E-04	4.10E+01	2.10E+02	1.00E+06	6.40E+02	1.71E-05	3.33E-06	7.00E-10	1.09E-06
AOI 13	VOAs	Methylene chloride	75-09-2	3	1	3.70E-02	3.70E-02	2.50E-04	2.50E-04	2.40E+02	7.00E+02	8.30E+06	2.30E+03	1.54E-04	5.29E-05	4.46E-09	1.61E-05
AOI 14	Metals	Aluminum	7429-90-5T	2	2	8.86E+03	9.22E+03	3.50E+00	3.60E+00	NA	NA	NA	3.70E+05	NC	NC	NC	2.49E-02
AOI 14	Metals	Arsenic	7440-38-2T	4	4	8.00E+00	1.80E+01	8.50E-03	8.80E-03	NA	NA	9.10E+02	3.70E+01	NC	NC	1.98E-02	4.86E-01
AOI 14	Metals	Barium	7440-39-3T	4	4	5.40E+01	6.39E+01	1.30E-01	1.40E-01	NA	NA	1.50E+05	1.30E+05	NC	NC	4.26E-04	4.92E-04
AOI 14	Metals	Beryllium	7440-41-7T	2	2	4.10E-01	5.90E-01	2.60E-03	2.70E-03	NA	NA	5.90E+02	1.60E+03	NC	NC	1.00E-03	3.69E-04
AOI 14	Metals	Cadmium	7440-43-9T	4	4	1.70E-01	5.90E-01	3.00E-03	3.10E-03	NA	NA	2.20E+03	2.10E+03	NC	NC	2.68E-04	2.81E-04
AOI 14	Metals	Calcium	7440-70-2T	2	2	4.05E+04	5.91E+04	3.60E+00	3.70E+00	NA	NA	NA	NA	NC	NC	NC	NC
AOI 14	Metals	Chromium (total)	7440-47-3T	4	4	1.20E+01	1.60E+01	3.80E-02	3.90E-02	NA	NA	2.40E+02	9.20E+03	NC	NC	6.67E-02	1.74E-03
AOI 14	Metals	Cobalt	7440-48-4T	2	2	7.30E+00	8.75E+00	2.50E-03	2.60E-03	NA	NA	5.90E+03	9.00E+03	NC	NC	1.48E-03	9.72E-04
AOI 14	Metals	Copper	7440-50-8T	4	4	1.29E+01	1.64E+01	6.90E-02	7.10E-02	NA	NA	5.90E+04	7.30E+04	NC	NC	2.77E-04	2.24E-04
AOI 14	Metals	Iron	7439-89-6T	2	2	1.98E+04	2.05E+04	2.20E+00	2.30E+00	NA	NA	NA	5.80E+05	NC	NC	NC	3.53E-02
AOI 14	Metals	Lead	7439-92-1T	4	4	9.70E+00	1.60E+01	2.20E-02	2.30E-02	NA	NA	4.40E+04	9.00E+02	NC	NC	3.64E-04	1.78E-02
AOI 14	Metals	Magnesium	7439-95-4T	2	2	1.63E+04	2.41E+04	1.70E+00	1.80E+00	NA	NA	2.90E+06	1.00E+06	NC	NC	8.29E-03	2.41E-02
AOI 14	Metals	Manganese	7439-96-5T	2	2	3.73E+02	4.30E+02	1.60E-01	1.60E-01	NA	NA	1.50E+03	9.00E+04	NC	NC	2.86E-01	4.77E-03
AOI 14	Metals	Mercury	7439-97-6T	4	2	1.15E-02	1.20E-02	4.10E-03	4.30E-03	8.90E+01	6.20E+01	8.80E+03	5.80E+02	1.35E-04	1.94E-04	1.36E-06	2.07E-05
AOI 14	Metals	Nickel	7440-02-0T	2	2	1.78E+01	2.69E+01	1.20E-02	1.30E-02	NA	NA	1.60E+04	1.50E+05	NC	NC	1.68E-03	1.79E-04
AOI 14	Metals	Potassium	7440-09-7T	2	2	1.42E+03	1.74E+03	3.43E+01	3.55E+01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 14	Metals	Selenium	7782-49-2T	4	2	2.55E-01	3.10E-01	2.00E-02	2.10E-02	NA	NA	5.90E+04	9.60E+03	NC	NC	5.25E-06	3.23E-05
AOI 14	Metals	Silver	7440-22-4T	4	2	6.40E-02	7.30E-02	2.20E-03	2.30E-03	NA	NA	2.90E+03	9.00E+03	NC	NC	2.52E-05	8.11E-06
AOI 14	Metals	Sodium	7440-23-5T	2	1	2.22E+02	2.22E+02	1.34E+02	1.39E+02	NA	NA	NA	1.00E+06	NC	NC	NC	2.22E-04
AOI 14	Metals	Thallium	7440-28-0T	2	2	1.50E-01	2.50E-01	2.20E-03	2.30E-03	NA	NA	NA	1.30E+02	NC	NC	NC	1.92E-03
AOI 14	Metals	Vanadium	7440-62-2T	2	2	2.59E+01	2.63E+01	3.90E-01	4.10E-01	NA	NA	NA	5.50E+03	NC	NC	NC	4.78E-03
AOI 14	Metals	Zinc	7440-66-6T	4	4	4.20E+01	8.00E+01	1.40E-01	1.50E-01	NA	NA	NA	6.30E+05	NC	NC	NC	1.27E-04
AOI 14	Petrl Prod	Petroleum hydrocarbons	PHC	1	1	3.36E+02	3.36E+02	NA	NA	NA	NA	NA	NA	NC	NC	NC	NC
AOI 14	SVOAs	Fluoranthene	206-44-0	3	1	6.60E-02	6.60E-02	4.40E-02	4.50E-02	1.00E+06	8.90E+05	4.10E+06	1.30E+05	6.60E-08	7.42E-08	1.61E-08	5.08E-07
AOI 14	SVOAs	Phenanthrene	85-01-8	3	1	5.60E-02	5.60E-02	4.40E-02	4.50E-02	5.10E+03	1.90E+02	2.90E+03	5.20E+03	1.10E-05	2.95E-04	1.93E-05	1.08E-05
AOI 14	SVOAs	Pyrene	129-00-0	3	1	5.70E-02	5.70E-02	4.60E-02	4.80E-02	1.00E+06	7.80E+05	2.90E+06	8.40E+04	5.70E-08	7.31E-08	1.97E-08	6.79E-07
AOI 14	VOAs	Ethylbenzene	100-41-4	4	1	1.30E-03	1.30E-03	NA	NA	1.40E+02	2.40E+03	1.30E+07	1.40E+02	9.29E-06	5.42E-07	1.00E-10	9.29E-06
AOI 14	VOAs	Methylene chloride	75-09-2	4	1	1.43E-02	1.43E-02	NA	NA	2.40E+02	7.00E+02	8.30E+06	2.30E+03	5.96E-05	2.04E-05	1.72E-09	6.22E-06
AOI 14	VOAs	Toluene	108-88-3	4	1	4.60E-03	4.60E-03	NA	NA	2.50E+02	3.30E+03	1.20E+07	2.50E+02	1.84E-05	1.39E-06	3.83E-10	1.84E-05
AOI 14	VOAs	Xylene (total)	1330-20-7	2	1	8.10E-03	8.10E-03	NA	NA	1.50E+02	5.40E+04	1.30E+08	1.50E+02	5.40E-05	1.50E-07	6.23E-11	5.40E-05
AOI 15	Metals	Arsenic	7440-38-2T	2	2	5.00E+00	1.03E+01	NA	NA	NA	NA	9.10E+02	3.70E+01	NC	NC	1.13E-02	2.77E-01
AOI 15	Metals	Barium	7440-39-3T	2	2	2.20E+01	3.84E+01	NA	NA	NA	NA	1.50E+05	1.30E+05	NC	NC	2.56E-04	2.95E-04
AOI 15	Metals	Cadmium	7440-43-9T	2	2	5.50E-02	4.90E-01	NA	NA	NA	NA	2.20E+03	2.10E+03	NC	NC	2.23E-04	2.33E-04
AOI 15	Metals	Chromium (total)	7440-47-3T	2	2	9.10E+00	1.01E+01	NA	NA	NA	NA	2.40E+02	9.20E+03	NC	NC	4.19E-02	1.09E-03
AOI 15	Metals	Copper	7440-50-8T	2	2	8.10E+00	9.00E+00	NA	NA	NA	NA	5.90E+04	7.30E+04	NC	NC	1.53E-04	1.23E-04
AOI 15	Metals	Lead	7439-92-1T	2	2	9.32E+00	1.10E+01	NA	NA	NA	NA	4.40E+04	9.00E+02	NC	NC	2.50E-04	1.22E-02
AOI 15	Metals	Selenium	7782-49-2T	2	1	2.80E-01	2.80E-01	NA	NA	NA	NA	5.90E+04	9.60E+03	NC	NC	4.75E-06	2.92E-05
AOI 15	Metals	Zinc	7440-66-6T	2	2	1.50E+01	3.00E+01	NA	NA	NA	NA	NA	6.30E+05	NC	NC	NC	4.76E-05
AOI 15	Petrl Prod	Petroleum hydrocarbons	PHC	1	1	2.80E+01	2.80E+01	NA	NA	NA	NA	NA	NA	NC	NC	NC	NC
AOI 15	SVOAs	Benzo(a)anthracene	56-55-3	1	1	1.10E-02	1.10E-02	NA	NA	NA	NA	NA	8.00E+01	NC	NC	NC	1.38E-04
AOI 15	SVOAs	Benzo(b)fluoranthene	205-99-2	1	1	1.40E-02	1.40E-02	NA	NA	NA	NA	NA	8.00E+01	NC	NC	NC	1.75E-04

TABLE 2.1

SOIL SCREENING RESULTS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Area	*Chemical Group*	*Chemical*	*CAS Registry Number*	*Total Analyzed*	*Total Detected*	*Min Detected (mg/kg)*	*Max Detected (mg/kg)*	*Min QL (mg/kg)*	*Max QL (mg/kg)*	*Criteria a*	*Criteria b*	*Criteria c*	*Criteria d*	*Ratio of Max:a*	*Ratio of Max:b*	*Ratio of Max:c*	*Ratio of Max:d*
AOI 15	VOAs	Methylene chloride	75-09-2	4	1	8.31E-02	8.31E-02	NA	NA	2.40E+02	7.00E+02	8.30E+06	2.30E+03	3.46E-04	1.19E-04	1.00E-08	3.61E-05
AOI 15	VOAs	Tetrachloroethene	127-18-4	4	2	1.60E-03	3.00E-03	NA	NA	6.00E+01	6.00E+02	6.80E+06	8.80E+01	5.00E-05	5.00E-06	4.41E-10	3.41E-05
AOI 15	VOAs	Toluene	108-88-3	4	1	2.90E-03	2.90E-03	NA	NA	2.50E+02	3.30E+03	1.20E+07	2.50E+02	1.16E-05	8.79E-07	2.42E-10	1.16E-05
AOI 15	VOAs	Trichloroethene	79-01-6	4	1	3.05E-03	3.05E-03	NA	NA	3.70E+01	2.60E+02	2.30E+06	5.00E+02	8.24E-05	1.17E-05	1.33E-09	6.10E-06
AOI 17	SVOAs	Benzo(a)anthracene	56-55-3	4	2	6.10E-02	7.30E-02	4.90E-02	5.20E-02	NA	NA	NA	8.00E+01	NC	NC	NC	9.13E-04
AOI 17	SVOAs	Benzo(a)pyrene	50-32-8	4	2	5.20E-02	7.00E-02	4.00E-02	4.30E-02	NA	NA	1.90E+03	8.00E+00	NC	NC	3.68E-05	8.75E-03
AOI 17	SVOAs	Benzo(b)fluoranthene	205-99-2	4	2	7.50E-02	1.10E-01	5.70E-02	6.00E-02	NA	NA	NA	8.00E+01	NC	NC	NC	1.38E-03
AOI 17	SVOAs	Chrysene	218-01-9	4	2	5.90E-02	7.60E-02	3.90E-02	4.20E-02	NA	NA	NA	8.00E+03	NC	NC	NC	9.50E-06
AOI 17	SVOAs	Fluoranthene	206-44-0	4	2	1.20E-01	1.20E-01	4.20E-02	4.50E-02	1.00E+06	8.90E+05	4.10E+06	1.30E+05	1.20E-07	1.35E-07	2.93E-08	9.23E-07
AOI 17	SVOAs	Phenanthrene	85-01-8	4	1	6.90E-02	6.90E-02	4.20E-02	4.50E-02	5.10E+03	1.90E+02	2.90E+03	5.20E+03	1.35E-05	3.63E-04	2.38E-05	1.33E-05
AOI 17	SVOAs	Pyrene	129-00-0	4	2	1.00E-01	1.10E-01	4.50E-02	4.70E-02	1.00E+06	7.80E+05	2.90E+06	8.40E+04	1.10E-07	1.41E-07	3.79E-08	1.31E-06
AOI 18	Metals	Aluminum	7429-90-5T	6	6	6.82E+03	1.58E+04	3.50E+00	3.70E+00	NA	NA	NA	3.70E+05	NC	NC	NC	4.27E-02
AOI 18	Metals	Arsenic	7440-38-2T	9	9	7.00E+00	1.21E+01	8.60E-03	9.20E-03	NA	NA	9.10E+02	3.70E+01	NC	NC	1.33E-02	3.27E-01
AOI 18	Metals	Barium	7440-39-3T	9	9	1.00E+01	1.90E+02	1.40E-01	1.40E-01	NA	NA	1.50E+05	1.30E+05	NC	NC	1.27E-03	1.46E-03
AOI 18	Metals	Beryllium	7440-41-7T	6	6	4.30E-01	8.85E-01	2.60E-03	1.40E-02	NA	NA	5.90E+02	1.60E+03	NC	NC	1.50E-03	5.53E-04
AOI 18	Metals	Cadmium	7440-43-9T	9	9	8.20E-02	6.70E-01	3.00E-03	3.30E-03	NA	NA	2.20E+03	2.10E+03	NC	NC	3.05E-04	3.19E-04
AOI 18	Metals	Calcium	7440-70-2T	6	6	4.32E+03	6.96E+04	3.60E+00	3.90E+00	NA	NA	NA	NA	NC	NC	NC	NC
AOI 18	Metals	Chromium (total)	7440-47-3T	9	9	4.50E+00	2.36E+01	3.80E-02	2.00E-01	NA	NA	2.40E+02	9.20E+03	NC	NC	9.83E-02	2.57E-03
AOI 18	Metals	Chromium VI (hexavalent)	18540-29-9T	6	1	5.35E-01	5.35E-01	NA	NA	NA	NA	2.40E+02	9.20E+03	NC	NC	2.23E-03	5.82E-05
AOI 18	Metals	Cobalt	7440-48-4T	6	6	6.30E+00	1.23E+01	2.50E-03	1.30E-02	NA	NA	5.90E+03	9.00E+03	NC	NC	2.08E-03	1.37E-03
AOI 18	Metals	Copper	7440-50-8T	9	9	7.60E+00	2.16E+01	6.90E-02	3.70E-01	NA	NA	5.90E+04	7.30E+04	NC	NC	3.66E-04	2.96E-04
AOI 18	Metals	Iron	7439-89-6T	6	6	1.63E+04	3.29E+04	2.30E+00	2.40E+00	NA	NA	NA	5.80E+05	NC	NC	NC	5.67E-02
AOI 18	Metals	Lead	7439-92-1T	9	9	4.10E+00	1.70E+01	2.30E-02	2.40E-02	NA	NA	4.40E+04	9.00E+02	NC	NC	3.86E-04	1.89E-02
AOI 18	Metals	Magnesium	7439-95-4T	6	6	4.47E+03	2.98E+04	1.70E+00	1.80E+00	NA	NA	2.90E+06	1.00E+06	NC	NC	1.03E-02	2.98E-02
AOI 18	Metals	Manganese	7439-96-5T	6	6	2.41E+02	5.77E+02	1.60E-01	1.70E-01	NA	NA	1.50E+03	9.00E+04	NC	NC	3.84E-01	6.41E-03
AOI 18	Metals	Mercury	7439-97-6T	9	6	6.80E-03	3.80E-02	4.20E-03	4.50E-03	8.90E+01	6.20E+01	8.80E+03	5.80E+02	4.27E-04	6.13E-04	4.32E-06	6.55E-05
AOI 18	Metals	Nickel	7440-02-0T	6	6	1.71E+01	3.07E+01	1.30E-02	6.70E-02	NA	NA	1.60E+04	1.50E+05	NC	NC	1.92E-03	2.05E-04
AOI 18	Metals	Potassium	7440-09-7T	6	6	1.60E+03	2.51E+03	3.45E+01	3.70E+01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 18	Metals	Selenium	7782-49-2T	9	8	1.20E-01	9.40E-01	2.00E-02	2.20E-02	NA	NA	5.90E+04	9.60E+03	NC	NC	1.59E-05	9.79E-05
AOI 18	Metals	Silver	7440-22-4T	9	6	7.40E-02	1.30E-01	2.30E-03	2.40E-03	NA	NA	2.90E+03	9.00E+03	NC	NC	4.48E-05	1.44E-05
AOI 18	Metals	Sodium	7440-23-5T	6	3	3.22E+02	4.93E+02	1.35E+02	1.45E+02	NA	NA	NA	1.00E+06	NC	NC	NC	4.93E-04
AOI 18	Metals	Thallium	7440-28-0T	6	6	1.20E-01	2.50E-01	2.30E-03	2.40E-03	NA	NA	NA	1.30E+02	NC	NC	NC	1.92E-03
AOI 18	Metals	Vanadium	7440-62-2T	6	6	1.96E+01	4.21E+01	3.90E-01	4.20E-01	NA	NA	NA	5.50E+03	NC	NC	NC	7.65E-03
AOI 18	Metals	Zinc	7440-66-6T	9	9	2.50E+01	7.42E+01	1.40E-01	1.50E-01	NA	NA	NA	6.30E+05	NC	NC	NC	1.18E-04
AOI 18	Petrl Prod	Diesel fuel	68334-30-5	2	1	1.10E+01	1.10E+01	NA	NA	NA	NA	NA	NA	NC	NC	NC	NC
AOI 18	Petrl Prod	Petroleum hydrocarbons	PHC	5	4	3.08E+02	5.56E+02	NA	NA	NA	NA	NA	NA	NC	NC	NC	NC
AOI 18	VOAs	1,1-Dichloroethene	75-35-4	9	2	1.00E-03	1.90E-03	1.70E-04	2.10E-04	3.30E-01	3.70E+00	7.80E+04	5.70E+02	5.76E-03	5.14E-04	2.44E-08	3.33E-06
AOI 18	VOAs	1,4-Dichlorobenzene	106-46-7	9	1	1.44E-03	1.44E-03	2.70E-04	3.20E-04	1.00E+02	2.60E+02	5.70E+05	1.90E+03	1.44E-05	5.54E-06	2.53E-09	7.58E-07
AOI 18	VOAs	2-Butanone	78-93-3	8	1	7.05E-03	7.05E-03	8.70E-04	1.00E-03	2.70E+04	3.50E+04	2.90E+07	2.70E+04	2.61E-07	2.01E-07	2.43E-10	2.61E-07
AOI 18	VOAs	Methylene chloride	75-09-2	9	2	1.40E-02	1.70E-02	2.40E-04	2.90E-04	2.40E+02	7.00E+02	8.30E+06	2.30E+03	7.08E-05	2.43E-05	2.05E-09	7.39E-06
AOI 19	Metals	Aluminum	7429-90-5T	9	9	2.01E+03	9.26E+03	3.30E+00	3.60E+00	NA	NA	NA	3.70E+05	NC	NC	NC	2.50E-02
AOI 19	Metals	Antimony	7440-36-0T	10	2	3.10E-01	3.90E-01	1.10E-01	1.20E-01	NA	NA	5.90E+03	6.70E+02	NC	NC	6.61E-05	5.82E-04
AOI 19	Metals	Arsenic	7440-38-2T	13	13	3.30E+00	9.60E+00	4.00E-02	4.40E-02	NA	NA	9.10E+02	3.70E+01	NC	NC	1.05E-02	2.59E-01
AOI 19	Metals	Barium	7440-39-3T	13	13	2.19E+01	1.05E+02	1.30E-01	1.40E-01	NA	NA	1.50E+05	1.30E+05	NC	NC	7.00E-04	8.08E-04
AOI 19	Metals	Beryllium	7440-41-7T	10	10	1.30E-01	6.60E-01	1.20E-02	1.60E-01	NA	NA	5.90E+02	1.60E+03	NC	NC	1.12E-03	4.13E-04
AOI 19	Metals	Cadmium	7440-43-9T	13	12	1.30E-01	3.70E-01	1.40E-02	1.60E-02	NA	NA	2.20E+03	2.10E+03	NC	NC	1.68E-04	1.76E-04
AOI 19	Metals	Calcium	7440-70-2T	9	9	9.69E+03	6.09E+04	3.40E+00	3.80E+00	NA	NA	NA	NA	NC	NC	NC	NC
AOI 19	Metals	Chromium (total)	7440-47-3T	13	13	3.90E+00	1.90E+01	1.80E-01	2.00E-01	NA	NA	2.40E+02	9.20E+03	NC	NC	7.92E-02	2.07E-03

TABLE 2.1

SOIL SCREENING RESULTS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Area	*Chemical Group*	*Chemical*	*CAS Registry Number*	*Total Analyzed*	*Total Detected*	*Min Detected (mg/kg)*	*Max Detected (mg/kg)*	*Min QL (mg/kg)*	*Max QL (mg/kg)*	*Criteria a*	*Criteria b*	*Criteria c*	*Criteria d*	*Ratio of Max:a*	*Ratio of Max:b*	*Ratio of Max:c*	*Ratio of Max:d*
AOI 19	Metals	Chromium VI (hexavalent)	18540-29-9T	10	3	9.89E-01	1.17E+00	NA	NA	NA	NA	2.40E+02	9.20E+03	NC	NC	4.89E-03	1.28E-04
AOI 19	Metals	Cobalt	7440-48-4T	10	10	2.10E+00	1.64E+01	1.20E-02	1.30E-02	NA	NA	5.90E+03	9.00E+03	NC	NC	2.77E-03	1.82E-03
AOI 19	Metals	Copper	7440-50-8T	13	12	8.60E+00	2.64E+01	3.20E-01	3.60E-01	NA	NA	5.90E+04	7.30E+04	NC	NC	4.47E-04	3.62E-04
AOI 19	Metals	Iron	7439-89-6T	9	9	6.31E+03	1.93E+04	2.10E+00	2.30E+00	NA	NA	NA	5.80E+05	NC	NC	NC	3.33E-02
AOI 19	Metals	Lead	7439-92-1T	13	13	4.90E+00	1.12E+01	1.10E-01	1.20E-01	NA	NA	4.40E+04	9.00E+02	NC	NC	2.55E-04	1.24E-02
AOI 19	Metals	Magnesium	7439-95-4T	9	9	4.22E+03	2.26E+04	1.60E+00	1.80E+00	NA	NA	2.90E+06	1.00E+06	NC	NC	7.79E-03	2.26E-02
AOI 19	Metals	Manganese	7439-96-5T	9	9	1.17E+02	6.20E+02	1.50E-01	1.60E-01	NA	NA	1.50E+03	9.00E+04	NC	NC	4.13E-01	6.89E-03
AOI 19	Metals	Mercury	7439-97-6T	13	9	6.90E-03	8.90E-02	3.90E-03	4.30E-03	8.90E+01	6.20E+01	8.80E+03	5.80E+02	1.00E-03	1.44E-03	1.01E-05	1.53E-04
AOI 19	Metals	Nickel	7440-02-0T	10	10	4.20E+00	2.44E+01	5.90E-02	6.50E-02	NA	NA	1.60E+04	1.50E+05	NC	NC	1.53E-03	1.63E-04
AOI 19	Metals	Potassium	7440-09-7T	9	9	3.49E+02	1.87E+03	3.24E+01	3.57E+01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 19	Metals	Selenium	7782-49-2T	13	11	1.10E-01	7.20E-01	9.50E-02	1.10E-01	NA	NA	5.90E+04	9.60E+03	NC	NC	1.22E-05	7.50E-05
AOI 19	Metals	Silver	7440-22-4T	13	10	1.60E-02	1.00E-01	1.10E-02	1.20E-02	NA	NA	2.90E+03	9.00E+03	NC	NC	3.45E-05	1.11E-05
AOI 19	Metals	Sodium	7440-23-5T	9	6	1.45E+02	2.44E+02	1.27E+02	1.40E+02	NA	NA	NA	1.00E+06	NC	NC	NC	2.44E-04
AOI 19	Metals	Thallium	7440-28-0T	10	8	2.00E-02	2.40E-01	1.10E-02	1.20E-02	NA	NA	NA	1.30E+02	NC	NC	NC	1.85E-03
AOI 19	Metals	Vanadium	7440-62-2T	10	10	8.90E+00	2.54E+01	3.70E-01	4.10E-01	NA	NA	NA	5.50E+03	NC	NC	NC	4.62E-03
AOI 19	Metals	Zinc	7440-66-6T	13	12	3.55E+01	3.13E+02	6.60E-01	7.30E-01	NA	NA	NA	6.30E+05	NC	NC	NC	4.97E-04
AOI 19	SVOAs	2-Methylnaphthalene	91-57-6	10	1	1.40E-01	1.40E-01	4.00E-02	8.00E+00	NA	NA	NA	2.60E+04	NC	NC	NC	5.38E-06
AOI 19	SVOAs	Acenaphthene	83-32-9	10	1	1.20E-01	1.20E-01	4.90E-02	9.70E+00	3.50E+05	9.70E+04	6.20E+06	1.30E+05	3.43E-07	1.24E-06	1.94E-08	9.23E-07
AOI 19	SVOAs	Anthracene	120-12-7	10	1	2.60E-01	2.60E-01	4.00E-02	8.00E+00	1.00E+06	1.60E+06	2.90E+07	7.30E+05	2.60E-07	1.63E-07	8.97E-09	3.56E-07
AOI 19	SVOAs	Benzo(a)anthracene	56-55-3	10	1	1.80E-01	1.80E-01	4.90E-02	9.70E+00	NA	NA	NA	8.00E+01	NC	NC	NC	2.25E-03
AOI 19	SVOAs	Benzo(a)pyrene	50-32-8	10	2	1.40E-01	5.30E-01	4.00E-02	8.00E+00	NA	NA	1.90E+03	8.00E+00	NC	NC	2.79E-04	6.63E-02
AOI 19	SVOAs	Benzo(b)fluoranthene	205-99-2	10	1	1.90E-01	1.90E-01	5.60E-02	1.10E+01	NA	NA	NA	8.00E+01	NC	NC	NC	2.38E-03
AOI 19	SVOAs	Benzo(g,h,i)perylene	191-24-2	10	1	1.30E-01	1.30E-01	4.40E-02	8.80E+00	NA	NA	3.50E+05	7.00E+03	NC	NC	3.71E-07	1.86E-05
AOI 19	SVOAs	Benzo(k)fluoranthene	207-08-9	10	1	6.80E-02	6.80E-02	3.50E-02	6.90E+00	NA	NA	NA	8.00E+02	NC	NC	NC	8.50E-05
AOI 19	SVOAs	Biphenyl (1,1-Biphenyl)	92-52-4	9	1	6.00E-02	6.00E-02	1.80E-02	3.70E+00	NA	NA	NA	NA	NC	NC	NC	NC
AOI 19	SVOAs	bis(2-Ethylhexyl)phthalate	117-81-7	10	1	7.80E-01	7.80E-01	4.00E-02	8.00E+00	NA	NA	8.90E+05	1.00E+04	NC	NC	8.76E-07	7.80E-05
AOI 19	SVOAs	Chrysene	218-01-9	10	2	2.10E-01	6.20E-01	3.90E-02	7.80E+00	NA	NA	NA	8.00E+03	NC	NC	NC	7.75E-05
AOI 19	SVOAs	Dibenzofuran	132-64-9	10	1	1.30E-01	1.30E-01	5.30E-02	1.10E+01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 19	SVOAs	Fluoranthene	206-44-0	10	3	4.90E-02	4.80E-01	4.20E-02	8.40E+00	1.00E+06	8.90E+05	4.10E+06	1.30E+05	4.80E-07	5.39E-07	1.17E-07	3.69E-06
AOI 19	SVOAs	Fluorene	86-73-7	10	2	2.20E-01	3.65E-01	4.80E-02	9.50E+00	1.00E+06	1.50E+05	4.10E+06	8.70E+04	3.65E-07	2.43E-06	8.90E-08	4.20E-06
AOI 19	SVOAs	Indeno(1,2,3-cd)pyrene	193-39-5	10	1	1.20E-01	1.20E-01	5.50E-02	1.10E+01	NA	NA	NA	8.00E+01	NC	NC	NC	1.50E-03
AOI 19	SVOAs	Naphthalene	91-20-3	10	1	6.80E-02	6.80E-02	4.20E-02	8.40E+00	4.70E+02	3.50E+02	8.80E+04	5.20E+04	1.45E-04	1.94E-04	7.73E-07	1.31E-06
AOI 19	SVOAs	N-Nitrosodiphenylamine	86-30-6	10	1	9.40E-01	9.40E-01	4.30E-02	8.60E+00	NA	NA	NA	7.80E+03	NC	NC	NC	1.21E-04
AOI 19	SVOAs	Phenanthrene	85-01-8	10	4	2.20E-01	1.20E+00	4.20E-02	8.40E+00	5.10E+03	1.90E+02	2.90E+03	5.20E+03	2.35E-04	6.32E-03	4.14E-04	2.31E-04
AOI 19	SVOAs	Phenol	108-95-2	10	1	5.80E-02	5.80E-02	5.50E-02	1.10E+01	NA	NA	1.80E+07	1.20E+04	NC	NC	3.22E-09	4.83E-06
AOI 19	SVOAs	Pyrene	129-00-0	10	1	4.00E-01	4.00E-01	4.40E-02	8.80E+00	1.00E+06	7.80E+05	2.90E+06	8.40E+04	4.00E-07	5.13E-07	1.38E-07	4.76E-06
AOI 19	VOAs	1,1,1-Trichloroethane	71-55-6	11	5	2.70E-03	1.00E-02	1.10E-04	2.60E-02	4.60E+02	4.50E+03	2.90E+07	4.60E+02	2.17E-05	2.22E-06	3.45E-10	2.17E-05
AOI 19	VOAs	1,1-Dichloroethane	75-34-3	11	5	2.40E-03	1.70E-01	1.80E-04	1.50E-02	4.30E+02	2.50E+03	1.50E+07	8.90E+02	3.95E-04	6.80E-05	1.13E-08	1.91E-04
AOI 19	VOAs	1,1-Dichloroethene	75-35-4	11	1	1.30E-03	1.30E-03	1.80E-04	1.90E-02	3.30E-01	3.70E+00	7.80E+04	5.70E+02	3.94E-03	3.51E-04	1.67E-08	2.28E-06
AOI 19	VOAs	2-Butanone	78-93-3	10	2	2.20E-03	3.70E-03	9.00E-04	1.80E-01	2.70E+04	3.50E+04	2.90E+07	2.70E+04	1.37E-07	1.06E-07	1.28E-10	1.37E-07
AOI 19	VOAs	4-Methyl-2-pentanone	108-10-1	10	6	1.60E-03	1.50E+00	4.10E-04	1.10E-01	2.70E+03	5.30E+04	6.00E+07	2.70E+03	5.56E-04	2.83E-05	2.50E-08	5.56E-04
AOI 19	VOAs	Acetone	67-64-1	10	3	8.30E-01	1.70E+00	2.10E-03	3.90E-01	1.10E+05	1.60E+05	1.70E+08	7.30E+04	1.55E-05	1.06E-05	1.00E-08	2.33E-05
AOI 19	VOAs	Ethylbenzene	100-41-4	11	1	7.00E-04	7.00E-04	2.40E-04	7.90E-03	1.40E+02	2.40E+03	1.30E+07	1.40E+02	5.00E-06	2.92E-07	5.38E-11	5.00E-06
AOI 19	VOAs	Methylene chloride	75-09-2	11	1	1.23E-02	1.23E-02	2.50E-04	7.10E-02	2.40E+02	7.00E+02	8.30E+06	2.30E+03	5.13E-05	1.76E-05	1.48E-09	5.35E-06
AOI 19	VOAs	Tetrachloroethene	127-18-4	11	1	8.00E-04	8.00E-04	1.80E-04	2.20E-02	6.00E+01	6.00E+02	6.80E+06	8.80E+01	1.33E-05	1.33E-06	1.18E-10	9.09E-06
AOI 19	VOAs	Toluene	108-88-3	11	5	4.00E-04	8.80E-01	2.20E-04	8.80E-03	2.50E+02	3.30E+03	1.20E+07	2.50E+02	3.52E-03	2.67E-04	7.33E-08	3.52E-03
AOI 19	VOAs	Trichloroethene	79-01-6	11	1	8.00E-04	8.00E-04	2.10E-04	3.10E-02	3.70E+01	2.60E+02	2.30E+06	5.00E+02	2.16E-05	3.08E-06	3.48E-10	1.60E-06
AOI 19	VOAs	Xylene (total)	1330-20-7	11	3	2.40E-03	4.00E-02	6.50E-04	3.10E-02	1.50E+02	5.40E+04	1.30E+08	1.50E+02	2.67E-04	7.41E-07	3.08E-10	2.67E-04
AOI 20	Metals	Aluminum	7429-90-5T	4	4	4.34E+03	9.93E+03	3.50E+00	3.60E+00	NA	NA	NA	3.70E+05	NC	NC	NC	2.68E-02
AOI 20	Metals	Antimony	7440-36-0T	5	1	2.00E-01	2.00E-01	2.30E-02	1.10E-01	NA	NA	5.90E+03	6.70E+02	NC	NC	3.39E-05	2.99E-04

TABLE 2.1

SOIL SCREENING RESULTS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Area	*Chemical Group*	*Chemical*	*CAS Registry Number*	*Total Analyzed*	*Total Detected*	*Min Detected (mg/kg)*	*Max Detected (mg/kg)*	*Min QL (mg/kg)*	*Max QL (mg/kg)*	*Criteria a*	*Criteria b*	*Criteria c*	*Criteria d*	*Ratio of Max:a*	*Ratio of Max:b*	*Ratio of Max:c*	*Ratio of Max:d*
AOI 20	Metals	Arsenic	7440-38-2T	6	6	4.30E+00	7.20E+00	8.60E-03	4.30E-02	NA	NA	9.10E+02	3.70E+01	NC	NC	7.91E-03	1.95E-01
AOI 20	Metals	Barium	7440-39-3T	6	6	2.14E+01	6.10E+01	1.40E-01	1.40E-01	NA	NA	1.50E+05	1.30E+05	NC	NC	4.07E-04	4.69E-04
AOI 20	Metals	Beryllium	7440-41-7T	5	5	1.80E-01	5.90E-01	2.60E-03	1.30E-02	NA	NA	5.90E+02	1.60E+03	NC	NC	1.00E-03	3.69E-04
AOI 20	Metals	Cadmium	7440-43-9T	6	6	1.30E-01	6.80E-01	3.00E-03	1.50E-02	NA	NA	2.20E+03	2.10E+03	NC	NC	3.09E-04	3.24E-04
AOI 20	Metals	Calcium	7440-70-2T	4	4	2.58E+03	5.54E+04	3.60E+00	3.70E+00	NA	NA	NA	NA	NC	NC	NC	NC
AOI 20	Metals	Chromium (total)	7440-47-3T	6	6	6.50E+00	1.62E+01	3.80E-02	1.90E-01	NA	NA	2.40E+02	9.20E+03	NC	NC	6.75E-02	1.76E-03
AOI 20	Metals	Chromium VI (hexavalent)	18540-29-9T	5	1	6.96E+00	6.96E+00	NA	NA	NA	NA	2.40E+02	9.20E+03	NC	NC	2.90E-02	7.57E-04
AOI 20	Metals	Cobalt	7440-48-4T	5	5	3.60E+00	8.60E+00	2.50E-03	1.30E-02	NA	NA	5.90E+03	9.00E+03	NC	NC	1.46E-03	9.56E-04
AOI 20	Metals	Copper	7440-50-8T	6	6	7.30E+00	1.45E+01	6.90E-02	3.50E-01	NA	NA	5.90E+04	7.30E+04	NC	NC	2.46E-04	1.99E-04
AOI 20	Metals	Iron	7439-89-6T	4	4	8.58E+03	2.12E+04	2.30E+00	2.30E+00	NA	NA	NA	5.80E+05	NC	NC	NC	3.66E-02
AOI 20	Metals	Lead	7439-92-1T	6	6	5.50E+00	1.50E+01	2.30E-02	1.10E-01	NA	NA	4.40E+04	9.00E+02	NC	NC	3.41E-04	1.67E-02
AOI 20	Metals	Magnesium	7439-95-4T	4	4	1.54E+03	2.43E+04	1.70E+00	1.80E+00	NA	NA	2.90E+06	1.00E+06	NC	NC	8.38E-03	2.43E-02
AOI 20	Metals	Manganese	7439-96-5T	4	4	1.60E+02	3.93E+02	1.60E-01	1.60E-01	NA	NA	1.50E+03	9.00E+04	NC	NC	2.62E-01	4.37E-03
AOI 20	Metals	Mercury	7439-97-6T	6	5	9.90E-03	1.70E-02	4.20E-03	4.20E-03	8.90E+01	6.20E+01	8.80E+03	5.80E+02	1.91E-04	2.74E-04	1.93E-06	2.93E-05
AOI 20	Metals	Nickel	7440-02-0T	5	5	8.40E+00	2.29E+01	1.30E-02	6.30E-02	NA	NA	1.60E+04	1.50E+05	NC	NC	1.43E-03	1.53E-04
AOI 20	Metals	Potassium	7440-09-7T	4	4	3.90E+02	2.36E+03	3.45E+01	3.51E+01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 20	Metals	Selenium	7782-49-2T	6	5	1.20E-01	7.50E-01	2.00E-02	1.00E-01	NA	NA	5.90E+04	9.60E+03	NC	NC	1.27E-05	7.81E-05
AOI 20	Metals	Silver	7440-22-4T	6	6	3.90E-02	6.00E-01	2.30E-03	1.10E-02	NA	NA	2.90E+03	9.00E+03	NC	NC	2.07E-04	6.67E-05
AOI 20	Metals	Thallium	7440-28-0T	5	5	7.00E-02	2.20E-01	2.30E-03	1.10E-02	NA	NA	NA	1.30E+02	NC	NC	NC	1.69E-03
AOI 20	Metals	Tin	7440-31-5T	1	1	5.90E+00	5.90E+00	1.10E+00	1.10E+00	NA	NA	NA	NA	NC	NC	NC	NC
AOI 20	Metals	Vanadium	7440-62-2T	5	5	1.26E+01	2.81E+01	4.00E-01	4.00E-01	NA	NA	NA	5.50E+03	NC	NC	NC	5.11E-03
AOI 20	Metals	Zinc	7440-66-6T	6	6	3.21E+01	5.62E+01	1.40E-01	7.10E-01	NA	NA	NA	6.30E+05	NC	NC	NC	8.92E-05
AOI 20	VOAs	1,1-Dichloroethane	75-34-3	6	1	1.90E-02	1.90E-02	1.70E-04	2.30E-04	4.30E+02	2.50E+03	1.50E+07	8.90E+02	4.42E-05	7.60E-06	1.27E-09	2.13E-05
AOI 20	VOAs	1,1-Dichloroethene	75-35-4	6	1	8.80E-04	8.80E-04	1.70E-04	2.30E-04	3.30E-01	3.70E+00	7.80E+04	5.70E+02	2.67E-03	2.38E-04	1.13E-08	1.54E-06
AOI 20	VOAs	1,4-Dichlorobenzene	106-46-7	6	1	3.80E-04	3.80E-04	2.70E-04	3.50E-04	1.00E+02	2.60E+02	5.70E+05	1.90E+03	3.80E-06	1.46E-06	6.67E-10	2.00E-07
AOI 20	VOAs	2-Butanone	78-93-3	5	1	1.20E-03	1.20E-03	8.70E-04	1.10E-03	2.70E+04	3.50E+04	2.90E+07	2.70E+04	4.44E-08	3.43E-08	4.14E-11	4.44E-08
AOI 20	VOAs	Carbon disulfide	75-15-0	5	1	4.00E-04	4.00E-04	3.00E-04	4.00E-04	1.40E+02	1.60E+03	2.10E+07	2.80E+02	2.86E-06	2.50E-07	1.90E-11	1.43E-06
AOI 20	VOAs	Trichloroethene	79-01-6	6	1	4.10E-03	4.10E-03	2.00E-04	2.60E-04	3.70E+01	2.60E+02	2.30E+06	5.00E+02	1.11E-04	1.58E-05	1.78E-09	8.20E-06
AOI 20	Wet	Cyanide (total)	57-12-5T	5	1	4.40E-01	4.40E-01	2.82E-01	2.87E-01	NA	NA	2.50E+02	2.50E+02	NC	NC	1.76E-03	1.76E-03
AOI 20/22	Metals	Arsenic	7440-38-2T	8	8	4.19E+00	8.27E+00	NA	NA	NA	NA	9.10E+02	3.70E+01	NC	NC	9.09E-03	2.24E-01
AOI 20/22	Metals	Barium	7440-39-3T	8	8	3.84E+01	6.80E+01	NA	NA	NA	NA	1.50E+05	1.30E+05	NC	NC	4.53E-04	5.23E-04
AOI 20/22	Metals	Chromium (total)	7440-47-3T	8	8	1.12E+01	1.29E+01	NA	NA	NA	NA	2.40E+02	9.20E+03	NC	NC	5.38E-02	1.40E-03
AOI 20/22	Metals	Lead	7439-92-1T	8	7	3.72E+00	1.03E+02	NA	NA	NA	NA	4.40E+04	9.00E+02	NC	NC	2.34E-03	1.14E-01
AOI 20/22	Metals	Mercury	7439-97-6T	8	1	3.00E-02	3.00E-02	NA	NA	8.90E+01	6.20E+01	8.80E+03	5.80E+02	3.37E-04	4.84E-04	3.41E-06	5.17E-05
AOI 20/22	Metals	Selenium	7782-49-2T	8	2	2.60E-01	3.70E-01	NA	NA	NA	NA	5.90E+04	9.60E+03	NC	NC	6.27E-06	3.85E-05
AOI 20/22	Petrl Prod	Petroleum hydrocarbons	PHC	8	3	3.13E+02	4.19E+02	NA	NA	NA	NA	NA	NA	NC	NC	NC	NC
AOI 20/22	VOAs	Ethylbenzene	100-41-4	8	1	5.80E-03	5.80E-03	NA	NA	1.40E+02	2.40E+03	1.30E+07	1.40E+02	4.14E-05	2.42E-06	4.46E-10	4.14E-05
AOI 20/22	VOAs	Methylene chloride	75-09-2	8	5	8.80E-03	5.41E-02	NA	NA	2.40E+02	7.00E+02	8.30E+06	2.30E+03	2.25E-04	7.73E-05	6.52E-09	2.35E-05
AOI 20/22	VOAs	Tetrachloroethene	127-18-4	8	1	4.40E-03	4.40E-03	NA	NA	6.00E+01	6.00E+02	6.80E+06	8.80E+01	7.33E-05	7.33E-06	6.47E-10	5.00E-05
AOI 20/22	VOAs	Toluene	108-88-3	8	1	9.00E-04	9.00E-04	NA	NA	2.50E+02	3.30E+03	1.20E+07	2.50E+02	3.60E-06	2.73E-07	7.50E-11	3.60E-06
AOI 20/22	VOAs	Trichloroethene	79-01-6	8	2	9.00E-04	1.60E-03	NA	NA	3.70E+01	2.60E+02	2.30E+06	5.00E+02	4.32E-05	6.15E-06	6.96E-10	3.20E-06
AOI 20/22	VOAs	Xylene (total)	1330-20-7	8	1	3.05E-02	3.05E-02	NA	NA	1.50E+02	5.40E+04	1.30E+08	1.50E+02	2.03E-04	5.65E-07	2.35E-10	2.03E-04
AOI 21	Metals	Aluminum	7429-90-5T	3	3	2.91E+03	1.10E+04	3.30E+00	3.60E+00	NA	NA	NA	3.70E+05	NC	NC	NC	2.97E-02
AOI 21	Metals	Arsenic	7440-38-2T	3	3	3.90E+00	7.00E+00	8.00E-03	8.80E-03	NA	NA	9.10E+02	3.70E+01	NC	NC	7.69E-03	1.89E-01
AOI 21	Metals	Barium	7440-39-3T	3	3	1.89E+01	6.61E+01	1.30E-01	1.40E-01	NA	NA	1.50E+05	1.30E+05	NC	NC	4.41E-04	5.08E-04
AOI 21	Metals	Beryllium	7440-41-7T	3	3	1.40E-01	6.00E-01	2.40E-03	1.30E-02	NA	NA	5.90E+02	1.60E+03	NC	NC	1.02E-03	3.75E-04
AOI 21	Metals	Cadmium	7440-43-9T	3	3	9.80E-02	1.60E-01	2.80E-03	3.10E-03	NA	NA	2.20E+03	2.10E+03	NC	NC	7.27E-05	7.62E-05
AOI 21	Metals	Calcium	7440-70-2T	3	3	1.67E+04	6.75E+04	3.40E+00	3.70E+00	NA	NA	NA	NA	NC	NC	NC	NC
AOI 21	Metals	Chromium (total)	7440-47-3T	3	3	4.80E+00	1.80E+01	3.50E-02	1.90E-01	NA	NA	2.40E+02	9.20E+03	NC	NC	7.50E-02	1.96E-03

TABLE 2.1

SOIL SCREENING RESULTS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Area	*Chemical Group*	*Chemical*	*CAS Registry Number*	*Total Analyzed*	*Total Detected*	*Min Detected (mg/kg)*	*Max Detected (mg/kg)*	*Min QL (mg/kg)*	*Max QL (mg/kg)*	*Criteria a*	*Criteria b*	*Criteria c*	*Criteria d*	*Ratio of Max:a*	*Ratio of Max:b*	*Ratio of Max:c*	*Ratio of Max:d*
AOI 21	Metals	Cobalt	7440-48-4T	3	3	2.50E+00	9.60E+00	2.30E-03	1.20E-02	NA	NA	5.90E+03	9.00E+03	NC	NC	1.63E-03	1.07E-03
AOI 21	Metals	Copper	7440-50-8T	3	3	6.00E+00	1.58E+01	6.50E-02	3.50E-01	NA	NA	5.90E+04	7.30E+04	NC	NC	2.68E-04	2.16E-04
AOI 21	Metals	Iron	7439-89-6T	3	3	8.23E+03	2.35E+04	2.10E+00	2.30E+00	NA	NA	NA	5.80E+05	NC	NC	NC	4.05E-02
AOI 21	Metals	Lead	7439-92-1T	3	3	4.50E+00	1.09E+01	2.10E-02	2.30E-02	NA	NA	4.40E+04	9.00E+02	NC	NC	2.48E-04	1.21E-02
AOI 21	Metals	Magnesium	7439-95-4T	3	3	4.17E+03	2.89E+04	1.60E+00	1.80E+00	NA	NA	2.90E+06	1.00E+06	NC	NC	9.97E-03	2.89E-02
AOI 21	Metals	Manganese	7439-96-5T	3	3	2.36E+02	2.94E+02	1.50E-01	1.60E-01	NA	NA	1.50E+03	9.00E+04	NC	NC	1.96E-01	3.27E-03
AOI 21	Metals	Mercury	7439-97-6T	3	3	9.20E-03	1.10E-02	3.90E-03	4.30E-03	8.90E+01	6.20E+01	8.80E+03	5.80E+02	1.24E-04	1.77E-04	1.25E-06	1.90E-05
AOI 21	Metals	Nickel	7440-02-0T	3	3	5.90E+00	2.50E+01	1.20E-02	6.30E-02	NA	NA	1.60E+04	1.50E+05	NC	NC	1.56E-03	1.67E-04
AOI 21	Metals	Potassium	7440-09-7T	3	3	2.60E+02	2.30E+03	3.23E+01	3.55E+01	NA	NA	NA	NA	NC	NC	NC	NC
AOI 21	Metals	Selenium	7782-49-2T	3	3	7.90E-02	5.80E-01	1.90E-02	2.10E-02	NA	NA	5.90E+04	9.60E+03	NC	NC	9.83E-06	6.04E-05
AOI 21	Metals	Silver	7440-22-4T	3	3	2.60E-02	3.60E-01	2.10E-03	2.30E-03	NA	NA	2.90E+03	9.00E+03	NC	NC	1.24E-04	4.00E-05
AOI 21	Metals	Sodium	7440-23-5T	3	1	5.42E+02	5.42E+02	1.27E+02	1.39E+02	NA	NA	NA	1.00E+06	NC	NC	NC	5.42E-04
AOI 21	Metals	Thallium	7440-28-0T	3	3	3.60E-02	1.60E-01	2.10E-03	2.30E-03	NA	NA	NA	1.30E+02	NC	NC	NC	1.23E-03
AOI 21	Metals	Vanadium	7440-62-2T	3	3	1.14E+01	3.02E+01	3.70E-01	4.10E-01	NA	NA	NA	5.50E+03	NC	NC	NC	5.49E-03
AOI 21	Metals	Zinc	7440-66-6T	3	3	2.35E+01	4.82E+01	1.30E-01	1.50E-01	NA	NA	NA	6.30E+05	NC	NC	NC	7.65E-05
AOI 21	SVOAs	Acenaphthene	83-32-9	4	1	7.90E-02	7.90E-02	4.70E-02	5.20E-02	3.50E+05	9.70E+04	6.20E+06	1.30E+05	2.26E-07	8.14E-07	1.27E-08	6.08E-07
AOI 21	SVOAs	Anthracene	120-12-7	4	1	1.70E-01	1.70E-01	3.90E-02	4.30E-02	1.00E+06	1.60E+06	2.90E+07	7.30E+05	1.70E-07	1.06E-07	5.86E-09	2.33E-07
AOI 21	SVOAs	Benzo(a)anthracene	56-55-3	4	1	3.30E-01	3.30E-01	4.70E-02	5.20E-02	NA	NA	NA	8.00E+01	NC	NC	NC	4.13E-03
AOI 21	SVOAs	Benzo(a)pyrene	50-32-8	4	2	4.30E-02	2.90E-01	3.90E-02	4.30E-02	NA	NA	1.90E+03	8.00E+00	NC	NC	1.53E-04	3.63E-02
AOI 21	SVOAs	Benzo(b)fluoranthene	205-99-2	4	2	6.40E-02	4.00E-01	5.50E-02	6.00E-02	NA	NA	NA	8.00E+01	NC	NC	NC	5.00E-03
AOI 21	SVOAs	Benzo(g,h,i)perylene	191-24-2	4	2	4.60E-02	1.50E-01	4.30E-02	4.80E-02	NA	NA	3.50E+05	7.00E+03	NC	NC	4.29E-07	2.14E-05
AOI 21	SVOAs	Benzo(k)fluoranthene	207-08-9	4	1	1.20E-01	1.20E-01	3.40E-02	3.70E-02	NA	NA	NA	8.00E+02	NC	NC	NC	1.50E-04
AOI 21	SVOAs	Carbazole	86-74-8	3	1	1.00E-01	1.00E-01	4.40E-02	4.90E-02	NA	NA	NA	2.40E+03	NC	NC	NC	4.17E-05
AOI 21	SVOAs	Chrysene	218-01-9	4	3	4.30E-02	2.30E+01	3.80E-02	4.20E-02	NA	NA	NA	8.00E+03	NC	NC	NC	2.88E-03
AOI 21	SVOAs	Dibenzofuran	132-64-9	3	1	5.80E-02	5.80E-02	5.20E-02	5.70E-02	NA	NA	NA	NA	NC	NC	NC	NC
AOI 21	SVOAs	Fluoranthene	206-44-0	4	2	7.50E-02	8.90E-01	4.10E-02	4.50E-02	1.00E+06	8.90E+05	4.10E+06	1.30E+05	8.90E-07	1.00E-06	2.17E-07	6.85E-06
AOI 21	SVOAs	Fluorene	86-73-7	4	1	8.50E-02	8.50E-02	4.60E-02	5.10E-02	1.00E+06	1.50E+05	4.10E+06	8.70E+04	8.50E-08	5.67E-07	2.07E-08	9.77E-07
AOI 21	SVOAs	Indeno(1,2,3-cd)pyrene	193-39-5	4	1	1.70E-01	1.70E-01	5.40E-02	5.90E-02	NA	NA	NA	8.00E+01	NC	NC	NC	2.13E-03
AOI 21	SVOAs	Phenanthrene	85-01-8	4	1	7.70E-01	7.70E-01	4.10E-02	4.50E-02	5.10E+03	1.90E+02	2.90E+03	5.20E+03	1.51E-04	4.05E-03	2.66E-04	1.48E-04
AOI 21	SVOAs	Pyrene	129-00-0	4	2	6.80E-02	6.80E-01	4.30E-02	4.80E-02	1.00E+06	7.80E+05	2.90E+06	8.40E+04	6.80E-07	8.72E-07	2.34E-07	8.10E-06
AOI 21	VOAs	Trichloroethene	79-01-6	4	1	8.20E-03	8.20E-03	2.10E-04	2.60E-04	3.70E+01	2.60E+02	2.30E+06	5.00E+02	2.22E-04	3.15E-05	3.57E-09	1.64E-05
AOI 21	VOAs	Xylene (total)	1330-20-7	1	1	3.05E-01	3.05E-01	NA	NA	1.50E+02	5.40E+04	1.30E+08	1.50E+02	2.03E-03	5.65E-06	2.35E-09	2.03E-03
Background	Metals	Aluminum	7429-90-5T	8	8	8.27E+03	1.51E+04	3.40E+00	3.60E+00	NA	NA	NA	3.70E+05	NC	NC	NC	4.08E-02
Background	Metals	Arsenic	7440-38-2T	8	8	5.50E+00	1.10E+01	8.30E-03	8.80E-03	NA	NA	9.10E+02	3.70E+01	NC	NC	1.21E-02	2.97E-01
Background	Metals	Barium	7440-39-3T	8	8	5.12E+01	9.32E+01	1.30E-01	1.40E-01	NA	NA	1.50E+05	1.30E+05	NC	NC	6.21E-04	7.17E-04
Background	Metals	Beryllium	7440-41-7T	8	8	3.60E-01	6.10E-01	2.50E-03	2.70E-03	NA	NA	5.90E+02	1.60E+03	NC	NC	1.03E-03	3.81E-04
Background	Metals	Cadmium	7440-43-9T	8	8	1.30E-01	1.70E-01	2.90E-03	3.10E-03	NA	NA	2.20E+03	2.10E+03	NC	NC	7.73E-05	8.10E-05
Background	Metals	Calcium	7440-70-2T	8	8	3.08E+04	6.66E+04	3.50E+00	3.70E+00	NA	NA	NA	NA	NC	NC	NC	NC
Background	Metals	Chromium (total)	7440-47-3T	8	8	1.14E+01	1.64E+01	3.70E-02	3.90E-02	NA	NA	2.40E+02	9.20E+03	NC	NC	6.83E-02	1.78E-03
Background	Metals	Cobalt	7440-48-4T	8	8	7.20E+00	1.06E+01	2.40E-03	2.50E-03	NA	NA	5.90E+03	9.00E+03	NC	NC	1.80E-03	1.18E-03
Background	Metals	Copper	7440-50-8T	8	8	1.07E+01	1.52E+01	6.70E-02	7.10E-02	NA	NA	5.90E+04	7.30E+04	NC	NC	2.58E-04	2.08E-04
Background	Metals	Iron	7439-89-6T	8	8	1.89E+04	2.79E+04	2.20E+00	2.30E+00	NA	NA	NA	5.80E+05	NC	NC	NC	4.81E-02
Background	Metals	Lead	7439-92-1T	8	8	6.60E+00	1.03E+01	2.20E-02	2.30E-02	NA	NA	4.40E+04	9.00E+02	NC	NC	2.34E-04	1.14E-02
Background	Metals	Magnesium	7439-95-4T	8	8	1.50E+04	2.95E+04	1.70E+00	1.80E+00	NA	NA	2.90E+06	1.00E+06	NC	NC	1.02E-02	2.95E-02
Background	Metals	Manganese	7439-96-5T	8	8	3.02E+02	4.57E+02	1.50E-01	1.60E-01	NA	NA	1.50E+03	9.00E+04	NC	NC	3.05E-01	5.08E-03
Background	Metals	Mercury	7439-97-6T	8	8	9.50E-03	2.90E-02	4.00E-03	4.30E-03	8.90E+01	6.20E+01	8.80E+03	5.80E+02	3.26E-04	4.68E-04	3.30E-06	5.00E-05
Background	Metals	Nickel	7440-02-0T	8	8	1.60E+01	2.25E+01	1.20E-02	1.30E-02	NA	NA	1.60E+04	1.50E+05	NC	NC	1.41E-03	1.50E-04
Background	Metals	Potassium	7440-09-7T	8	8	1.35E+03	2.09E+03	3.33E+01	3.54E+01	NA	NA	NA	NA	NC	NC	NC	NC
Background	Metals	Selenium	7782-49-2T	8	8	2.30E-01	3.50E-01	2.00E-02	2.10E-02	NA	NA	5.90E+04	9.60E+03	NC	NC	5.93E-06	3.65E-05
Background	Metals	Silver	7440-22-4T	8	8	5.60E-02	1.20E-01	2.20E-03	2.30E-03	NA	NA	2.90E+03	9.00E+03	NC	NC	4.14E-05	1.33E-05

TABLE 2.1

SOIL SCREENING RESULTS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Area	*Chemical Group*	*Chemical*	*CAS Registry Number*	*Total Analyzed*	*Total Detected*	*Min Detected (mg/kg)*	*Max Detected (mg/kg)*	*Min QL (mg/kg)*	*Max QL (mg/kg)*	*Criteria a*	*Criteria b*	*Criteria c*	*Criteria d*	*Ratio of Max:a*	*Ratio of Max:b*	*Ratio of Max:c*	*Ratio of Max:d*
Background	Metals	Sodium	7440-23-5T	8	3	1.98E+02	5.80E+02	1.31E+02	1.39E+02	NA	NA	NA	1.00E+06	NC	NC	NC	5.80E-04
Background	Metals	Thallium	7440-28-0T	8	8	1.60E-01	1.90E-01	2.20E-03	2.30E-03	NA	NA	NA	1.30E+02	NC	NC	NC	1.46E-03
Background	Metals	Vanadium	7440-62-2T	8	8	2.41E+01	3.88E+01	3.80E-01	4.00E-01	NA	NA	NA	5.50E+03	NC	NC	NC	7.05E-03
Background	Metals	Zinc	7440-66-6T	8	8	3.55E+01	5.86E+01	1.40E-01	1.50E-01	NA	NA	NA	6.30E+05	NC	NC	NC	9.30E-05

Notes:

a - Ind_Comm II_III_IV/IndoorAir_SoilVolatilization_IndAirInhalation
b - Ind_Comm II_III_IV/Ambient Air_InfiniteSrceVolatileSoilInhalatio
c - Ind_Comm II_III_IV/Particulate Soil Inhalation
d - Ind_Comm II_III_IV/Direct Contact_Ind/Comm II
QL - Quantitation Limit
NA - Not Available
NC - Not Calculated

TABLE 2.2

GROUNDWATER SCREENING RESULTS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Aera	*Chemical Group*	*Chemical*	*CAS Registry Number*	*Analysis Basis*	*Total Analyzed*	*Total Detected*	*Min Detected (mg/L)*	*Max Detected (mg/L)*	*Min QL (mg/L)*	*Max QL (mg/L)*	*Criteria a*	*Criteria b*	*Criteria c*	*Ratio of Max:a*	*Ratio of Max:b*	*Ratio of Max:c*
AOI 1	Metals	Barium	7440-39-3T	T	1	1	1.3E+00	1.3E+00	NA	NA	2.0E+00	NA	1.4E+04	6.5E-01	NC	9.3E-05
AOI 1	VOAs	1,1,1-Trichloroethane	71-55-6	N	3	1	9.0E-03	9.0E-03	NA	NA	2.0E-01	1.3E+03	1.3E+03	4.5E-02	6.9E-06	6.9E-06
AOI 1	VOAs	1,1-Dichloroethane	75-34-3	N	3	2	4.0E-03	1.3E-02	NA	NA	2.5E+00	2.3E+03	2.4E+03	5.2E-03	5.7E-06	5.4E-06
AOI 1	VOAs	1,1-Dichloroethene	75-35-4	N	3	1	3.0E-03	3.0E-03	NA	NA	7.0E-03	1.3E+00	1.1E+01	4.3E-01	2.3E-03	2.7E-04
AOI 1	VOAs	cis-1,2-Dichloroethene	156-59-2	N	3	2	4.0E-03	7.3E-01	NA	NA	7.0E-02	2.1E+02	2.0E+02	**1.0E+01**	3.5E-03	3.6E-03
AOI 1	VOAs	Tetrachloroethene	127-18-4	N	3	1	8.0E-04	8.0E-04	NA	NA	5.0E-03	1.7E+02	1.2E+01	1.6E-01	4.7E-06	6.7E-05
AOI 1	VOAs	Toluene	108-88-3	N	3	1	9.0E-04	9.0E-04	NA	NA	7.9E-01	5.3E+02	5.3E+02	1.1E-03	1.7E-06	1.7E-06
AOI 1	VOAs	trans-1,2-Dichloroethene	156-60-5	N	3	1	1.9E-02	1.9E-02	NA	NA	1.0E-01	2.0E+02	2.2E+02	1.9E-01	9.3E-05	8.4E-05
AOI 1	VOAs	Trichloroethene	79-01-6	N	3	2	1.4E-02	1.6E+00	NA	NA	5.0E-03	9.7E+01	2.2E+01	**3.3E+02**	1.7E-02	7.4E-02
AOI 2	VOAs	1,1-Dichloroethane	75-34-3	N	1	1	8.8E-04	8.8E-04	9.6E-05	9.6E-05	2.5E+00	2.3E+03	2.4E+03	3.5E-04	3.8E-07	3.6E-07
AOI 2	VOAs	Benzene	71-43-2	N	1	1	8.3E-05	8.3E-05	6.0E-05	6.0E-05	5.0E-03	3.5E+01	1.1E+01	1.7E-02	2.4E-06	7.5E-06
AOI 2	VOAs	Toluene	108-88-3	N	1	1	6.0E-05	6.0E-05	4.1E-05	4.1E-05	7.9E-01	5.3E+02	5.3E+02	7.6E-05	1.1E-07	1.1E-07
AOI 3	Metals	Barium	7440-39-3T	T	1	1	1.1E+00	1.1E+00	NA	NA	2.0E+00	NA	1.4E+04	5.5E-01	NC	7.9E-05
AOI 3	Metals	Cadmium	7440-43-9T	T	1	1	6.0E-04	6.0E-04	NA	NA	5.0E-03	NA	1.9E+02	1.2E-01	NC	3.2E-06
AOI 7	Metals	Barium (dissolved)	7440-39-3D	D	1	1	5.7E-02	5.7E-02	1.8E-03	1.8E-03	2.0E+00	NA	1.4E+04	2.8E-02	NC	4.0E-06
AOI 9	Metals	Barium	7440-39-3T	T	1	1	1.2E+00	1.2E+00	NA	NA	2.0E+00	NA	1.4E+04	6.0E-01	NC	8.6E-05
AOI 14	Metals	Barium	7440-39-3T	T	3	2	5.4E-01	6.1E-01	NA	NA	2.0E+00	NA	1.4E+04	3.1E-01	NC	4.4E-05
AOI 14	Metals	Selenium (dissolved)	7782-49-2D	D	1	1	9.5E-03	9.5E-03	NA	NA	5.0E-02	NA	9.7E+02	1.9E-01	NC	9.8E-06
AOI 14	SVOAs	2-Nitrophenol	88-75-5	N	1	1	2.2E-03	2.2E-03	NA	NA	5.8E-02	NA	7.9E+01	3.7E-02	NC	2.7E-05
AOI 14	SVOAs	Acenaphthene	83-32-9	N	2	1	1.3E-03	1.3E-03	NA	NA	3.8E+00	4.2E+00	4.2E+00	3.5E-04	3.2E-04	3.2E-04
AOI 14	SVOAs	Di-n-butylphthalate (DBP)	84-74-2	N	1	1	1.6E-03	1.6E-03	NA	NA	2.5E+00	NA	1.1E+01	6.4E-04	NC	1.5E-04
AOI 14	SVOAs	Fluorene	86-73-7	N	2	1	1.3E-03	1.3E-03	NA	NA	2.0E+00	2.0E+00	2.0E+00	6.6E-04	6.6E-04	6.6E-04
AOI 14	SVOAs	Naphthalene	91-20-3	N	2	1	1.3E-03	1.3E-03	NA	NA	1.5E+00	3.1E+01	3.1E+01	8.9E-04	4.3E-05	4.3E-05
AOI 14	SVOAs	Phenanthrene	85-01-8	N	2	1	1.6E-03	1.6E-03	NA	NA	1.5E-01	1.0E+00	1.0E+00	1.0E-02	1.6E-03	1.6E-03
AOI 14	VOAs	1,1-Dichloroethane	75-34-3	N	3	1	7.5E-04	7.5E-04	NA	NA	2.5E+00	2.3E+03	2.4E+03	3.0E-04	3.3E-07	3.1E-07
AOI 14	VOAs	cis-1,2-Dichloroethene	156-59-2	N	3	1	5.0E-03	5.0E-03	NA	NA	7.0E-02	2.1E+02	2.0E+02	7.1E-02	2.4E-05	2.5E-05
AOI 14	VOAs	Tetrachloroethene	127-18-4	N	3	1	5.0E-04	5.0E-04	NA	NA	5.0E-03	1.7E+02	1.2E+01	1.0E-01	2.9E-06	4.2E-05
AOI 14	VOAs	Toluene	108-88-3	N	3	2	5.5E-04	6.0E-04	NA	NA	7.9E-01	5.3E+02	5.3E+02	7.6E-04	1.1E-06	1.1E-06
AOI 14	VOAs	trans-1,2-Dichloroethene	156-60-5	N	3	1	1.1E-03	1.1E-03	NA	NA	1.0E-01	2.0E+02	2.2E+02	1.1E-02	5.5E-06	5.0E-06
AOI 14	VOAs	Trichloroethene	79-01-6	N	3	2	2.5E-03	2.7E-03	NA	NA	5.0E-03	9.7E+01	2.2E+01	5.3E-01	2.7E-05	1.2E-04
AOI 15	Metals	Barium	7440-39-3T	T	1	1	4.5E-01	4.5E-01	NA	NA	2.0E+00	NA	1.4E+04	2.3E-01	NC	3.2E-05
AOI 15	Metals	Cadmium	7440-43-9T	T	1	1	1.4E-03	1.4E-03	NA	NA	5.0E-03	NA	1.9E+02	2.8E-01	NC	7.4E-06
AOI 15	VOAs	Toluene	108-88-3	N	1	1	6.3E-05	6.3E-05	4.1E-05	4.1E-05	7.9E-01	5.3E+02	5.3E+02	8.0E-05	1.2E-07	1.2E-07
AOI 18	Metals	Barium	7440-39-3T	T	1	1	1.6E+00	1.6E+00	NA	NA	2.0E+00	NA	1.4E+04	8.0E-01	NC	1.1E-04
AOI 18	Metals	Zinc	7440-66-6T	T	1	1	2.0E-02	2.0E-02	NA	NA	5.0E+00	NA	1.1E+05	4.0E-03	NC	1.8E-07
AOI 20/22	Metals	Barium	7440-39-3T	T	1	1	3.4E-01	3.4E-01	NA	NA	2.0E+00	NA	1.4E+04	1.7E-01	NC	2.4E-05
AOI 20/22	VOAs	Tetrachloroethene	127-18-4	N	2	1	5.5E-04	5.5E-04	NA	NA	5.0E-03	1.7E+02	1.2E+01	1.1E-01	3.2E-06	4.6E-05
AOI 20/22	VOAs	Toluene	108-88-3	N	2	2	6.0E-04	1.4E-03	NA	NA	7.9E-01	5.3E+02	5.3E+02	1.8E-03	2.6E-06	2.6E-06
AOI 20/22	VOAs	Trichloroethene	79-01-6	N	2	2	2.7E-03	4.7E-03	NA	NA	5.0E-03	9.7E+01	2.2E+01	9.4E-01	4.8E-05	2.1E-04
Drift Aquifer	Metals	Arsenic	7440-38-2T	T	1	1	4.0E-02	4.0E-02	NA	NA	1.0E-02	NA	4.3E+00	**4.0E+00**	NC	9.3E-03
Drift Aquifer	Metals	Barium	7440-39-3T	T	1	1	5.5E-01	5.5E-01	NA	NA	2.0E+00	NA	1.4E+04	2.8E-01	NC	3.9E-05

Notes:

a - Res_IndComm/Ind/Comm II_III_IV DW
b - Res_IndComm/Ind/CommII_III_IVGWVolatilization_IndoorAirInhalatio
c - Res_IndComm/GW Contact
T - Analyzed by for Total Metals
D - Analyzed by for Dissolved Metals
N - Non-metal analysis
QL - Quantitation Limit
NA - Not Available
NC - Not Calculated

APPENDIX A

CA725 FORM

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Former Peregrine (US) Inc. Coldwater Road Facility
Facility Address: 1245 East Coldwater Road, Flint, MI 48559
Facility EPA ID #: MIR 000 020 743

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   __X__ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available skip to #6 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	___	X	___	See Section 2.2 in EI Report
Air (indoors)[2]	___	X	___	See Section 2.3.3 in EI Report
Surface Soil (e.g., <2 ft)	___	X	___	See Table 2.1 in EI Report
Surface Water	___	X	___	See Section 2.3.4 in EI Report
Sediment	___	X	___	See Section 2.3.4 in EI Report
Subsurf. Soil (e.g., >2 ft)	___	X	___	See Table 2.1 in EI Report
Air (outdoors)	___	X	___	See Section 2.3.3 in EI Report

__X__ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

_____ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

The generic risk-based screening criteria used to identify "contamination" are discussed in Section 2.2.1 and 2.2.2 of the RCRA Environmental Indicators (EI) CA725/CA750 Report (CRA 2010). The screening criteria for soil are the Michigan Part 201 generic industrial criteria based on direct contact and inhalation of soil vapor (infinite source) and particulates in ambient air, and volatilization to indoor air (MDEQ 2002). The screening criteria for groundwater are the Michigan Part 201 generic industrial groundwater contact criteria, drinking water criteria, and volatilization to indoor air criteria (MDEQ 2002).

Soil does not meet the definition of contamination, as explained in Section 2.2.1 of the EI Report. Groundwater does not meet the definition of contamination, as explained in Section 2.2.2 of the EI Report.

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

	Potential **Human Receptors** (Under Current Conditions)						
Contaminated Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
~~Groundwater~~	____	____	____	____			____
~~Air (indoors)~~	____	____	____				
~~Soil (surface, e.g., <2 ft)~~	____	____	____	____	____	____	____
~~Surface Water~~	____	____			____	____	____
~~Sediment~~	____	____			____	____	____
~~Soil (subsurface e.g., >2 ft)~~				____			____
~~Air (outdoors)~~	____	____	____	____	____		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

__X__ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

_____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

_____
_____
_____
_____
_____

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

_____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

5 Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

_X_ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Former Peregrine (US) Inc. Coldwater Road Facility facility, EPA ID # MIR 000 020 743, located at 1245 East Coldwater Road, Flint, MI 48559 under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by (signature)_____ Date _____
(print)_____
(title)_____

Supervisor (signature)_____ Date _____
(print)_____
(title)_____
(EPA Region or State)_____

Locations where References may be found:

- Description of Current Conditions Report (CRA 2000a)
- RFI Work Plan (CRA 2000b)
- RFI Work Plan Addendum #1 (CRA 2001)
- RFI Work Plan Addendum #2 (CRA 2002)
- Revised RFI Report (CRA 2010)
- Interim Measures Completion Report (CRA 2010)
- RCRA Environmental Indicators (EI) Report (CRA 2010)

Contact telephone and e-mail numbers

(name) _____
(phone #) _____
(e-mail) _____

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

APPENDIX B

CA750 FORM

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Former Peregrine (US) Inc. Coldwater Road Facility
Facility Address: 1245 East Coldwater Road, Flint, MI 48559
Facility EPA ID #: MIR 000 020 743

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   _X_ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available, skip to #8 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_____ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

__X__ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The occurrence of groundwater at the Site and the screening criteria for identifying "contaminated" groundwater are discussed in Section 2.2.2 of the RCRA Environmental Indicators (EI) CA725/CA750 Report (CRA 2010). The comparison of groundwater data with their corresponding criteria is summarized in Table 2.2 of the EI Report. The screening criteria are the Michigan Part 201 generic industrial groundwater contact criteria, drinking water criteria, and volatilization to indoor air criteria (MDEQ 2002).

Groundwater does not meet the definition of contamination, as explained in Section 2.2.2 of the EI Report.

Footnotes:

[1]"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and
Reference(s):_____

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and
Reference(s):_____

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

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_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and
Reference(s):_____
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[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

   _____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
   2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

   _____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

   _____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):_____
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[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and
Reference(s):_____

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__X__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Former Peregrine (US) Inc. Coldwater Road Facility facility, EPA ID # MIR 000 020 743, located at 1245 East Coldwater Road. Flint. MI 48559. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by (signature)_____ Date _____
(print)_____
(title)_____

Supervisor (signature)_____ Date _____
(print)_____
(title)_____
(EPA Region or State)_____

Locations where References may be found:

- Description of Current Conditions Report (CRA 2000a)
- RFI Work Plan (CRA 2000b)
- RFI Work Plan Addendum #1 (CRA 2001)
- RFI Work Plan Addendum #2 (CRA 2002)
- Revised RFI Report (CRA 2010)
- Interim Measures Completion Report (CRA 2010)
- RCRA Environmental Indicators (EI) Report (CRA 2010)

Contact telephone and e-mail numbers

(name)_____
(phone #)_____
(e-mail)_____