Periodic Review Report
for Site No. 932001B
Airco Properties, Inc., Airco Parcel
Niagara Falls, New York

Prepared for

Linde, LLC
425 Avenue P
Newark, NJ 07105

Prepared by

Greenstar Environmental Solutions, LLC
6 Gellatly Drive
Wappingers Falls, New York 12590
(845) 223-9944

September 2021
Project No.: 1047

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September 23, 2021

Charles E. McLeod, Jr., P.E.
Senior Engineer

Date

September 2021
Project No.: 1047

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EXECUTIVE SUMMARY

The remedy for the Airco Parcel in Niagara Falls, New York, as identified in the Record of Decision dated March 2006, included the construction of a modified Title 6 New York Codes, Rules and Regulations (NYCRR) Part 360 landfill cap and a collection and treatment system for untreated groundwater. The site remedy has been operating as designed since it was installed in 2000. Regular maintenance and system modifications have occurred as needed since the remedy was constructed.

Has the remedy been operating as designed?

The 2020 periodic review found that the remedy was constructed in accordance with the requirements of the Interim Remedial Measure (IRM) and the remedy is functioning as designed. Potential exposure pathways have been eliminated through capping of the waste and prevention of releases of untreated groundwater. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy.

Have there been reductions/improvements in Constituents of Concern since remedy implementation?

Post-closure sampling data has been collected for 20 years with no significant changes in concentrations of COCs. Since the site is an unlined landfill, concentrations of Constituents of Concern **(**COCs) in shallow groundwater which are in contact with waste may remain above some water quality standards. The remedy was designed to prevent exposure pathways and to prevent the release of untreated groundwater recharging to ground surface. The landfill cap eliminated the direct exposure pathways through capping of the former landfill and the Groundwater Collection and Treatment System (GCTS) has prevented impacted groundwater from discharging to ground surface. The landfill cap is functioning as intended and has minimized the migration of contaminants to groundwater and eliminated environmental and human exposure.

What, if any, issues have been raised, and what modifications are recommended?

None noted at this time.

1. INTRODUCTION

Greenstar Environmental Solutions, LLC (Greenstar) on behalf of Linde LLC (Linde) has prepared this 2020 Periodic Review Report (PRR) for the Airco Parcel located in the Town of Niagara, New York. As per Section 6.3(b) of DER-10 Technical Guidance for Site Investigation and Remediation, the purpose of the annual PRR is to document the implementation of, and compliance with, site-specific site management requirements. The methods, findings, and conclusions of the review are documented in this report. The report also identifies recommendations for the site for the next annual review period.

2. BACKGROUND

2.1 Site Physical Characteristics

The Airco Parcel is a part of the Vanadium Corporation of America Site which has been placed on the New York State Department of Environmental Conservation (NYSDEC) New York State Registry of Inactive Hazardous Waste Sites. The site location is shown in Figure 1. The Vanadium Site includes three Operable Units (OU), which are aligned in a roughly west to east orientation as shown in Figure 2.

1) OU-1 is a 37-acre parcel owned by SKW Alloys, Inc. (SKW Parcel).
2) OU-2 is a 25-acre parcel owned by Airco Properties, Inc. (Airco Parcel).
3) OU-3 is a 53-acre parcel owned by National Grid (acquired Niagara Mohawk Power Corporation/New York Power Authority) (NMPC/NYPA Parcel).

2.2 Land and Resource Use

The current land use for the site and surrounding areas is for light industrial and commercial uses. The nearest residential areas are located approximately 0.20 miles to the northeast and 0.30 miles to the south. The Airco Parcel itself is completely fenced and gated. A 24-acre modified 6 NYCRR Part 360 cap constructed over the former disposal area as part of an interim remedial measure (IRM) was completed in 2000.

There are no current users of groundwater at the Vanadium Site. Regionally, groundwater yields from overburden deposits are too low for domestic or industrial purposes. The bedrock has the capability to produce higher yields; however, the bedrock groundwater is typically highly mineralized and is not used as a drinking water source in the area.

2.3 Basis of Actions

In 1985, the NYSDEC first listed the entire Vanadium Site as a Class 2a site in the Registry of Inactive Hazardous Waste Disposal Sites in New York (the Registry). Class 2a is a temporary classification assigned to a site that has inadequate and/or insufficient data for inclusion in any of the other classifications. In 1995, the NYSDEC listed the Vanadium Site as a Class 2 site in the Registry. A Class 2 site is a site where the NYSDEC has determined hazardous waste presents a significant threat to the public health or the environment and action is required. The NYSDEC lowered the classification for the Airco Parcel to a Class 4 inactive hazardous waste site on 24 November 2014. This classification indicates the site has been properly closed but requires continued management. This report addresses only the Airco Parcel (OU-2), although information from the other OUs is used when necessary to develop a complete understanding of the issues at the Airco Parcel.

2.4 Basis for Taking Action at The Airco Parcel

The Airco Parcel was historically used to dispose of a wide variety of waste materials derived from the metallurgic industry. Prior to commencement of remedial activities at the Airco Parcel, approximately 80 percent of the site was largely exposed waste and groundwater was discharging to surface water in the eastern and southwest portions of the site. The groundwater contained concentrations of calcium, chromium and hexavalent chromium with pH above background levels.

The remedy selected for the Airco Parcel included installation of a landfill cap to limit infiltration of water into the waste material thereby reducing the amount of impacted groundwater or surface water. Since the Airco Parcel had been permitted as a 6 NYCRR Part 360 landfill, the remedy was required to conform to the provisions of 6 NYCRR Part 360, Solid Waste Management Facilities (NYSDEC 1998).

Ongoing remedial measures at the Airco parcel include operation and maintenance of the cap to prevent direct exposure to waste materials and operation and maintenance of the Groundwater Collection and Treatment System (GCTS) to prevent the release of untreated groundwater. Potential exposure pathways at the Airco Parcel are being addressed through the capping of the landfill, the installation of the fence, and operation and maintenance of the GCTS. Public water is available to adjacent areas surrounding the site.

As noted in the Proposed Remedial Action Plan (PRAP) and Record of Decision (ROD) developed for the Vanadium Site (NYSDEC 2006), the IRM for the Airco Parcel has accomplished the remedial action objectives. The remedial measures have operated and been maintained in a manner consistent with the design and approved Operation, Maintenance, and Monitoring Plans.

The following are required as part of post-closure monitoring and facility maintenance:

- Maintenance of all drainage structures and ditches to prevent ponding of water and erosion of the final landfill soil cap.
- Inspections of the engineered wetland to assess the presence of mosquito larva.
- Maintenance of the soil cover integrity, slopes, cover vegetation, drainage structures, and the perimeter road during the post-closure monitoring and maintenance period.
- Maintenance and sampling of environmental monitoring points during the post-closure period. A Periodic Review Report must be submitted annually to the NYSDEC Division of Solid and Hazardous Materials, Region 9, the State of New York Department of Health in Albany, New York; and to the document repository located at the Town of Niagara Town Clerk's Office.
- Maintenance of the vegetative cover on all exposed final cover material, and adequate measures must be taken to ensure the integrity of the final vegetated cover, topsoil layer, and underlying barrier protection layer.
- Operation and maintenance of the GCTS to effectively mitigate the release of groundwater recharging to surface water in the southwest corner of the Airco Parcel.
- Maintenance of records from all sampling and analysis results.

3. EVALUATE REMEDY PERFORMANCE, EFFECTIVENESS AND PROTECTIVENESS

The 2020 periodic review of the remedy found that the remedy was constructed in accordance with the requirements of the IRM. The remedy is functioning as designed and the exposure pathways have been eliminated through capping of the waste and prevention of releases of untreated groundwater.

Since the site is an unlined landfill, concentrations of Constituents of Concern **(**COCs) in shallow groundwater in contact with waste may remain above some water quality standards. However, the Remedial Action Objectives (RAOs) for the site do not include restoring the groundwater to drinking water standards. The remedy was designed to prevent exposure pathways and to prevent the release of untreated groundwater. The remedy has eliminated the exposure pathways through capping of the former landfill and prevent the release of untreated groundwater through impacted groundwater control.

The remedy is functioning as intended and no modifications to the remedy are necessary. Inspection of the cap indicated no deficiencies. The treatment system is operating as designed and operational data is presented in Attachments C through C.2.

4. IC/EC PLAN COMPLIANCE REPORT

The remedy for the Site includes institutional controls (IC) and engineering controls (EC). The Post-Closure Monitoring and Facility Maintenance Plan[1] includes the following ICs for the site:

- Soil Management Plan which is intended to restrict site usage or excavation activities which would permit exposing the waste layer.
- Site Management Plan which is intended to prevent future development of the site.
- The Operations and Monitoring (O&M) plans, which are sections of the Post-Closure plan, detail the required operations, maintenance, and monitoring activities. This includes an annual engineering inspection of the cap system (See Attachment B) to ensure the cap components maintained and that no penetrations through the cap have occurred.
- Although not discussed in the Post-Closure plan, land use restrictions are also in place and recorded on the deed to prevent future site use and development.

The ECs for the site include the following:

- Landfill Cover System
- Fencing/Access Control
- Groundwater Containment and Treatment System (GCTS)

The ECs are discussed in the Post-Closure plan which specifies the routine inspection, operation and maintenance that is required. The engineering controls each have a specific intended purpose. The landfill capping system is designed to prevent infiltration of precipitation that could mobilize and transport contaminants into the groundwater. The fencing provides site security and limits access to the site reducing the potential of unauthorized personnel from possible exposure to contaminants or to groundwater treatment operations. The GCTS is designed to intercept, collect and treat groundwater that could discharge to the surface and provide an exposure pathway.

Attachments C through C.2 provide a summary of the monthly operations and maintenance details for 2020 which were completed to maintain the system to meet the EC.

The data collected during 2020 demonstrates the IC/ECs in place are meeting their intended purpose. There were no modifications to the ECs during the reporting period other than routine maintenance to the ECs. There are no changes or modifications to the IC/ECs recommended at this time.

1 Greenstar Environmental Solutions, LLC, 2017. Post-Closure Monitoring and Facility Maintenance Plan for the Airco Parcel, Niagara Falls, New York. February

5. MONITORING PLAN COMPLIANCE REPORT

The Post-Closure Monitoring and Facility Maintenance Plan details requirements for site monitoring including periodic GCTS discharge sampling, routine maintenance of the cap and groundwater collection and treatment system and groundwater sampling every five years.

5.1 Monitoring Well Gauging

During 2020 the site monitoring wells and piezometers were not gauged as no groundwater sampling occurred.

In general, groundwater elevations are highest near MW-1B located along the northern property boundary. No significant seasonal changes in groundwater flow direction have been noted.

5.2 Groundwater and Surface Water Monitoring

During 2020 there were no groundwater samples collected. The last sampling even was conducted on September 28th 2016. The next groundwater sampling event is scheduled for September 2021.

Modifications for the collection of surface water samples was approved by the NYSDEC in a letter dated October 28, 2016. The modifications included reducing surface water sampling to quarterly at one location, where the effluent from the treatment system leaves the site in the southwest corner. The sample designation for this location was SS-01 and has been modified to AP-EWE-01 to represent the compliance sampling location of the GCTS effluent. Results from the quarterly sampling can be found in Table 2 and are discussed in Section 6.1.

6. OPERATION & MAINTENANCE (O&M) PLAN COMPLIANCE REPORT

Linde has the responsibility for conducting operation and maintenance activities at the Airco Parcel. These activities are being conducted in accordance with the Post-Closure Monitoring and Facility Maintenance Plan (Greenstar 2017).

The primary remedial activity at the Airco Parcel involved the construction of a modified 6 NYCRR Part 360 cap. The landfill cap was designed to eliminate the flow of water through the landfill by providing an impermeable layer which prevents precipitation from infiltrating into the landfill thereby producing leachate. The cap system effectively removes a major source of the ongoing groundwater contamination by reducing leachate generation. The 2020 activities included operation and maintenance of the treatment system, and inspections and maintenance of the cap and fence around the site.

During 2020 routine operations and maintenance of the GCTS were performed during monthly site visits. Activities performed include flow and discharge data collection, cleaning and calibration of pH probes, cleaning of pressure transmitters, operational parameter adjustments based on observed site conditions, and as needed site maintenance tasks. The replacement of system components, including pumps, pressure transmitters, and pH probes was also completed during the routine visits.

6.1 System Operations and Maintenance (January to December 2020)

The GCTS was operated throughout the period of 1 January to 31 December 2020. System monitoring and data logging were conducted throughout the operation period. Attachment C provides details of any issues encountered and implemented solutions.

During the reporting period, the GCTS operated 100 percent of year processing 554,905 gallons at an average flow rate of 1.1 gallons per minute (gpm). The system utilized the T8 emergency overflow containment pond as necessary during 2020 as detailed in Attachment C. The T8 emergency overflow containment pond is a lined pond where collected leachate is diverted and stored temporarily in the event of an alarm condition that prohibits water from being processed by the GCTS. It allows the system to collect and store untreated water during periods if bypassing the GCTS is required for scheduled or unscheduled shutdowns. There were no uncontrolled releases of untreated groundwater during 2020.

GCTS field sampling occurred monthly during 2020. Samples were collected at various locations within the system to evaluate treatment system performance and compliance with discharge criteria. Samples were collected from the following locations: within the GCTS system at T3B after CO_2 aeration; T6B after treatment via the zero-valence iron tank; after the engineered wetland (T7); and at the point where the drainage swale exits the site in the southwest corner (AP-EWE-01). The samples were analyzed in the field for total chromium and hexavalent chromium using a HACH DR4000® spectrophotometer. The discharge limits for chromium and hexavalent chromium are 0.50 mg/L and 0.11 mg/L, respectively. The HACH DR4000® spectrophotometer field method is EPA-approved for reporting water and wastewater analyses within a detection limit of 0.006 mg/L for hexavalent chromium, and 0.003 mg/L for total chromium.

The GCTS discharge samples were sent for off-site laboratory analysis at a New York State accredited environmental laboratory for required discharge analysis. During the 2020 reporting period, field analysis of the GCTS discharge samples collected from the AP-EWE-01 location in the southwest corner of the site noted no hexavalent chromium or total chromium concentrations in excess of the NYSDEC discharge guidance values of 11 µg/L and 50 µg/L, respectively. Field sampling results for total and hexavalent chromium are summarized in Table 1 and results of the quarterly GCTS discharge samples are summarized in Table 2. The Laboratory data package for the GCTS discharge sampling can be found in Attachment A.

Analytical results for the quarterly discharge sampling were in compliance with NYSDEC discharge guidance values for the first and second quarter sampling events. No discharge from the site occurred in the third or fourth quarter and therefore no sampling was performed.

The field sampling indicated Total and hexavalent chromium levels within acceptable limits. The treatment system is operating as intended and no changes are required.

6.2 GCTS Modifications (January to December 2020)

System modifications and improvements performed during the 2020 annual reporting period included upgrades to the control system including a complete replacement of the main control panel, upgrades to the hardware in the T-6A/B control panel including the T3B VFD, replacement of the pH controller and probes for T-3B and T-6B, installation of a new pH controller and probe in T3A, and replacement of the VFDs in T-1 and the control panel in T-1. New radios will be installed to replace the current radios to improve system connectivity, increase data transmission speeds and limit communication failures.

7. OVERALL PRR CONCLUSIONS AND RECOMMENDATIONS

Based on the 2020 data and the annual site inspection, the cap is functioning as intended by the IRM for the Airco Parcel. The capping of the landfill achieved the RAOs to minimize the migration of contaminants to groundwater and to eliminate environmental and human exposure. There have been no changes in the physical condition of the site that would affect the protectiveness of the remedy. The cap and surrounding area were undisturbed and is operating as designed. The perimeter fence around the site is intact and in good repair. The GCTS is functioning as designed. The GCTS has been collecting, treating and discharging groundwater that has come into contact with the landfill waste to prevent the uncontrolled discharge of impacted groundwater to the surface.

TABLE 1 ROUTINE GCTS FIELD SAMPLING RESULTS
1 JANUARY – 31 DECEMBER 2020
AIRCO PARCEL, TOWN OF NIAGARA, NEW YORK

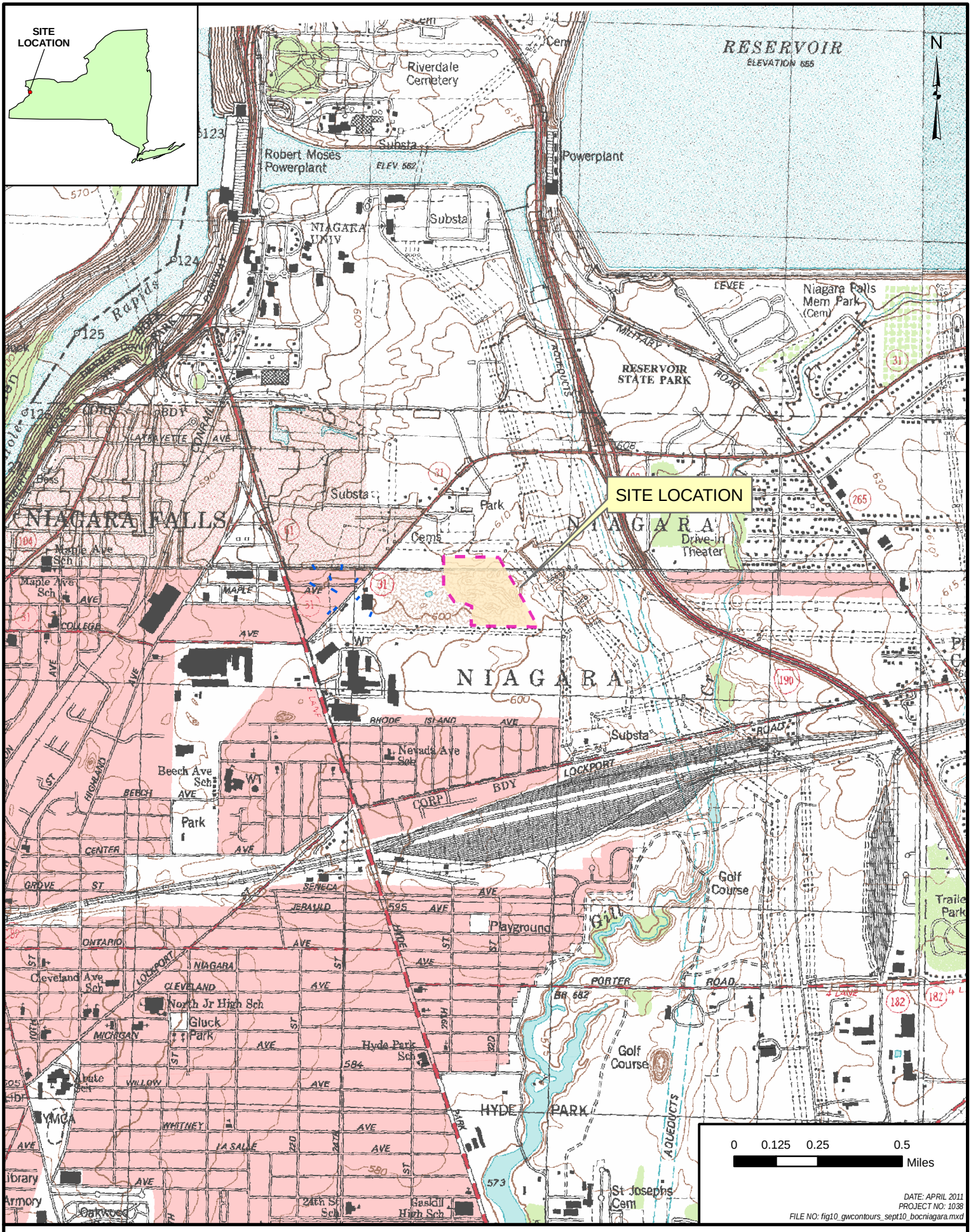
	Calcium Tank 3B		Iron Tank 6B		Engineered Wetland		Southwest Corner	
Date	Total Chromium	Hexavalent Chromium	Total Chromium	Hexavalent Chromium	Total Chromium	Hexavalent Chromium	Total Chromium	Hexavalent Chromium
1/23/20	0 µg/L	3 µg/L	1 µg/L	2 µg/L	1µg/L	2µg/L	0µg/L	0µg/L
2/14/20	NS	NS	NS	NS	NS	NS	NS	NS
3/11/20	0 µg/L	10 µg/L	0 µg/L	0 µg/L	0 µg/L	0 µg/L	10 µg/L	90 µg/L
4/15/20	9 µg/L	10 µg/L	0 µg/L	0 µg/L	3 µg/L	4 µg/L	0 µg/L	1 µg/L
5/28/20	12 µg/L	7 µg/L	9 µg/L	0 µg/L	0 µg/L	0 µg/L	0 µg/L	1 µg/L
6/08/20	11 µg/L	10 µg/L	0 µg/L	0 µg/L	0 µg/L	2 µg/L	No Flow	No Flow
7/10/20	NA	NA	NA	NA	NA	NA	NA	NA
8/18/20	12µg/L	0µg/L	10µg/L	0µg/L	No Flow	No Flow	No Flow	No Flow
9/29/20	12 µg/L	1 µg/L	14 µg/L	2 µg/L	No Flow	No Flow	No Flow	No Flow
10/14/20	10 µg/L	0 µg/L	10 µg/L	0 µg/L	No Flow	No Flow	No Flow	No Flow
11/19/20	12 µg/L	0 µg/L	10 µg/L	0 µg/L	No Flow	No Flow	No Flow	No Flow
12/21/20	23 µg/L	10 µg/L	0 µg/L	9 µg/L	No Flow	No Flow	No Flow	No Flow

NOTE: NS – No sample analyzed due to frozen conditions.
NA – No sample analyzed due system downtime for system upgrades.
Bold field sample results were in excess of SPDES discharge guidance values.
Field samples analyzed using a HACH DR4000© Spectrophotometer.
Hach Methods 8023 for Hexavalent Chromium and Hach Method 8084 for Total Chromium.

TABLE 2
QUARTERLY GCTS DISCHARGE SAMPLING RESULTS
1 JANUARY – 31 DECEMBER 2020
AIRCO PARCEL, TOWN OF NIAGARA, NEW YORK

Parameter	11 March 2020	22 April 2020	3rd Quarter	4th Quarter	New York State Department of Environmental Conservation Discharge Criteria
pH	7.8	7.9	NS	NS	6.5-8.5
Total suspended solids	3.8	1.5	NS	NS	10 mg/L
Dissolved Oxygen	11	12	NS	NS	>7 mg/L
Ammonia as N	0.110	0.039J	NS	NS	5.0 mg/L
Total Kjeldahl nitrogen	0.642	0.540	NS	NS	Monitor (mg/L)
Total Recoverable Phenolics	<0.006U	<0.006U	NS	NS	0.008 mg/L
Biochemical oxygen demand	<2.0U	<2.0U	NS	NS	5.0 mg/L
1,1-Dichloroethane	<0.40U	<0.40U	NS	NS	5.0 µg/L
Trichloroethene	<0.33U	<0.33U	NS	NS	5.0 µg/L
Nickel	<0.00055U	<0.00055U	NS	NS	0.07 mg/L
Copper	0.00085J	0.00114	NS	NS	0.0147 mg/L
Barium	0.03796	0.04258	NS	NS	2 mg/L
Total chromium	<.00017U	0.00064J	NS	NS	0.1 mg/L
Hexavalent chromium	<0.003U	<0.003U	NS	NS	0.011 mg/L
Iron	<0.0191U	0.0853	NS	NS	0.3 mg/L
Selenium	<0.00173U	<0.00173U	NS	NS	0.0046 mg/L
Thallium	<0.00014U	<0.00014U	NS	NS	0.004 mg/L
Zinc	0.01543	0.01874	NS	NS	0.115 mg/L
Nitrate as N	0.076J	0.044J	NS	NS	Monitor (mg/L-N)
Nitrite as N	0.026J	0.016J	NS	NS	Monitor (mg/L-N)
Chemical oxygen demand	24	<6U	NS	NS	40 mg/L
Total dissolved solids	330	360	NS	NS	Monitor (mg/L)

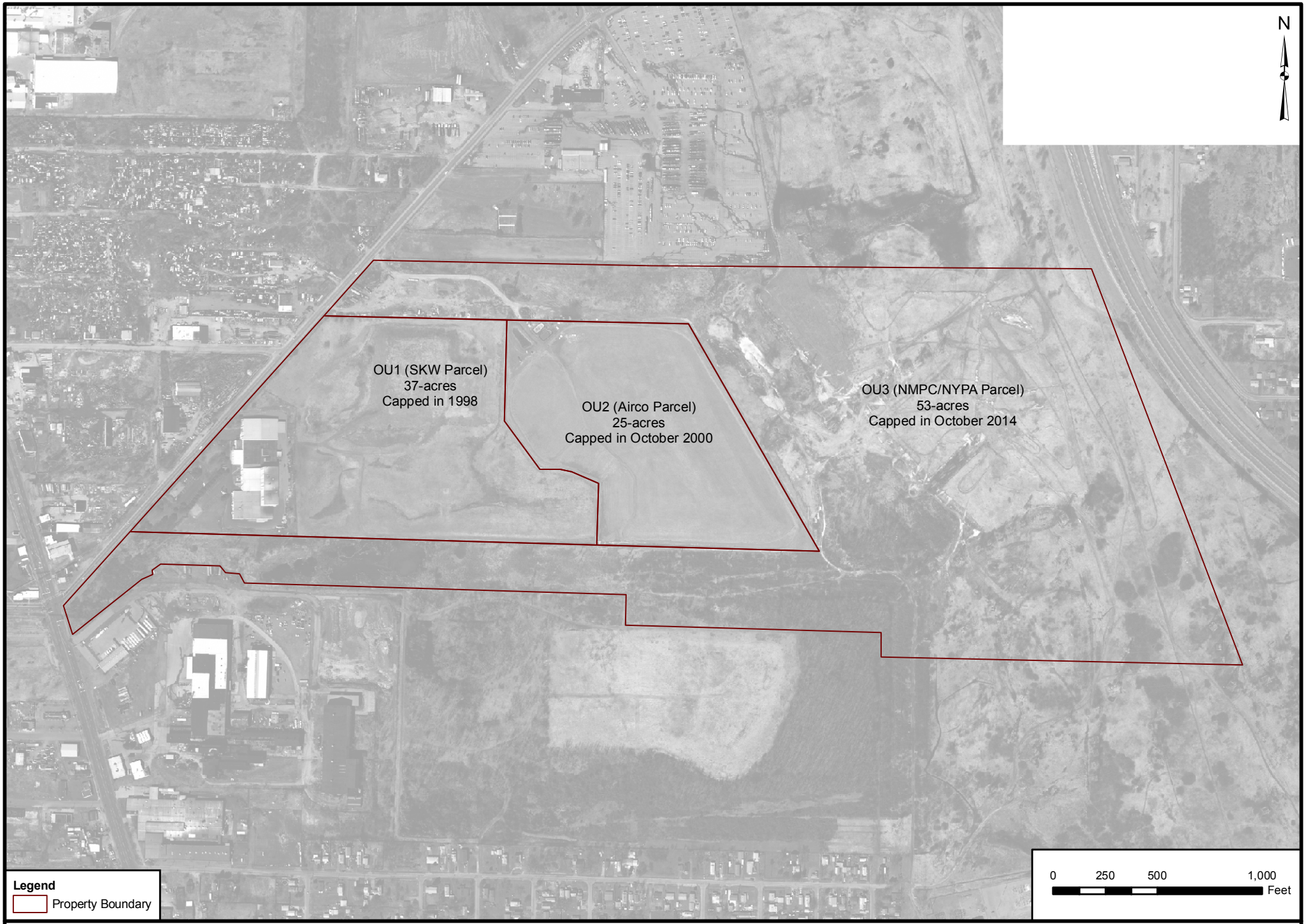
Values in **BOLD** were out of the discharge guidance values range for that parameter.
U = Compound not detected at the minimum laboratory detection limit shown.
J = Result is less than the reporting limit but greater than or equal to the minimum detection limit and the concentration is an approximate value.



GREENSTAR
Environmental Solutions, LLC

AIRCO PARCEL
NIAGARA FALLS, NEW YORK

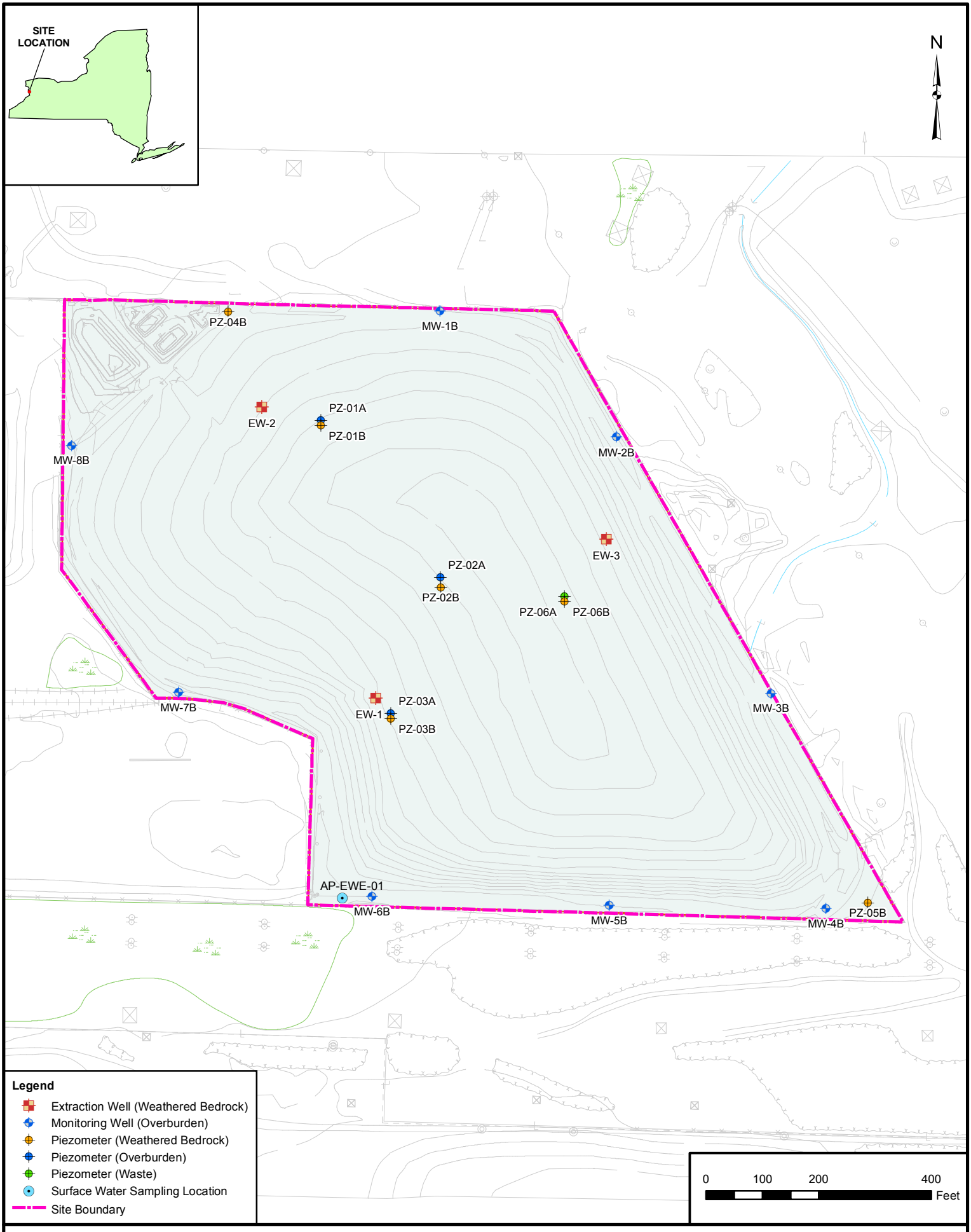
FIGURE 1
SITE LOCATION



GREENSTAR
Environmental Solutions, LLC

AIRCO PARCEL
NIAGARA FALLS, NEW YORK

FIGURE 2
VANADIUM SITE
OPERABLE UNITS



GREENSTAR Environmental Solutions, LLC

AIRCO PARCEL
NIAGARA FALLS, NEW YORK

FIGURE 3
SITE MAP

Attachment A

Laboratory Analytical Results
Quarterly Discharge Sampling

ANALYTICAL REPORT

Lab Number:	L2010942
Client:	Greenstar Environmental Solutions, LLC 6 Gellatly Drive Wappingers Falls, NY 12590
ATTN:	Chip McLeod
Phone:	(845) 223-9944
Project Name:	SPDES
Project Number:	1047-2020
Report Date:	03/19/20

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2010942
Report Date: 03/19/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2010942-01	AP-EWG-01	WATER	NIAGARA FALLS, NY	03/11/20 13:20	03/11/20

Project Name:	SPDES	**Lab Number:**	L2010942
Project Number:	1047-2020	**Report Date:**	03/19/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: SPDES **Lab Number:** L2010942
Project Number: 1047-2020 **Report Date:** 03/19/20

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1350789-3 MS recovery, performed on L2010942-01, is outside the acceptance criteria for silicon (230%). A post digestion spike was performed and yielded an unacceptable recovery for silicon (4%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

The WG1350771-4 Laboratory Duplicate RPD for manganese (55%), performed on L2010942-01, is above the acceptance criteria; however, the sample and duplicate results are less than five times the reporting limit. Therefore, the RPD is valid.

Dissolved Oxygen

L2010942-01 was analyzed with the method required holding time exceeded.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Caitlin Walukevich

Title: Technical Director/Representative Date: 03/19/20

ORGANICS

VOLATILES

Project Name: SPDES
Project Number: 1047-2020
Lab Number: L2010942
Report Date: 03/19/20

SAMPLE RESULTS

Lab ID: L2010942-01
Client ID: AP-EWG-01
Sample Location: NIAGARA FALLS, NY

Date Collected: 03/11/20 13:20
Date Received: 03/11/20
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1
Analytical Date: 03/15/20 20:23
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,1-Dichloroethane	ND		ug/l	1.5	0.40	1
Trichloroethene	0.33	J	ug/l	1.0	0.33	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	111		60-140
Fluorobenzene	103		60-140
4-Bromofluorobenzene	103		60-140

Project Name: SPDES
Project Number: 1047-2020
Lab Number: L2010942
Report Date: 03/19/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1
Analytical Date: 03/15/20 13:40
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1352443-4					
1,1-Dichloroethane	ND		ug/l	1.5	0.40
Trichloroethene	ND		ug/l	1.0	0.33

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	109		60-140
Fluorobenzene	105		60-140
4-Bromofluorobenzene	99		60-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2010942
Report Date: 03/19/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1352443-3								
1,1-Dichloroethane	115		-		50-150	-		49
Trichloroethene	115		-		65-135	-		48

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Pentafluorobenzene	107				60-140
Fluorobenzene	106				60-140
4-Bromofluorobenzene	100				60-140

METALS

Project Name: SPDES
Project Number: 1047-2020
Lab Number: L2010942
Report Date: 03/19/20

SAMPLE RESULTS

Lab ID: L2010942-01
Client ID: AP-EWG-01
Sample Location: NIAGARA FALLS, NY
Sample Depth:
Matrix: Water

Date Collected: 03/11/20 13:20
Date Received: 03/11/20
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Barium, Total	0.03796		mg/l	0.00050	0.00017	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Copper, Total	0.00085	J	mg/l	0.00100	0.00038	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Magnesium, Total	19.8		mg/l	0.0700	0.0242	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Manganese, Total	0.00261		mg/l	0.00100	0.00044	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Silicon, Total	3.47		mg/l	0.500	0.007	1	03/13/20 19:57	03/18/20 23:34	EPA 3005A	1,6010D	LC
Sodium, Total	8.20		mg/l	0.150	0.0293	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00100	0.00014	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM
Zinc, Total	0.01543		mg/l	0.01000	0.00341	1	03/13/20 19:44	03/16/20 20:00	EPA 3005A	1,6020B	AM

Project Name: SPDES
Project Number: 1047-2020
Lab Number: L2010942
Report Date: 03/19/20

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1350771-1										
Barium, Total	ND		mg/l	0.00050	0.00017	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Sodium, Total	ND		mg/l	0.150	0.0293	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Thallium, Total	ND		mg/l	0.00100	0.00014	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	03/13/20 19:44	03/16/20 18:42	1,6020B	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1350789-1										
Silicon, Total	0.013	J	mg/l	0.500	0.007	1	03/13/20 19:57	03/18/20 23:04	1,6010D	LC

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: SPDES

Project Number: 1047-2020

Lab Number: L2010942

Report Date: 03/19/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1350771-2								
Barium, Total	104		-		80-120	-		
Cadmium, Total	111		-		80-120	-		
Chromium, Total	102		-		80-120	-		
Copper, Total	101		-		80-120	-		
Iron, Total	117		-		80-120	-		
Lead, Total	104		-		80-120	-		
Magnesium, Total	110		-		80-120	-		
Manganese, Total	108		-		80-120	-		
Nickel, Total	108		-		80-120	-		
Selenium, Total	108		-		80-120	-		
Sodium, Total	105		-		80-120	-		
Thallium, Total	102		-		80-120	-		
Zinc, Total	115		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1350789-2								
Silicon, Total	98		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2010942
Report Date: 03/19/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1350771-3 QC Sample: L2010942-01 Client ID: AP-EWG-01												
Barium, Total	0.03796	2	2.209	108		-	-		75-125	-		20
Cadmium, Total	ND	0.051	0.06046	118		-	-		75-125	-		20
Chromium, Total	ND	0.2	0.2104	105		-	-		75-125	-		20
Copper, Total	0.00085J	0.25	0.2483	99		-	-		75-125	-		20
Iron, Total	ND	1	1.18	118		-	-		75-125	-		20
Lead, Total	ND	0.51	0.5482	107		-	-		75-125	-		20
Magnesium, Total	19.8	10	30.6	108		-	-		75-125	-		20
Manganese, Total	0.00261	0.5	0.5293	105		-	-		75-125	-		20
Nickel, Total	ND	0.5	0.5089	102		-	-		75-125	-		20
Selenium, Total	ND	0.12	0.137	114		-	-		75-125	-		20
Sodium, Total	8.20	10	18.7	105		-	-		75-125	-		20
Thallium, Total	ND	0.12	0.1290	108		-	-		75-125	-		20
Zinc, Total	0.01543	0.5	0.5819	113		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1350789-3 QC Sample: L2010942-01 Client ID: AP-EWG-01												
Silicon, Total	3.47	1	5.77	**230**	Q	-	-		75-125	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2010942
Report Date: 03/19/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1350771-4 QC Sample: L2010942-01 Client ID: AP-EWG-01						
Barium, Total	0.03796	0.03944	mg/l	4		20
Cadmium, Total	ND	ND	mg/l	NC		20
Chromium, Total	ND	ND	mg/l	NC		20
Copper, Total	0.00085J	0.00079J	mg/l	NC		20
Iron, Total	ND	ND	mg/l	NC		20
Lead, Total	ND	ND	mg/l	NC		20
Magnesium, Total	19.8	18.5	mg/l	7		20
Manganese, Total	0.00261	0.00148	mg/l	**55**	Q	20
Nickel, Total	ND	ND	mg/l	NC		20
Selenium, Total	ND	ND	mg/l	NC		20
Sodium, Total	8.20	7.62	mg/l	7		20
Thallium, Total	ND	0.00020J	mg/l	NC		20
Zinc, Total	0.01543	0.01436	mg/l	7		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1350789-4 QC Sample: L2010942-01 Client ID: AP-EWG-01						
Silicon, Total	3.47	3.41	mg/l	2		20

INORGANICS
&
MISCELLANEOUS

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2010942
Report Date: 03/19/20

SAMPLE RESULTS

Lab ID: L2010942-01
Client ID: AP-EWG-01
Sample Location: NIAGARA FALLS, NY

Date Collected: 03/11/20 13:20
Date Received: 03/11/20
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Dissolved	330		mg/l	10	3.1	1	-	03/13/20 12:00	121,2540C	DW
Solids, Total Suspended	3.8		mg/l	1.3	NA	1.3	-	03/13/20 09:05	121,2540D	EM
pH (H)	7.8		SU	-	NA	1	-	03/12/20 10:44	1,9040C	JA
Nitrogen, Ammonia	0.110		mg/l	0.075	0.024	1	03/12/20 19:00	03/16/20 19:06	121,4500NH3-BH	AT
Nitrogen, Nitrite	0.026	J	mg/l	0.050	0.014	1	-	03/12/20 10:04	121,4500NO3-F	MR
Nitrogen, Nitrate	0.076	J	mg/l	0.100	0.032	1	-	03/12/20 10:04	121,4500NO3-F	MR
Nitrogen, Total Kjeldahl	0.642		mg/l	0.300	0.066	1	03/12/20 18:49	03/13/20 23:19	121,4500NH3-H	AT
Dissolved Oxygen	14.		mg/l	0.10	0.10	1	-	03/12/20 13:40	121,4500O-C	JT
Sulfate	24.		mg/l	10	1.4	1	03/16/20 18:05	03/16/20 19:00	121,4500SO4-E	DP
Chemical Oxygen Demand	24.		mg/l	20	6.0	1	03/12/20 09:00	03/12/20 12:35	121,5220D	SD
BOD, 5 day	ND		mg/l	2.0	NA	1	03/13/20 06:05	03/18/20 00:20	121,5210B	TE
Phenolics, Total	ND		mg/l	0.030	0.016	1	03/13/20 10:01	03/13/20 15:20	4,420.1	BR
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	03/12/20 09:30	03/12/20 10:32	1,7196A	MA

Project Name: SPDES
Project Number: 1047-2020
Lab Number: L2010942
Report Date: 03/19/20

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1350073-1										
Nitrogen, Nitrite	ND		mg/l	0.050	0.014	1	-	03/12/20 09:50	121,4500NO3-F	MR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1350077-1										
Nitrogen, Nitrate	ND		mg/l	0.100	0.032	1	-	03/12/20 09:45	121,4500NO3-F	MR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1350126-1										
Chemical Oxygen Demand	ND		mg/l	20	6.0	1	03/12/20 09:00	03/12/20 12:19	121,5220D	SD
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1350202-1										
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	03/12/20 09:30	03/12/20 10:29	1,7196A	MA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1350298-1										
Nitrogen, Total Kjeldahl	0.130	J	mg/l	0.300	0.022	1	03/12/20 18:49	03/13/20 23:16	121,4500NH3-H	AT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1350424-1										
Nitrogen, Ammonia	ND		mg/l	0.075	0.024	1	03/12/20 19:00	03/16/20 18:50	121,4500NH3-BH	AT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1350552-1										
Solids, Total Dissolved	ND		mg/l	10	3.1	1	-	03/13/20 12:00	121,2540C	DW
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1350556-1										
Solids, Total Suspended	ND		mg/l	1.0	NA	1	-	03/13/20 09:05	121,2540D	EM
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1350644-1										
BOD, 5 day	ND		mg/l	2.0	NA	1	03/13/20 06:05	03/18/20 00:20	121,5210B	TE
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1350654-1										
Phenolics, Total	ND		mg/l	0.030	0.016	1	03/13/20 10:01	03/13/20 14:42	4,420.1	BR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1351642-1										
Sulfate	1.8	J	mg/l	10	1.4	1	03/16/20 18:05	03/16/20 19:00	121,4500SO4-E	DP

Lab Control Sample Analysis

Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2010942
Report Date: 03/19/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1350073-2								
Nitrogen, Nitrite	100		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1350077-2								
Nitrogen, Nitrate	97		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1350126-2								
Chemical Oxygen Demand	107		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1350166-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1350202-2								
Chromium, Hexavalent	102		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1350298-2								
Nitrogen, Total Kjeldahl	102		-		78-122	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1350424-2								
Nitrogen, Ammonia	98		-		80-120	-		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2010942
Report Date: 03/19/20

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1350552-2					
Solids, Total Dissolved	89	-	80-120	-	
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1350644-2					
BOD, 5 day	106	-	85-115	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1350654-2					
Phenolics, Total	95	-	70-130	-	
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1351642-2					
Sulfate	90	-	90-110	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2010942
Report Date: 03/19/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350073-4 QC Sample: L2010959-10 Client ID: MS Sample												
Nitrogen, Nitrite	0.036J	4	2.72	**68**	Q	-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350077-4 QC Sample: L2010992-01 Client ID: MS Sample												
Nitrogen, Nitrate	0.040J	4	4.00	100		-	-		83-113	-		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350126-3 QC Sample: L2010254-05 Client ID: MS Sample												
Chemical Oxygen Demand	240	238	440	86		-	-		84-120	-		12
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350202-4 QC Sample: L2010942-01 Client ID: AP-EWG-01												
Chromium, Hexavalent	ND	0.1	0.107	107		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350298-4 QC Sample: L2010719-01 Client ID: MS Sample												
Nitrogen, Total Kjeldahl	0.694	8	8.12	93		-	-		77-111	-		24
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350424-4 QC Sample: L2010959-01 Client ID: MS Sample												
Nitrogen, Ammonia	0.032J	4	3.62	90		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350644-4 QC Sample: L2010833-01 Client ID: MS Sample												
BOD, 5 day	3.9	100	81	77		-	-		50-145	-		35
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350654-4 QC Sample: L2010942-01 Client ID: AP-EWG-01												
Phenolics, Total	ND	0.4	0.37	92		-	-		70-130	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1351642-4 QC Sample: L2010764-01 Client ID: MS Sample												
Sulfate	6.2J	20	28	140		-	-		55-147	-		14

Lab Duplicate Analysis
Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2010942
Report Date: 03/19/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350073-3 QC Sample: L2010959-10 Client ID: DUP Sample						
Nitrogen, Nitrite	0.036J	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350077-3 QC Sample: L2010992-01 Client ID: DUP Sample						
Nitrogen, Nitrate	0.040J	ND	mg/l	NC		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350126-4 QC Sample: L2010254-05 Client ID: DUP Sample						
Chemical Oxygen Demand	240	230	mg/l	4		12
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350166-2 QC Sample: L2010942-01 Client ID: AP-EWG-01						
pH (H)	7.8	7.6	SU	3		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350202-3 QC Sample: L2010942-01 Client ID: AP-EWG-01						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350298-3 QC Sample: L2010719-01 Client ID: DUP Sample						
Nitrogen, Total Kjeldahl	0.694	0.715	mg/l	3		24
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350331-1 QC Sample: L2011095-02 Client ID: DUP Sample						
Dissolved Oxygen	0.10	0.10	mg/l	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350424-3 QC Sample: L2010959-01 Client ID: DUP Sample						
Nitrogen, Ammonia	0.032J	0.030J	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350552-3 QC Sample: L2010766-01 Client ID: DUP Sample						
Solids, Total Dissolved	13000	13000	mg/l	0		10

Lab Duplicate Analysis

Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2010942
Report Date: 03/19/20

Parameter	Native Sample	Duplicate Sample	Units	RPD		RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350556-2 QC Sample: L2010922-01 Client ID: DUP Sample						
Solids, Total Suspended	120	120	mg/l	0		29
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350644-3 QC Sample: L2010833-01 Client ID: DUP Sample						
BOD, 5 day	3.9	2.6	mg/l	**40**	Q	35
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1350654-3 QC Sample: L2010942-01 Client ID: AP-EWG-01						
Phenolics, Total	ND	0.032	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1351642-3 QC Sample: L2010764-01 Client ID: DUP Sample						
Sulfate	6.2J	6.2J	mg/l	NC		14

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2010942
Report Date: 03/19/20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2010942-01A	Vial Na2S2O3 preserved	A	NA		3.4	Y	Absent		624.1(7)
L2010942-01B	Vial Na2S2O3 preserved	A	NA		3.4	Y	Absent		624.1(7)
L2010942-01C	Vial Na2S2O3 preserved	A	NA		3.4	Y	Absent		624.1(7)
L2010942-01D	Plastic 250ml unpreserved	A	7	7	3.4	Y	Absent		HEXCR-7196(1)
L2010942-01E	Plastic 250ml HNO3 preserved	A	<2	<2	3.4	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),NI-6020T(180),CR-6020T(180),ZN-6020T(180),CU-6020T(180),NA-6020T(180),SI-TI(180),PB-6020T(180),MN-6020T(180),CD-6020T(180),MG-6020T(180)
L2010942-01F	Plastic 500ml H2SO4 preserved	A	<2	<2	3.4	Y	Absent		TKN-4500(28),COD-5220(28),NH3-4500(28)
L2010942-01G	Plastic 950ml unpreserved	A	7	7	3.4	Y	Absent		SO4-4500(28),PH-9040(1),NO3-4500(2),NO2-4500NO3(2),BOD-5210(2),TDS-2540(7)
L2010942-01H	Plastic 950ml unpreserved	A	7	7	3.4	Y	Absent		TSS-2540-LOW(7)
L2010942-01I	BOD bottle Powder Pillow preserved	A	NA		3.4	Y	Absent		DO-4500(.3)
L2010942-01J	BOD bottle Powder Pillow preserved	A	NA		3.4	Y	Absent		DO-4500(.3)
L2010942-01K	Amber 950ml H2SO4 preserved	A	<2	<2	3.4	Y	Absent		TPHENOL-420(28)

*Values in parentheses indicate holding time in days

Project Name:	SPDES	**Lab Number:**	L2010942
Project Number:	1047-2020	**Report Date:**	03/19/20

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: DU Report with 'J' Qualifiers

Project Name:	SPDES	**Lab Number:**	L2010942
Project Number:	1047-2020	**Report Date:**	03/19/20

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration

Report Format: DU Report with 'J' Qualifiers

Project Name:	SPDES	**Lab Number:**	L2010942
Project Number:	1047-2020	**Report Date:**	03/19/20

Data Qualifiers

Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers

Project Name:	SPDES	**Lab Number:**	L2010942
Project Number:	1047-2020	**Report Date:**	03/19/20

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

4 Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020. Revised March 1983.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

128 Method 624.1: Purgeables by GC/MS, EPA 821-R-16-008, December 2016.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
EPA TO-12 Non-methane organics
EPA 3C Fixed gases
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 3/12/20

ALPHA Job #: L2010942

Client Information

Client: Greenstar
Address: 6 Gellatly Drive
Wappingers Falls, NY 12590
Phone: 845-223-9944
Fax:
Email: cmcleod@greenstarsolutions.com

Project Information

Project Name: SPDES
Project Location: Niagara Falls, NY
Project # 1047-2020
(Use Project name as Project #) ☐
Project Manager: Chip McLeod
ALPHAQuote #:

Turn-Around Time

Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement

☐ NY TOGS ☑ NY Part 375
☑ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☑ Other: 24-136
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information

☐ Same as Client Info
PO #

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other: NA

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

*metals-NI, CU, BA, CR, FE, SE, TL, ZN, SI, CD, PB, MG, MN, NA **VOC-1,1-dichloroethane, trichloroethene

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	T. Phenol	Dissolved Oxygen	TSS	T. Metals*	NH3/TKN/COD	VOC**	CR+6, pH, TDS, BOD	SO4, NO3, NO2	Sample Specific Comments	Total Bottles
10942-01	AP-EWG-01	3/11/20	1320	AWQ	OM	X	X	X	X	X	X	X	X		11

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type	G	O	P	P	P	P	P	
Preservative	D		A	C	D	A	A	

Relinquished By:	Date/Time	Received By:	Date/Time
	3/11/20 1320	AMC	3/11/20 1453
AMC	3/11/20 1515		3/12/20 0820

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS.

Form No: 01-25 (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2015877
Client:	Greenstar Environmental Solutions, LLC 6 Gellatly Drive Wappingers Falls, NY 12590
ATTN:	Chip McLeod
Phone:	(845) 223-9944
Project Name:	SPDES
Project Number:	1047-2020
Report Date:	04/22/20

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2015877
Report Date: 04/22/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2015877-01	AP-EWE-01	WATER	NIAGARA FALLS, NY	04/15/20 14:00	04/15/20

Project Name:	SPDES	**Lab Number:**	L2015877
Project Number:	1047-2020	**Report Date:**	04/22/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: SPDES **Lab Number:** L2015877
Project Number: 1047-2020 **Report Date:** 04/22/20

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Dissolved Oxygen

L2015877-01 was analyzed with the method required holding time exceeded.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Caitlin Walukevich

Title: Technical Director/Representative Date: 04/22/20

ORGANICS

VOLATILES

Project Name: SPDES
Project Number: 1047-2020
Lab Number: L2015877
Report Date: 04/22/20

SAMPLE RESULTS

Lab ID: L2015877-01
Client ID: AP-EWE-01
Sample Location: NIAGARA FALLS, NY
Date Collected: 04/15/20 14:00
Date Received: 04/15/20
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 128,624.1
Analytical Date: 04/16/20 21:14
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,1-Dichloroethane	ND		ug/l	1.5	0.40	1
Trichloroethene	ND		ug/l	1.0	0.33	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	106		60-140
Fluorobenzene	102		60-140
4-Bromofluorobenzene	112		60-140

Project Name: SPDES
Project Number: 1047-2020
Lab Number: L2015877
Report Date: 04/22/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 128,624.1
Analytical Date: 04/16/20 15:39
Analyst: GT

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1362123-4					
1,1-Dichloroethane	ND		ug/l	1.5	0.40
Trichloroethene	ND		ug/l	1.0	0.33

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	115		60-140
Fluorobenzene	107		60-140
4-Bromofluorobenzene	102		60-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: SPDES

Project Number: 1047-2020

Lab Number: L2015877

Report Date: 04/22/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1362123-3								
1,1-Dichloroethane	110		-		50-150	-		49
Trichloroethene	115		-		65-135	-		48

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Pentafluorobenzene	114				60-140
Fluorobenzene	108				60-140
4-Bromofluorobenzene	103				60-140

METALS

Project Name: SPDES
Project Number: 1047-2020
Lab Number: L2015877
Report Date: 04/22/20

SAMPLE RESULTS

Lab ID: L2015877-01
Client ID: AP-EWE-01
Sample Location: NIAGARA FALLS, NY
Sample Depth:
Matrix: Water

Date Collected: 04/15/20 14:00
Date Received: 04/15/20
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Barium, Total	0.04258		mg/l	0.00050	0.00017	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Chromium, Total	0.00064	J	mg/l	0.00100	0.00017	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Copper, Total	0.00114		mg/l	0.00100	0.00038	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Iron, Total	0.0853		mg/l	0.0500	0.0191	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Magnesium, Total	19.4		mg/l	0.0700	0.0242	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Manganese, Total	0.00871		mg/l	0.00100	0.00044	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Silicon, Total	3.71		mg/l	0.500	0.007	1	04/16/20 15:33	04/21/20 12:06	EPA 3005A	1,6010D	LC
Sodium, Total	9.97		mg/l	0.100	0.0293	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM
Zinc, Total	0.01874		mg/l	0.01000	0.00341	1	04/16/20 11:25	04/21/20 12:21	EPA 3005A	1,6020B	AM

Project Name: SPDES
Project Number: 1047-2020
Lab Number: L2015877
Report Date: 04/22/20

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1361719-1										
Barium, Total	ND		mg/l	0.00050	0.00017	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Manganese, Total	ND		mg/l	0.00100	0.00044	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	04/16/20 11:25	04/21/20 08:47	1,6020B	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1361792-1										
Silicon, Total	ND		mg/l	0.500	0.007	1	04/16/20 15:33	04/21/20 11:38	1,6010D	LC

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis

Batch Quality Control

Project Name: SPDES

Project Number: 1047-2020

Lab Number: L2015877

Report Date: 04/22/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1361719-2								
Barium, Total	103		-		80-120	-		
Cadmium, Total	105		-		80-120	-		
Chromium, Total	100		-		80-120	-		
Copper, Total	97		-		80-120	-		
Iron, Total	114		-		80-120	-		
Lead, Total	106		-		80-120	-		
Magnesium, Total	109		-		80-120	-		
Manganese, Total	105		-		80-120	-		
Nickel, Total	102		-		80-120	-		
Selenium, Total	105		-		80-120	-		
Sodium, Total	104		-		80-120	-		
Thallium, Total	104		-		80-120	-		
Zinc, Total	106		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1361792-2								
Silicon, Total	87		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2015877
Report Date: 04/22/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1361719-3 QC Sample: L2015722-01 Client ID: MS Sample												
Barium, Total	0.6186	2	2.544	96		-	-		75-125	-		20
Cadmium, Total	0.00348	0.051	0.05436	100		-	-		75-125	-		20
Chromium, Total	0.1168	0.2	0.2955	89		-	-		75-125	-		20
Copper, Total	0.5694	0.25	0.7689	80		-	-		75-125	-		20
Iron, Total	45.7	1	41.0	**0**	Q	-	-		75-125	-		20
Lead, Total	0.8930	0.51	1.370	94		-	-		75-125	-		20
Magnesium, Total	5.04	10	14.8	98		-	-		75-125	-		20
Manganese, Total	0.2813	0.5	0.7446	93		-	-		75-125	-		20
Nickel, Total	0.05440	0.5	0.5149	92		-	-		75-125	-		20
Selenium, Total	ND	0.12	0.0230J	**19**	Q	-	-		75-125	-		20
Sodium, Total	855.	10	814	**0**	Q	-	-		75-125	-		20
Thallium, Total	ND	0.12	0.1207	100		-	-		75-125	-		20
Zinc, Total	1.326	0.5	1.777	90		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1361792-3 QC Sample: L2015903-01 Client ID: MS Sample												
Silicon, Total	5.36	1	6.34	98		-	-		75-125	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2015877
Report Date: 04/22/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1361719-4 QC Sample: L2015722-01 Client ID: DUP Sample						
Barium, Total	0.6186	0.6339	mg/l	2		20
Cadmium, Total	0.00348	0.00357	mg/l	3		20
Chromium, Total	0.1168	0.1198	mg/l	3		20
Copper, Total	0.5694	0.5886	mg/l	3		20
Iron, Total	45.7	46.2	mg/l	1		20
Lead, Total	0.8930	0.9265	mg/l	4		20
Magnesium, Total	5.04	4.97	mg/l	1		20
Manganese, Total	0.2813	0.2828	mg/l	1		20
Nickel, Total	0.05440	0.05506	mg/l	1		20
Selenium, Total	ND	ND	mg/l	NC		20
Sodium, Total	855.	872	mg/l	2		20
Thallium, Total	ND	0.00163J	mg/l	NC		20
Zinc, Total	1.326	1.349	mg/l	2		20

INORGANICS
&
MISCELLANEOUS

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2015877
Report Date: 04/22/20

SAMPLE RESULTS

Lab ID: L2015877-01
Client ID: AP-EWE-01
Sample Location: NIAGARA FALLS, NY

Date Collected: 04/15/20 14:00
Date Received: 04/15/20
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total Dissolved	360		mg/l	10	3.1	1	-	04/20/20 10:45	121,2540C	DW
Solids, Total Suspended	1.5		mg/l	1.0	NA	1	-	04/17/20 11:21	121,2540D	EM
pH (H)	7.9		SU	-	NA	1	-	04/16/20 07:39	1,9040C	JA
Nitrogen, Ammonia	0.039	J	mg/l	0.075	0.024	1	04/16/20 16:43	04/20/20 21:12	121,4500NH3-BH	AT
Nitrogen, Nitrite	0.016	J	mg/l	0.050	0.014	1	-	04/16/20 09:07	121,4500NO3-F	MR
Nitrogen, Nitrate	0.044	J	mg/l	0.100	0.032	1	-	04/16/20 09:07	121,4500NO3-F	MR
Nitrogen, Total Kjeldahl	0.540		mg/l	0.300	0.066	1	04/16/20 12:20	04/16/20 20:05	121,4500NH3-H	AT
Dissolved Oxygen	12.		mg/l	0.10	0.10	1	-	04/16/20 09:30	121,4500O-C	JT
Sulfate	19.		mg/l	10	1.4	1	04/16/20 09:20	04/16/20 09:20	121,4500SO4-E	MV
Chemical Oxygen Demand	ND		mg/l	20	6.0	1	04/16/20 16:15	04/16/20 20:27	121,5220D	TL
BOD, 5 day	ND		mg/l	2.0	NA	1	04/16/20 10:55	04/21/20 08:30	121,5210B	AA
Phenolics, Total	ND		mg/l	0.030	0.006	1	04/17/20 04:45	04/17/20 08:34	4,420.1	MV
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	04/16/20 07:45	04/16/20 08:13	1,7196A	JA

Project Name: SPDES
Project Number: 1047-2020
Lab Number: L2015877
Report Date: 04/22/20

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1361548-1										
Nitrogen, Nitrate	ND		mg/l	0.100	0.032	1	-	04/16/20 06:09	121,4500NO3-F	MR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1361549-1										
Nitrogen, Nitrite	ND		mg/l	0.050	0.014	1	-	04/16/20 05:21	121,4500NO3-F	MR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1361631-1										
Sulfate	1.5	J	mg/l	10	1.4	1	04/16/20 09:20	04/16/20 09:20	121,4500SO4-E	MV
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1361639-1										
Chromium, Hexavalent	ND		mg/l	0.010	0.003	1	04/16/20 07:45	04/16/20 08:10	1,7196A	JA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1361702-1										
Nitrogen, Total Kjeldahl	ND		mg/l	0.300	0.022	1	04/16/20 12:20	04/16/20 20:02	121,4500NH3-H	AT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1361717-1										
BOD, 5 day	ND		mg/l	2.0	NA	1	04/16/20 10:55	04/21/20 08:30	121,5210B	AA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1361829-1										
Chemical Oxygen Demand	ND		mg/l	20	6.0	1	04/16/20 16:15	04/16/20 20:25	121,5220D	TL
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1361850-1										
Nitrogen, Ammonia	ND		mg/l	0.075	0.024	1	04/16/20 16:43	04/20/20 21:00	121,4500NH3-BH	AT
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1361964-1										
Phenolics, Total	ND		mg/l	0.030	0.006	1	04/17/20 04:45	04/17/20 08:21	4,420.1	MV
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1362009-1										
Solids, Total Suspended	ND		mg/l	1.0	NA	1	-	04/17/20 11:21	121,2540D	EM
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1362549-1										
Solids, Total Dissolved	ND		mg/l	10	3.1	1	-	04/20/20 10:45	121,2540C	DW

Lab Control Sample Analysis

Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2015877
Report Date: 04/22/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1361548-2								
Nitrogen, Nitrate	107		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1361549-2								
Nitrogen, Nitrite	101		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1361608-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1361631-2								
Sulfate	100		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1361639-2								
Chromium, Hexavalent	102		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1361702-2								
Nitrogen, Total Kjeldahl	96		-		78-122	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1361717-2								
BOD, 5 day	89		-		85-115	-		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: SPDES

Project Number: 1047-2020

Lab Number: L2015877

Report Date: 04/22/20

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1361829-2					
Chemical Oxygen Demand	105	-	90-110	-	
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1361850-2					
Nitrogen, Ammonia	90	-	80-120	-	20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1361964-2					
Phenolics, Total	88	-	70-130	-	
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1362009-2					
Solids, Total Suspended	85	-	80-120	-	
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1362549-2					
Solids, Total Dissolved	87	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2015877
Report Date: 04/22/20

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361548-4 QC Sample: L2015768-02 Client ID: MS Sample												
Nitrogen, Nitrate	ND	4	3.96	99		-	-		83-113	-		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361549-4 QC Sample: L2015768-02 Client ID: MS Sample												
Nitrogen, Nitrite	0.026J	4	4.28	107		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361631-4 QC Sample: L2015903-10 Client ID: MS Sample												
Sulfate	6.4J	20	24	120		-	-		55-147	-		14
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361639-4 QC Sample: L2015877-01 Client ID: AP-EWE-01												
Chromium, Hexavalent	ND	0.1	0.115	115		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361702-4 QC Sample: L2015749-01 Client ID: MS Sample												
Nitrogen, Total Kjeldahl	13.3	40	52.0	97		-	-		77-111	-		24
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361717-4 QC Sample: L2015877-01 Client ID: AP-EWE-01												
BOD, 5 day	ND	100	88	88		-	-		50-145	-		35
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361829-3 QC Sample: L2015862-01 Client ID: MS Sample												
Chemical Oxygen Demand	ND	238	250	103		-	-		84-120	-		12
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361850-4 QC Sample: L2015893-01 Client ID: MS Sample												
Nitrogen, Ammonia	0.064J	4	3.46	86		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361964-4 QC Sample: L2015142-01 Client ID: MS Sample												
Phenolics, Total	ND	0.4	0.31	78		-	-		70-130	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2015877
Report Date: 04/22/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361548-3 QC Sample: L2015768-02 Client ID: DUP Sample						
Nitrogen, Nitrate	ND	ND	mg/l	NC		17
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361549-3 QC Sample: L2015768-02 Client ID: DUP Sample						
Nitrogen, Nitrite	0.026J	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361608-2 QC Sample: L2015876-01 Client ID: DUP Sample						
pH	6.0	5.9	SU	2		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361631-3 QC Sample: L2015903-10 Client ID: DUP Sample						
Sulfate	6.4J	5.9J	mg/l	NC		14
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361639-3 QC Sample: L2015877-01 Client ID: AP-EWE-01						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361702-3 QC Sample: L2015749-01 Client ID: DUP Sample						
Nitrogen, Total Kjeldahl	13.3	15.8	mg/l	17		24
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361717-3 QC Sample: L2015877-01 Client ID: AP-EWE-01						
BOD, 5 day	ND	ND	mg/l	NC		35
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361738-1 QC Sample: L2015877-01 Client ID: AP-EWE-01						
Dissolved Oxygen	12.	12	mg/l	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361829-4 QC Sample: L2015862-01 Client ID: DUP Sample						
Chemical Oxygen Demand	ND	8.0J	mg/l	NC		12

Lab Duplicate Analysis

Batch Quality Control

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2015877
Report Date: 04/22/20

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361850-3 QC Sample: L2015893-01 Client ID: DUP Sample					
Nitrogen, Ammonia	0.064J	0.054J	mg/l	NC	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1361964-3 QC Sample: L2015142-01 Client ID: DUP Sample					
Phenolics, Total	ND	ND	mg/l	NC	20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1362009-3 QC Sample: L2015604-02 Client ID: DUP Sample					
Solids, Total Suspended	330	350	mg/l	6	29
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1362549-3 QC Sample: L2015839-04 Client ID: DUP Sample					
Solids, Total Dissolved	290	300	mg/l	3	10

Project Name: SPDES
Project Number: 1047-2020

Lab Number: L2015877
Report Date: 04/22/20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2015877-01A	Vial Na2S2O3 preserved	A	NA		2.4	Y	Absent		624.1(7)
L2015877-01B	Vial Na2S2O3 preserved	A	NA		2.4	Y	Absent		624.1(7)
L2015877-01C	Vial Na2S2O3 preserved	A	NA		2.4	Y	Absent		624.1(7)
L2015877-01D	Plastic 250ml unpreserved	A	7	7	2.4	Y	Absent		SO4-4500(28),NO3-4500(2),NO2-4500NO3(2)
L2015877-01E	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),NI-6020T(180),CR-6020T(180),SI-TI(180),ZN-6020T(180),CU-6020T(180),NA-6020T(180),PB-6020T(180),MN-6020T(180),CD-6020T(180),MG-6020T(180)
L2015877-01F	BOD bottle Powder Pillow preserved	A	NA		2.4	Y	Absent		DO-4500(.3)
L2015877-01G	BOD bottle Powder Pillow preserved	A	NA		2.4	Y	Absent		DO-4500(.3)
L2015877-01H	Plastic 500ml H2SO4 preserved	A	<2	<2	2.4	Y	Absent		TKN-4500(28),COD-5220(28),NH3-4500(28)
L2015877-01I	Plastic 950ml unpreserved	A	7	7	2.4	Y	Absent		HEXCR-7196(1),PH-9040(1),TDS-2540(7),BOD-5210(2)
L2015877-01J	Plastic 950ml unpreserved	A	7	7	2.4	Y	Absent		TSS-2540-LOW(7)
L2015877-01K	Amber 1000ml H2SO4 preserved	A	<2	<2	2.4	Y	Absent		NY-TPHENOL-420(28)

*Values in parentheses indicate holding time in days

Project Name:	SPDES	**Lab Number:**	L2015877
Project Number:	1047-2020	**Report Date:**	04/22/20

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: DU Report with 'J' Qualifiers

Project Name:	SPDES	**Lab Number:**	L2015877
Project Number:	1047-2020	**Report Date:**	04/22/20

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration

Report Format: DU Report with 'J' Qualifiers

Project Name:	SPDES	**Lab Number:**	L2015877
Project Number:	1047-2020	**Report Date:**	04/22/20

Data Qualifiers

Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers

Project Name:	SPDES	**Lab Number:**	L2015877
Project Number:	1047-2020	**Report Date:**	04/22/20

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

4 Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020. Revised March 1983.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

128 Method 624.1: Purgeables by GC/MS, EPA 821-R-16-008, December 2016.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
EPA TO-12 Non-methane organics
EPA 3C Fixed gases
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 04/16/20

ALPHA Job #: L2015877

Client Information

Client: Greenstar
Address: 6 Gellatly Drive
Wappingers Falls, NY 12590
Phone: 845-223-9944
Fax:
Email: cmcleod@greenstarsolutions.com

Project Information

Project Name: SPDES
Project Location: Niagara Falls, NY
Project #: 1047-2020
(Use Project name as Project #) ☐
Project Manager: Chip Mcleod
ALPHAQuote #:

Turn-Around Time

Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables

☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement

☐ NY TOGS ☒ NY Part 375
☒ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☒ Other Part 360
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information

☐ Same as Client Info
PO #

Disposal Site Information

Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other: NA

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

*metals-NI, CU, BA, CR, FE, SE, TL, ZN, SI, CD, PB, MG, MN, NA **VOC-1,1-dichloroethane, trichloroethene

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	T. Phenol	Dissolved Oxygen	TSS	T. Metals*	NH3/TKN/COD	VOC**	CR+6, pH, TDS, BOD	SO4, NO3, NO2	Sample Specific Comments	Total Bottle
15877-01	AP-EWE-01	4/15/20	1400	AQ	LO	X	X	X	X	X	X	X	X		11

Container Type: G O P P P P P
Preservative: D A C D A A

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
	4/15/20 1500		4/15/20 1500
	4/15/20 1530		4/16/20 0130

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S

Form No: 01-25 (rev. 30-Sept-2013)

Attachment B

Landfill Cap Inspection Checklist
October 2020

LANDFILL CAP INSPECTION CHECKLIST
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Personnel:	Chip Mcleod
Date:	10/14/20
Weather:	Sunny, 70 degrees F

1. **Inspection of ground surface for exposure of geotextile cover (cap erosion):** None noted.

2. **Inspection of ground surface for differential settlement resulting in soil cracking or ponded water:** None noted.

3. **Identification of stressed vegetation:** None noted.

4. **Identification of seeps, rooted vegetation (trees), and/or animal burrows:** Cap mowing completed in September prior to inspection.

5. **Identification of deteriorating equipment (i.e., monitoring wells, fencing, or drainage structures):** Cleanout enclosure in the SW corner requires repair/replacement; the box is out of square and will not close correctly. AL-MW-02B riser kinked. Dedicated tubing installed to ensure future collection of groundwater sampling is still possible.

6. **Inspection of storm water drainage swales for erosion, sloughing, or flow-through:** None noted

7. **Inspection of east side of the landfill (Niagara Mohawk Power Corporation parcel) along the intermittent stream for the presence of erosion or sloughing:** None noted.

8. **Inspection of access roads:** All roads are in acceptable condition.

Attachment C

Monthly Operation and Maintenance Details
January – December 2020

ATTACHMENT C
MONTHLY OPERATIONS AND MAINTENANCE DETAILS
JANUARY TO DECEMBER 2020

1. INTRODUCTION

This Attachment presents a summary of the ongoing operation and maintenance activities for the Airco Parcel, Town of Niagara, New York, from 1 January to 31 December 2020. It includes a summary of ongoing operations, system repairs, corrective actions, improvement, and an evaluation of the groundwater collection and treatment system (GCTS) performance.

2. ROUTINE OPERATION AND MAINTENANCE

The overall system average flow rate was 1.1 gallons per minute (gpm). The average daily flow rate during the reporting period was estimated to be 1,520 gallons per day. The flow rate of treated water did not exceed the 36,000-gallon daily flow limit during the reporting period. The system average flowrate was within the normal range as compared to previous years.

Tables 1 and 2 in the PRR provide a summary of the Total and hexavalent chromium field sampling results and the quarterly effluent analytical data from the quarterly GCTS discharge sampling events, respectively. As noted in Section 6.1 of the PRR, analytical results for the quarterly discharge sampling were in compliance with NYSDEC discharge guidance values. No samples were collected in the 3rd or 4th quarters since no water was discharged from the site due to extremely dry conditions.

Routine operation and maintenance were completed throughout the reporting period. Field tasks included system checks, data collection, and field analysis of treated water at various stages of the treatment process, component and full-system cleanings, component replacement and general site maintenance.

3. SYSTEM OPERATIONS AND EFFICIENCY

During this monitoring period, 554,905 gallons of groundwater were treated and discharged to the stormwater swale adjacent to the engineered wetlands. The system average flow rate was 1.1 gpm during the reporting period. The groundwater collection system was operational 99.2 percent of the reporting period. The system was down for 3 days in May to accommodate system upgrades to the controls. The emergency overflow pond (T-8) was utilized while the tank and line cleaning were performed during the reporting period and during response to alarm conditions. No known releases to the environment occurred during the reporting period. The completed System Monitoring Checklists are provided in Attachment C.1of the PRR. Monthly GCTS flow calculations are provided in Attachment C.2 of the PRR.

3.1 SYNOPSIS OF THE ANNUAL ACTIVITIES

January 2020

The system was operational for 31 days in January. No alarm conditions were reported during the month of January. No scheduled or unscheduled system shutdowns or system bypasses occurred. The following details the activities, which were performed during January:

- 23 January 2020 – Routine site visit. Checked sheds for mouse activity. Performed field analysis for total chromium and hexavalent chromium using a HACH DR4000® spectrophotometer. Rotated P1A and P1B valves as to not allow valves to calcify. Downloaded all data from transducers in wells for pilot study. Tested new radios to see if they will communicate between panels.

February 2020

The system was operational for 29 days in February. No alarm conditions were reported during the month of February. No scheduled or unscheduled system shutdowns or system bypasses occurred. The following details the activities, which were performed during February:

- 14 February 2020 – Routine site visit. Checked sheds for mouse activity. No chrome testing. All sample locations were frozen over or frozen shut. Could not rotate P1A and P1B valves due to calcification. Will schedule line cleaning for March site visit. Installed new monitor for the SCADA system as the existing one failed. Notified Penn Power for repairs (low engine coolant alarm). Installed temporary over-ground cable from generator to T8 to establish connection with the generator. Cable will be permanently installed in the spring to replace the existing cable which failed.

March 2020

The system was operational for 31 days in March. No alarm conditions were reported during the month of March. No scheduled or unscheduled system shutdowns or system bypasses occurred. The following details the activities, which were performed during March:

- 11 March 2020 – Routine site visit. Checked sheds for mouse activity. Completed field tests for hex chrome and total chrome for T3, T6, T7, and SS-1. Downloaded all data from transducers in wells for pilot study. Quarterly sample collected for SS-01. Subcontractor onsite to clean influent leachate line, and to clean the influent manifold in the T1 shed located in the southwest corner.

April 2020

The system was operational for 30 days in April. No alarm conditions were reported during the month of April. No scheduled or unscheduled system shutdown or system bypass occurred. The following details the activities, which were performed during April:

- 15 April 2020 – Routine site visit. Checked sheds for mouse activity. Performed field analysis for total chromium and hexavalent chromium using a HACH DR4000®

spectrophotometer. Rotated P1A and P1B valves so as to not allow valves to calcify. Downloaded all data from transducers in wells for pilot study all transducers removed from wells except MW-8 and PZ-02B. Quarterly sample collected for SS-01.

May 2020

The system was operational for 28 days in May. No alarm conditions were reported during the month of May. One scheduled system bypass occurred. The following details the activities, which were performed during May 2020:

- 4-7 May 2020 – System upgrades were completed to replace the old PLC controls and VFDs with new control system and new SCADA system. The main control panel and the panel in the T1 shed were replaced. The T8 overflow pond was utilized during this scheduled upgrade. The system was in bypass mode from noon on the 4th to noon on the 7th. .
- 28 May 2020 – Routine site visit. Checked sheds for mouse activity. Performed field analysis for total chromium and hexavalent chromium using a HACH DR4000® spectrophotometer. Rotated P1A and P1B valves as to not allow valves to calcify. Cleaned overflow pipes between tanks, calibrated pH probes for T3B and T6B.

June 2020

The system was operational for 30 days in June. One alarm condition was reported during the month of June. No scheduled and one unscheduled system shutdowns or system bypasses occurred. The following details the activities, which were performed during June:

- 8 June 2020 – Routine site visit. Calibrated pH probes in T3, T6, and T7. Checked sheds for mouse activity. Performed field analysis for total chromium and hexavalent chromium using a HACH DR4000® spectrophotometer. Rotated P1A and P1B valves as to not allow valves to calcify. Cleaned overflow pipes between tanks.
- 23 June 2020 – Responded to a communication failure alarm. PLC was offline. Rebooted PLC. System returned to normal operations.

July 2020

The system was operational for 31 days in July. One alarm condition was reported during the month of July. No scheduled and one unscheduled system shutdowns or system bypasses occurred. The following details the activities, which were performed during July:

- 3 July 2020 – Responded to multiple pump failure alarms. Called PLC programmer to adjust time interval for assessing pump failures.
- 6-10 July 2020 – Additional System upgrades were performed to replace the old PLC controls and VFDs with new control system and new SCADA system. The control panel in the T3/6 lab shed and all control wiring and power wiring and conduit replaced at the main treatment system. The T8 overflow pond was utilized during this scheduled upgrade.

August 2020

The system was operational for 31 days in August. No alarm conditions were reported during the month of August. No scheduled or unscheduled system shutdown or system bypass occurred. The following details the activities, which were performed during August:

- 18 August 2020 – Routine site visit. Checked sheds for mouse activity. Performed field analysis for total chromium and hexavalent chromium using a HACH DR4000® spectrophotometer. Rotated P1A and P1B valves as to not allow valves to calcify.

September 2020

The system was operational for 30 days in September. No alarm conditions were reported during the month of September. No scheduled or unscheduled system shutdowns or system bypasses occurred. The following details the activities, which were performed during September:

- 27-30 September 2020 Routine site visit. Landfill mowing and site cleanup completed. Stone added to roads. Sheds cleaned and new mouse bait put out. Performed field analysis for total chromium and hexavalent chromium using a HACH DR4000® spectrophotometer. Rotated P1A and P1B valves as to not allow valves to calcify. Installed new T3A pH meter and fixed remaining broken or damaged conduits and junction boxes. System flow is 185 gallons every other day. No quarterly sample collected. No discharge from the site.

October 2020

The system was operational for 31 days in October. No alarm conditions were reported during the month of October. No scheduled or unscheduled system shutdowns or system bypasses occurred. The following details the activities, which were performed during October:

- 14 October 2020 – Routine site visit. Annual cap inspection completed by Professional Engineer, no significant issues noted. Cleaned lines between: T3A and T3B; T6A and T6B, and between T6B and T7. One line between T6A and T6B was completely blocked. Discharge from T6B increased from 32 GPM to 43 GPM. Installation of new control box and wiring to allow remote operation of the 12 VDC whale pump under T8 liner to remove water as needed. Flow from T1 is approximately 325 gpd in October. No discharge from the site.

November 2020

The system was operational for 30 days in November. No alarm conditions were reported during the month of November. No scheduled or unscheduled system shutdowns or system bypasses occurred. The following details the activities, which were performed during November:

- 25 November 2020 - Routine site visit. Performed field analysis for total chromium and hexavalent chromium using a HACH DR4000® spectrophotometer. Flow from T1 is averaging 297 gpd in November. No discharge from the site. No quarterly sample collected. T8 will not pump. Blown fuse. Replaced fuse, fuse blew again. Pump needs

to be replaced. Called contractors to schedule pond dewatering, cleaning and pump replacement. Minor changes top PLC programming for the P8 pump to add if no flow is observed when pump is on, to alarm out pump fail to start. Two of the onsite web cameras no longer allow for manual control for tilt. New cameras ordered.

December 2020

The system was operational for 31 days in December. No alarm conditions were reported during the month of December. No scheduled or unscheduled system shutdowns or system bypasses occurred. The following details the activities, which were performed during December:

- 11-13 December 2020 – Remote oversight of contractor performing T8 overflow pond cleaning and replacement of the pump (P8).
- 21 December 2020 – Routine site visit. Checked sheds for mouse activity. Performed field analysis for total chromium and hexavalent chromium using a HACH DR4000® spectrophotometer. System flow is averaging 620 gpd in December. T7 pond elevation is still 6" below the discharge outlet elevation. There is no treated water discharging from the system. No quarterly sample collected. Cleaning of T8 and pump replacement completed. Flowmeters and solenoid valves used to regulate the flow of CO2 into T3A, T3B and T6B need replacement. Replacement parts ordered. T1 shed spray foam insulation completed.

4. MODIFICATIONS/IMPROVEMENTS AND RECOMMENDATIONS

4.1 SYSTEM MODIFICATION/IMPROVEMENTS

System modifications and improvements performed during the 2020 annual reporting period included upgrades to the control system including a complete replacement of the main control panel, upgrades to the hardware in the T-6A/B control panel including the T3B VFD, replacement of the pH controller and probes for T-3B and T-6B, installation of a new pH controller and probe in T3A, and replacement of the VFDs in T-1 and the control panel in T-1. New radios were also installed to replace the current radios to improve system connectivity, increase data transmission speeds and limit communication failures.

5. PROJECTED OPERATION AND MAINTENANCE

5.1 JANUARY – DECEMBER 2021

During the 2021 annual reporting period, Greenstar anticipates performing routine operation and maintenance activities. Routine activities during the reporting period will include routine cleaning and calibration, pump and other system component replacements, and other activities on an as-needed basis. Emergency response to alarm conditions will be completed as required.

6. SYSTEM MONITORING

6.1 ENVIRONMENTAL SAMPLING

Routine system sampling with field analysis will continue as needed to ensure chromium removal. Quarterly discharge samples will be collected from the GCTS. Groundwater sampling will be completed in 2021 as part of the five-year review process.

Attachment C.1

GCTS Monitoring Checklists
January – December 2020

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:1/23/20	**Project No.: 1047.001**	**Greenstar Personnel**: L.Oliveira	**Weather: Cloudy 30**
READING		*ITEM*	
242		Carbon Dioxide Storage Tank Pressure (220-235 psi)	
8,779		Carbon Dioxide Tank Liquid Level	
597.4		T1 Water Level	
On/Cycling		Pump P1A Running Status	
On/Cycling		Pump P1BA Running Status	
616.1		T3A Water Elevation	
5.5		T3B pH Reading	
613.0		T3B Water Level	
On/Cycling		Pump 3B Operational Status	
612.8		T5 Water Level	
On/Cycling		Pump 5 Operational Status	
616.2		T6A Water Elevation	
0.0		T6B pH	
612.1		T6B Water Level	
On/Cycling		Pump 6B Operational Status	
615.9		T7 Water Level Reading	
0.0		T7 pH	
615.0		T8 Water Elevation	
76,047,280		Flow Meter Reading	
1.8		Average System Flow	
READING	*Standard*	*LOCATION/PARAMETER*	
0.003	0.011 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium	
0.000	0.050 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium	
0.002	0.011 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium	
0.001	0.050 mg/L	Iron Settling Pond Effluent (T6) Total Chromium	
0.002	0.011 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium	
0.000	0.050 mg/L	Engineered Wetland Effluent (T7) Total Chromium	
0.000	0.011 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium	
0.000	0.050 mg/L	Southwest Corner Effluent (SS-1) Total Chromium	
pH READING		*SAMPLE LOCATION*	
6.86		Calcium Settling Pond Effluent (T3)	
6.95		Iron Settling Pond Effluent (T6)	
7.20		Engineered Wetland Effluent (T7)	
7.31		Southwest Corner Effluent (SS-1)	

Notes: Routine site visit. Checked sheds for mouse activity. Did field tests for hex chrome and total chrome for T3, T6, T7, and SS-1. Rotated P1A and P1B valves as to not allow valves to calcify. Downloaded all data from transducers in wells for pilot study. Tested new radios with Dan to see if they will still communicate between panels.

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:2/14/20	**Project No**.: 1047.001	**Greenstar Personnel**: C.Mcleod	**Weather: 8 Degrees. Snowy**
READING		*ITEM*	
239		Carbon Dioxide Storage Tank Pressure (220-235 psi)	
9,620		Carbon Dioxide Tank Liquid Level	
597.3		T1 Water Level	
On/Cycling		Pump P1A Running Status	
On/Cycling		Pump P1BA Running Status	
616.1		T3A Water Elevation	
5.5		T3B pH Reading	
612.3		T3B Water Level	
On/Cycling		Pump 3B Operational Status	
612.0		T5 Water Level	
On/Cycling		Pump 5 Operational Status	
616.2		T6A Water Elevation	
0.0		T6B pH	
616.2		T6B Water Level	
On/Cycling		Pump 6B Operational Status	
615.8		T7 Water Level Reading	
7.1		T7 pH	
614.8		T8 Water Elevation	
76,098,888		Flow Meter Reading	
1		Average System Flow	
READING	*Standard*	*LOCATION/PARAMETER*	
NS	0.011 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium	
NS	0.050 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium	
NS	0.011 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium	
NS	0.050 mg/L	Iron Settling Pond Effluent (T6) Total Chromium	
NS	0.011 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium	
NS	0.050 mg/L	Engineered Wetland Effluent (T7) Total Chromium	
NS	0.011 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium	
NS	0.050 mg/L	Southwest Corner Effluent (SS-1) Total Chromium	
pH READING		*SAMPLE LOCATION*	
NS		Calcium Settling Pond Effluent (T3)	
NS		Iron Settling Pond Effluent (T6)	
NS		Engineered Wetland Effluent (T7)	
NS		Southwest Corner Effluent (SS-1)	

Note: Notes: Routine site visit. Checked sheds for mouse activity. No chrome testing. All sample locations were frozen over or frozen shut. Could not rotate P1A and P1B valves due to calcification. Will schedule line cleaning for March site visit. Installed new monitor for the SCADA system as the existing one failed. Notified Penn Power for repairs (Low engine Coolant Alarm). Installed temporary over ground cable from generator to T8 to establish connection with the generator. Cable will be permanently installed in the spring to replace the existing cable which failed.

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:3/11/20	**Project No**.: 1047.001	**Greenstar Personnel**: L.Oliveira	Weather: **Cloudy, 30**
READING		*ITEM*	
239		Carbon Dioxide Storage Tank Pressure (220-235 psi)	
8,425		Carbon Dioxide Tank Liquid Level	
598.3		T1 Water Level	
On/Cycling		Pump P1A Running Status	
On/Cycling		Pump P1BA Running Status	
616.1		T3A Water Elevation	
5.4		T3B pH Reading	
612.2		T3B Water Level	
On/Cycling		Pump 3B Operational Status	
612.9		T5 Water Level	
On/Cycling		Pump 5 Operational Status	
616.2		T6A Water Elevation	
0.0		T6B pH	
612.5		T6B Water Level	
On/Cycling		Pump 6B Operational Status	
615.9		T7 Water Level Reading	
0.0		T7 pH	
614.7		T8 Water Elevation	
76,155,104		Flow Meter Reading	
4.1		Average System Flow	
READING	*Standard*	*LOCATION/PARAMETER*	
0.01	0.011 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium	
0.00	0.050 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium	
0.00	0.011 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium	
0.00	0.050 mg/L	Iron Settling Pond Effluent (T6) Total Chromium	
0.00	0.011 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium	
0.00	0.050 mg/L	Engineered Wetland Effluent (T7) Total Chromium	
0.09	0.011 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium	
0.01	0.050 mg/L	Southwest Corner Effluent (SS-1) Total Chromium	
pH READING		*SAMPLE LOCATION*	
5.93		Calcium Settling Pond Effluent (T3)	
6.44		Iron Settling Pond Effluent (T6)	
6.99		Engineered Wetland Effluent (T7)	
7.80		Southwest Corner Effluent (SS-1)	
Note: Routine site visit. Checked sheds for mouse activity. Did field tests for hex chrome and total chrome for T3, T6, T7, and SS-1. Downloaded all data from transducers in wells for pilot study. Quarterly sample collected for SS-01. Subcontractor on site to clean influent leachate line, and to clean manifold down SW.			

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:4/15/20	**Project No**.: 1047.001	**Greenstar Personnel**: L.Oliveira	**Weather: Cloudy 36**
READING		*ITEM*	
240		Carbon Dioxide Storage Tank Pressure (220-235 psi)	
3452		Carbon Dioxide Tank Liquid Level	
597.1		T1 Water Level	
On/Cycling		Pump P1A Running Status	
On/Cycling		Pump P1BA Running Status	
616.1		T3A Water Elevation	
0.0		T3B pH Reading	
612.9		T3B Water Level	
On/Cycling		Pump 3B Operational Status	
612.5		T5 Water Level	
On/Cycling		Pump 5 Operational Status	
616.2		T6A Water Elevation	
0.0		T6B pH	
612.2		T6B Water Level	
On/Cycling		Pump 6B Operational Status	
615.9		T7 Water Level Reading	
0.0		T7 pH	
613.0		T8 Water Elevation	
76326288		Flow Meter Reading	
4		Average System Flow	
READING	*Standard*	*LOCATION/PARAMETER*	
0.010	0.011 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium	
0.009	0.050 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium	
0.000	0.011 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium	
0.000	0.050 mg/L	Iron Settling Pond Effluent (T6) Total Chromium	
0.000	0.011 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium	
0.003	0.050 mg/L	Engineered Wetland Effluent (T7) Total Chromium	
0.001	0.011 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium	
0.000	0.050 mg/L	Southwest Corner Effluent (SS-1) Total Chromium	
pH READING		*SAMPLE LOCATION*	
6.03		Calcium Settling Pond Effluent (T3)	
6.51		Iron Settling Pond Effluent (T6)	
6.99		Engineered Wetland Effluent (T7)	
7.66		Southwest Corner Effluent (SS-1)	

Note: Routine site visit. Checked sheds for mouse activity. Did field tests for hex chrome and total chrome for T3, T6, T7, and SS-1. Rotated P1A and P1B valves as to not allow valves to calcify. Downloaded all data from transducers in wells for pilot study all transducers removed from wells except MW-8 and PZ-02B. Quarterly sample collected for SS-01.

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:5/28/20	**Project No.**: 1047.001	**Greenstar Personnel**: L.Oliveira	**Weather: 75 Raining**
READING		*ITEM*	
238		Carbon Dioxide Storage Tank Pressure (220-235 psi)	
6197		Carbon Dioxide Tank Liquid Level	
597.4		T1 Water Level	
On/Cycling		Pump P1A Running Status	
On/Cycling		Pump P1BA Running Status	
616.2		T3A Water Elevation	
5.9		T3B pH Reading	
612.5		T3B Water Level	
On/Cycling		Pump 3B Operational Status	
612.3		T5 Water Level	
On/Cycling		Pump 5 Operational Status	
616.2		T6A Water Elevation	
6.5		T6B pH	
612.7		T6B Water Level	
On/Cycling		Pump 6B Operational Status	
615.9		T7 Water Level Reading	
NA		T7 pH	
615.7		T8 Water Elevation	
76417681		Flow Meter Reading	
-		Average System Flow	
READING	*Standard*	*LOCATION/PARAMETER*	
0.007	0.011 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium	
0.012	0.050 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium	
0.000	0.011 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium	
0.009	0.050 mg/L	Iron Settling Pond Effluent (T6) Total Chromium	
0.000	0.011 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium	
0.000	0.050 mg/L	Engineered Wetland Effluent (T7) Total Chromium	
0.001	0.011 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium	
0.000	0.050 mg/L	Southwest Corner Effluent (SS-1) Total Chromium	
pH READING		*SAMPLE LOCATION*	
6.05		Calcium Settling Pond Effluent (T3)	
6.68		Iron Settling Pond Effluent (T6)	
7.11		Engineered Wetland Effluent (T7)	
7.53		Southwest Corner Effluent (SS-1)	
Note: Routine site visit. Checked sheds for mouse activity. Did field tests for hex chrome and total chrome for T3, T6, T7, and SS-1. Rotated P1A and P1B valves as to not allow valves to calcify. Cleaned overflow pipes between tanks, calibrated pH probes for T3B and T6B.			

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:6/8/20	**Project No.:** 1047.001	**Greenstar Personnel**:O.Mahmoud	**Weather: Sunny, 70**
READING		*ITEM*	
241		Carbon Dioxide Storage Tank Pressure (220-235 psi)	
12,081		Carbon Dioxide Tank Liquid Level	
597.5		T1 Water Level	
On/Cycling		Pump P1A Running Status	
On/Cycling		Pump P1BA Running Status	
616.1		T3A Water Elevation	
6.0		T3B pH Reading	
612.9		T3B Water Level	
On/Cycling		Pump 3B Operational Status	
612.6		T5 Water Level	
On/Cycling		Pump 5 Operational Status	
616.2		T6A Water Elevation	
6.6		T6B pH	
612.9		T6B Water Level	
On/Cycling		Pump 6B Operational Status	
615.9		T7 Water Level Reading	
0.0		T7 pH	
615.1		T8 Water Elevation	
76,433,457		Flow Meter Reading	
0.2		Average System Flow	
READING	*Standard*	*LOCATION/PARAMETER*	
0.010	0.011 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium	
0.011	0.050 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium	
0.00	0.011 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium	
0.00	0.050 mg/L	Iron Settling Pond Effluent (T6) Total Chromium	
0.002	0.011 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium	
0.00	0.050 mg/L	Engineered Wetland Effluent (T7) Total Chromium	
No Flow	0.011 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium	
No Flow	0.050 mg/L	Southwest Corner Effluent (SS-1) Total Chromium	
pH READING		*SAMPLE LOCATION*	
6.32		Calcium Settling Pond Effluent (T3)	
6.53		Iron Settling Pond Effluent (T6)	
6.80		Engineered Wetland Effluent (T7)	
No Flow		Southwest Corner Effluent (SS-1)	

Note: Routine site visit. Checked sheds for mouse activity. Did field tests for hex chrome and total chrome for T3, T6, T7, and SS-1. Rotated P1A and P1B valves as to not allow valves to calcify. Cleaned overflow pipes between tanks, calibrated pH probes for T3B and T6B. No sample collected from SW Corner Effluent because swale was dry.

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:7/10/20	**Project No**.: 1047.001	**Greenstar Personnel**: L.Oliveira	**Weather: Sunny 95**
READING		*ITEM*	
245		Carbon Dioxide Storage Tank Pressure (220-235 psi)	
9655		Carbon Dioxide Tank Liquid Level	
597.0		T1 Water Level	
On/Cycling		Pump P1A Running Status	
On/Cycling		Pump P1BA Running Status	
616.1		T3A Water Elevation	
6.7		T3B pH Reading	
612.1		T3B Water Level	
On/Cycling		Pump 3B Operational Status	
612.6		T5 Water Level	
On/Cycling		Pump 5 Operational Status	
616.1		T6A Water Elevation	
6.8		T6B pH	
612.9		T6B Water Level	
On/Cycling		Pump 6B Operational Status	
615.4		T7 Water Level Reading	
0.0		T7 pH	
615.0		T8 Water Elevation	
76393760		Flow Meter Reading	
0.0		Average System Flow	
READING	*Standard*	*LOCATION/PARAMETER*	
NA	0.011 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium	
NA	0.050 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium	
NA	0.011 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium	
NA	0.050 mg/L	Iron Settling Pond Effluent (T6) Total Chromium	
NA	0.011 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium	
NA	0.050 mg/L	Engineered Wetland Effluent (T7) Total Chromium	
NA	0.011 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium	
NA	0.050 mg/L	Southwest Corner Effluent (SS-1) Total Chromium	
pH READING		*SAMPLE LOCATION*	
NA		Calcium Settling Pond Effluent (T3)	
NA		Iron Settling Pond Effluent (T6)	
NA		Engineered Wetland Effluent (T7)	
NA		Southwest Corner Effluent (SS-1)	
Notes: Routine site visit and additional system upgrades. System offline for 3 days to replace all wiring for P3B, P6B, and P5. Install new PLC, New motor starter, new VFD, and shut offs. Dan on site to wire new plc panel in lab shed.			

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:8/18/20	**Project No**.: 1047.001	**Greenstar Personnel**: C.McLeod	**Weather: 75, Sunny**
READING		*ITEM*	
238		Carbon Dioxide Storage Tank Pressure (220-235 psi)	
4,037		Carbon Dioxide Tank Liquid Level	
597.3		T1 Water Level	
On/Cycling		Pump P1A Running Status	
On/Cycling		Pump P1BA Running Status	
616.2		T3A Water Elevation	
6.7		T3B pH Reading	
612.3		T3B Water Level	
On/Cycling		Pump 3B Operational Status	
613.0		T5 Water Level	
On		Pump 5 Operational Status	
616.6		T6A Water Elevation	
7.0		T6B pH	
612.4		T6B Water Level	
On/Cycling		Pump 6B Operational Status	
614.7		T7 Water Level Reading	
615.2		T8 Water Elevation	
76,407,490		Flow Meter Reading	
76,411,700		Average System Flow	
READING		Standard	
0.000	*0.011 mg/L*	*LOCATION/PARAMETER*	
0.012	0.050 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium	
0.000	0.011 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium	
0.010	0.050 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium	
No Flow	0.011 mg/L	Iron Settling Pond Effluent (T6) Total Chromium	
No Flow	0.050 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium	
No Flow	0.011 mg/L	Engineered Wetland Effluent (T7) Total Chromium	
No Flow	0.050 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium	
pH READING	SAMPLE LOCATION	Southwest Corner Effluent (SS-1) Total Chromium	
6.75		*Calcium Settling Pond Effluent (T3)*	
7.00`		Iron Settling Pond Effluent (T6)	
No Flow		Engineered Wetland Effluent (T7)	
No Flow		Southwest Corner Effluent (SS-1)	

Notes: Routine site visit. Checked sheds for mouse activity. Did field tests for hex chrome and total chrome for T3 and T6. Rotated P1A and P1B valves as to not allow valves to calcify. No sample collected from SW Corner Effluent because swale was dry.

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:9/29/20	**Project No.:** 1047.001	**Greenstar Personnel:**C.McLeod	**Weather: 60, P. Cloudy**
READING		*ITEM*	
238		Carbon Dioxide Storage Tank Pressure (220-235 psi)	
7,100		Carbon Dioxide Tank Liquid Level	
597.0		T1 Water Level	
On/Cycling		Pump P1A Running Status	
On/Cycling		Pump P1BA Running Status	
616.2		T3A Water Elevation	
7.0		T3B pH Reading	
613.0		T3B Water Level	
On/Cycling		Pump 3B Operational Status	
613.4		T5 Water Level	
On/Cycling		Pump 5 Operational Status	
616.2		T6A Water Elevation	
7.0		T6B pH	
613.0		T6B Water Level	
On/Cycling		Pump 6B Operational Status	
613.8		T7 Water Level Reading	
N/A		T7 pH	
615.3		T8 Water Elevation	
76,411,580		Flow Meter Reading	
0		Average System Flow	
READING	*Standard*	*LOCATION/PARAMETER*	
0.001	0.011 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium	
0.012	0.050 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium	
0.002	0.011 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium	
0.014	0.050 mg/L	Iron Settling Pond Effluent (T6) Total Chromium	
No Flow	0.011 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium	
No Flow	0.050 mg/L	Engineered Wetland Effluent (T7) Total Chromium	
No Flow	0.011 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium	
No Flow	0.050 mg/L	Southwest Corner Effluent (SS-1) Total Chromium	
pH READING		*SAMPLE LOCATION*	
NS		Calcium Settling Pond Effluent (T3)	
NS		Iron Settling Pond Effluent (T6)	
No Flow		Engineered Wetland Effluent (T7)	
No Flow		Southwest Corner Effluent (SS-1)	

Notes: Routine site visit. Landfill Cap inspection completed. Landfill mowing and site cleanup completed. Stone added to roads. Sheds cleaned and new mouse bait put out. Installed new T3A pH meter and fixed remaining broken or damaged conduits and junction boxes. System flow is 185 gallons every other day. No quarterly sample collected. No discharge from the site.

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:10/14/20	**Project No**.: 1047.001	**Greenstar Personnel**: C.McLeod	**Weather: Sunny 65**
READING		*ITEM*	
248		Carbon Dioxide Storage Tank Pressure (220-235 psi)	
10,900		Carbon Dioxide Tank Liquid Level	
597.0		T1 Water Level	
On/Cycling		Pump P1A Running Status	
On/Cycling		Pump P1BA Running Status	
6.0		T3A pH Reading	
616.2		T3A Water Elevation	
7.1		T3B pH Reading	
612.7		T3B Water Level	
On/Cycling		Pump 3B Operational Status	
612.0		T5 Water Level	
On/Cycling		Pump 5 Operational Status	
612.6		T6A Water Elevation	
7.3		T6B pH	
612.8		T6B Water Level	
On/Cycling		Pump 6B Operational Status	
614.0		T7 Water Level Reading	
615.1		T8 Water Elevation	
76,478,951		Flow Meter Reading	
0.35		Average System Flow	
READING	*Standard*	*LOCATION/PARAMETER*	
0.000	0.011 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium	
0.010	0.050 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium	
0.000	0.011 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium	
0.010	0.050 mg/L	Iron Settling Pond Effluent (T6) Total Chromium	
No Flow	0.011 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium	
No Flow	0.050 mg/L	Engineered Wetland Effluent (T7) Total Chromium	
No Flow	0.011 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium	
No Flow	0.050 mg/L	Southwest Corner Effluent (SS-1) Total Chromium	
pH READING		*SAMPLE LOCATION*	
6.0/7.1		Calcium Settling Pond Effluent (T3A/T3B)	
7.3		Iron Settling Pond Effluent (T6)	
No Flow		Engineered Wetland Effluent (T7)	
No Flow		Southwest Corner Effluent (SS-1)	

Notes: Routine site visit. Cap Inspection Completed. Cleaned lines between: T3A and T3B; T6A and T6B, and between T6B and T7. One line between T6A and T6B was completely blocked. Discharge from T6B increased from 32 GPM to 43 GPM. Installation of new control box and wiring to allow remote operation of the 12 VDC whale pump under T8 liner to remove water as needed. Flow from T1 is ~325 gpd in October. No discharge from the site.

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:11/19/20	**Project No**.: 1047.001	**Greenstar Personnel:** C.McLeod	**Weather: 60, Windy**
READING		*ITEM*	
240		Carbon Dioxide Storage Tank Pressure (220-235 psi)	
7,401		Carbon Dioxide Tank Liquid Level	
597.4		T1 Water Level	
On/Cycling		Pump P1A Running Status	
On/Cycling		Pump P1BA Running Status	
5.9		T3A pH Reading	
616.1		T3A Water Elevation	
7.5		T3B pH Reading	
612.0		T3B Water Level	
On/Cycling		Pump 3B Operational Status	
612.7		T5 Water Level	
On/Cycling		Pump 5 Operational Status	
616.2		T6A Water Elevation	
7.3		T6B pH	
612.6		T6B Water Level	
On/Cycling		Pump 6B Operational Status	
614.5		T7 Water Level Reading	
613.2		T8 Water Elevation	
76,494,933		Flow Meter Reading	
0.15		Average System Flow	
READING	*Standard*	*LOCATION/PARAMETER*	
0.000	0.011 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium	
0.012	0.050 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium	
0.000	0.011 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium	
0.010	0.050 mg/L	Iron Settling Pond Effluent (T6) Total Chromium	
No Flow	0.011 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium	
No Flow	0.050 mg/L	Engineered Wetland Effluent (T7) Total Chromium	
No Flow	0.011 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium	
No Flow	0.050 mg/L	Southwest Corner Effluent (SS-1) Total Chromium	
pH READING		*SAMPLE LOCATION*	
5.9/7.5		Calcium Settling Pond Effluent (T3A/T3B)	
7.3		Iron Settling Pond Effluent (T6)	
No Flow		Engineered Wetland Effluent (T7)	
No Flow		Southwest Corner Effluent (SS-1)	

Notes: Routine site visit. No samples collected. Flow from T1 is averaging 297 gpd in November. No discharge from the site. No quarterly sample collected. T8 will not pump. Blown fuse. Replaced fuse, fuse blew again. Pump needs to be replaced. Called contractors to schedule pond dewatering, cleaning and pump replacement. Minor changes top PLC programming for the P8 pump to add if no flow is observed when pump is on, to alarm out pump fail to start. Two of the onsite web cameras no longer allow for manual control for tilt. New cameras ordered.

GCTS DATA RECORDING SHEET
AIRCO PARCEL, NIAGARA FALLS, NEW YORK

Date:12/21/20	**Project No**.: 1047.001	**Greenstar Personnel**: C. McLeod	**Weather: Overcast, 35 degrees**

READING	*ITEM*
245	Carbon Dioxide Storage Tank Pressure (220-235 psi)
9,898	Carbon Dioxide Tank Liquid Level
597.4	T1 Water Level
On/Cycling	Pump P1A Running Status
On/Cycling	Pump P1BA Running Status
6.2	T3A pH Reading
616.2	T3A Water Elevation
6.6	T3B pH Reading
612.4	T3B Water Level
On/Cycling	Pump 3B Operational Status
612.0	T5 Water Level
On/Cycling	Pump 5 Operational Status
616.2	T6A Water Elevation
6.9	T6B pH
612.5	T6B Water Level
On/Cycling	Pump 6B Operational Status
615.3	T7 Water Level Reading
611.6	T8 Water Elevation
76,512,363	Flow Meter Reading
1	Average System Flow

READING	*Standard*	*LOCATION/PARAMETER*
0.010	0.011 mg/L	Calcium Settling Pond Effluent (T3) Hexavalent Chromium
0.023	0.050 mg/L	Calcium Settling Pond Effluent (T3) Total Chromium
0.009	0.011 mg/L	Iron Settling Pond Effluent (T6) Hexavalent Chromium
0.000	0.050 mg/L	Iron Settling Pond Effluent (T6) Total Chromium
NS	0.011 mg/L	Engineered Wetland Effluent (T7) Hexavalent Chromium
NS	0.050 mg/L	Engineered Wetland Effluent (T7) Total Chromium
NS	0.011 mg/L	Southwest Corner Effluent (SS-1) Hexavalent Chromium
NS	0.050 mg/L	Southwest Corner Effluent (SS-1) Total Chromium

pH READING	*SAMPLE LOCATION*
6.18	Calcium Settling Pond Effluent (T3)
6.62	Iron Settling Pond Effluent (T6)
NS	Engineered Wetland Effluent (T7)
NS	Southwest Corner Effluent (SS-1)

Notes: Routine site visit. System flow is averaging 620 gpd in December. T7 pond elevation is still 6” below the discharge outlet elevation. There is no treated water discharging from the system. No quarterly sample collected. Cleaning of T8 and pump replacement completed. Flowmeters and solenoid valves used to regulate the flow of CO2 into T3A, T3B and T6B need replacement. Replacement parts ordered. T1 shed spray foam insulation completed.

Attachment C.2

GCTS Monthly Flow Calculations
January – December 2020

Monthly Flow Calculations
January 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
1/1/2020	41	2.54	3,664	75,967,608	24	0
1/2/2020	41	2.37	3,416	75,971,024	24	0
1/3/2020	41	1.98	2,848	75,973,872	24	0
1/4/2020	41	2.14	3,088	75,976,960	24	0
1/5/2020	41	1.83	2,632	75,979,592	24	0
1/6/2020	41	2.81	4,048	75,983,640	24	0
1/7/2020	41	2.38	3,424	75,987,064	24	0
1/8/2020	40	1.78	2,560	75,989,624	24	0
1/9/2020	41	1.66	2,392	75,992,016	24	0
1/10/2020	41	1.81	2,600	75,994,616	24	0
1/11/2020	41	6.24	8,984	76,003,600	24	0
1/12/2020	41	6.89	9,928	76,013,528	24	0
1/13/2020	41	3.00	4,320	76,017,848	24	0
1/14/2020	41	2.58	3,720	76,021,568	24	0
1/15/2020	41	2.21	3,184	76,024,752	24	0
1/16/2020	41	2.12	3,056	76,027,808	24	0
1/17/2020	40	1.69	2,440	76,030,248	24	0
1/18/2020	40	1.84	2,656	76,032,904	24	0
1/19/2020	41	2.14	3,080	76,035,984	24	0
1/20/2020	41	1.68	2,416	76,038,400	24	0
1/21/2020	40	1.53	2,200	76,040,600	24	0
1/22/2020	40	1.55	2,232	76,042,832	24	0
1/23/2020	41	1.41	2,032	76,044,864	24	0
1/24/2020	41	1.99	2,872	76,047,736	24	0
1/25/2020	41	7.64	11,008	76,058,744	24	0
1/26/2020	41	1.67	2,408	76,061,152	24	0
1/27/2020	41	1.66	2,392	76,063,544	24	0
1/28/2020	41	1.42	2,040	76,065,584	24	0
1/29/2020	41	2.66	3,832	76,069,416	24	0
1/30/2020	41	1.49	2,152	76,071,568	24	0
1/31/2020	41	1.12	1,608	76,073,176	24	0
	41.0	**2.45**	**109,232**	**76,073,176**	**31.0**	**100%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage

Monthly Flow Calculations
February 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
2/1/2020	41	1.11	1,600	76,074,776	24	0
2/2/2020	41	1.37	1,976	76,076,752	24	0
2/3/2020	41	1.26	1,816	76,078,568	24	0
2/4/2020	41	1.41	2,024	76,080,592	24	0
2/5/2020	41	1.12	1,608	76,082,200	24	0
2/6/2020	40	1.26	1,816	76,084,016	24	0
2/7/2020	40	1.11	1,592	76,085,608	24	0
2/8/2020	40	0.97	1,392	76,087,000	24	0
2/9/2020	40	1.11	1,592	76,088,592	24	0
2/10/2020	41	1.43	2,056	76,090,648	24	0
2/11/2020	41	1.39	2,008	76,092,656	24	0
2/12/2020	41	2.67	3,848	76,096,504	24	0
2/13/2020	41	1.11	1,592	76,098,096	24	0
2/14/2020	41	2.09	3,008	76,101,104	24	0
2/15/2020	41	1.23	1,768	76,102,872	24	0
2/16/2020	41	1.09	1,576	76,104,448	24	0
2/17/2020	41	0.93	1,344	76,105,792	24	0
2/18/2020	41	2.02	2,912	76,108,704	24	0
2/19/2020	41	1.26	1,808	76,110,512	24	0
2/20/2020	41	0.81	1,168	76,111,680	24	0
2/21/2020	41	0.66	952	76,112,632	24	0
2/22/2020	41	0.94	1,352	76,113,984	24	0
2/23/2020	41	0.81	1,168	76,115,152	24	0
2/24/2020	41	0.67	968	76,116,120	24	0
2/25/2020	41	0.81	1,168	76,117,288	24	0
2/26/2020	41	1.13	1,624	76,118,912	24	0
2/27/2020	40	2.50	3,600	76,122,512	24	0
2/28/2020	40	0.82	1,176	76,123,688	24	0
2/29/2020	40	0.83	1,200	76,124,888	24	0
	41.0	**1.24**	**51,712**	**76,124,888**	**29**	**100%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage

Monthly Flow Calculations
March 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
3/1/2020	40	0.55	792	76,125,680	24	0
3/2/2020	41	2.91	4,192	76,129,872	24	0
3/3/2020	41	5.29	7,624	76,137,496	24	0
3/4/2020	41	3.50	5,040	76,142,536	24	0
3/5/2020	40	0.82	1,184	76,143,720	24	0
3/6/2020	41	0.82	1,184	76,144,904	24	0
3/7/2020	40	0.67	960	76,145,864	24	0
3/8/2020	41	0.67	968	76,146,832	24	0
3/9/2020	41	0.67	960	76,147,792	24	0
3/10/2020	41	2.04	2,944	76,150,736	24	
3/11/2020	41	4.71	6,776	76,157,512	24	0
3/12/2020	41	4.11	5,920	76,163,432	24	0
3/13/2020	41	4.75	6,840	76,170,272	24	0
3/14/2020	41	2.04	2,936	76,173,208	24	0
3/15/2020	41	3.89	5,608	76,178,816	24	0
3/16/2020	41	3.99	5,744	76,184,560	24	0
3/17/2020	41	2.74	3,944	76,188,504	24	0
3/18/2020	41	2.38	3,424	76,191,928	24	0
3/19/2020	41	2.53	3,648	76,195,576	24	0
3/20/2020	41	5.04	7,264	76,202,840	24	0
3/21/2020	41	4.16	5,984	76,208,824	24	0
3/22/2020	41	3.23	4,648	76,213,472	24	0
3/23/2020	41	3.00	4,320	76,217,792	24	0
3/24/2020	41	2.96	4,256	76,222,048	24	0
3/25/2020	41	2.89	4,168	76,226,216	24	0
3/26/2020	40	2.63	3,792	76,230,008	24	0
3/27/2020	40	2.71	3,896	76,233,904	24	0
3/28/2020	41	3.19	4,600	76,238,504	24	0
3/29/2020	40	5.30	7,632	76,246,136	24	0
3/30/2020	40	4.81	6,928	76,253,064	24	0
3/31/2020	40	4.23	6,088	76,259,152	24	0
	41.0	**3.01**	**134,264**	**76,259,152**	**31**	**100%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage

Monthly Flow Calculations
April 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
4/1/2020	40	3.52	5,072	76,264,224	24	0
4/2/2020	40	3.09	4,448	76,268,672	24	0
4/3/2020	40	2.81	4,040	76,272,712	24	0
4/4/2020	40	2.52	3,624	76,276,336	24	0
4/5/2020	40	2.41	3,472	76,279,808	24	0
4/6/2020	40	3.51	5,056	76,284,864	24	0
4/7/2020	40	2.27	3,264	76,288,128	24	0
4/8/2020	40	2.22	3,200	76,291,328	24	0
4/9/2020	40	3.83	5,520	76,296,848	24	0
4/10/2020	40	4.68	6,736	76,303,584	24	0
4/11/2020	40	2.89	4,168	76,307,752	24	0
4/12/2020	40	2.53	3,648	76,311,400	24	0
4/13/2020	40	4.60	6,624	76,318,024	24	0
4/14/2020	40	3.74	5,384	76,323,408	24	0
4/15/2020	40	2.99	4,304	76,327,712	24	0
4/16/2020	40	2.51	3,616	76,331,328	24	0
4/17/2020	40	2.29	3,296	76,334,624	24	0
4/18/2020	40	1.96	2,816	76,337,440	24	0
4/19/2020	40	1.91	2,744	76,340,184	24	0
4/20/2020	40	1.86	2,672	76,342,856	24	0
4/21/2020	40	1.79	2,584	76,345,440	24	0
4/22/2020	40	1.69	2,432	76,347,872	24	0
4/23/2020	40	1.52	2,192	76,350,064	24	0
4/24/2020	40	1.54	2,216	76,352,280	24	0
4/25/2020	40	1.39	2,000	76,354,280	24	0
4/26/2020	40	1.87	2,688	76,356,968	24	0
4/27/2020	40	1.97	2,832	76,359,800	24	0
4/28/2020	40	1.80	2,592	76,362,392	24	0
4/29/2020	40	1.66	2,392	76,364,784	24	0
4/30/2020	40	4.97	7,160	76,371,944	24	0
	40.0	**2.61**	**112,792**	**76,371,944**	**30**	**100%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage

Monthly Flow Calculations
May 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
5/1/2020	40	4.97	7,160	76,379,104	24	0
5/2/2020	40	2.82	4,056	76,383,160	24	0
5/3/2020	40	2.40	3,456	76,386,616	24	0
5/4/2020	40	1.68	2,424	76,389,040	12	0
5/5/2020	0	0.00	0	76,389,040	0	0
5/6/2020	0	0.00	0	76,389,040	0	0
5/7/2020	40	1.14	1,640	76,390,680	12	0
5/8/2020	40	1.14	1,640	76,392,320	24	0
5/9/2020	41	1.29	1,858	76,394,178	24	0
5/10/2020	40	0.96	1,384	76,395,562	24	0
5/11/2020	40	0.98	1,407	76,396,969	24	0
5/12/2020	40	0.84	1,214	76,398,183	24	0
5/13/2020	40	0.82	1,179	76,399,362	24	0
5/14/2020	40	0.85	1,217	76,400,579	24	0
5/15/2020	40	0.98	1,416	76,401,995	24	0
5/16/2020	40	0.83	1,199	76,403,194	24	0
5/17/2020	40	0.84	1,211	76,404,405	24	0
5/18/2020	40	1.40	2,013	76,406,418	24	0
5/19/2020	40	0.97	1,402	76,407,820	24	0
5/20/2020	40	1.13	1,621	76,409,441	24	0
5/21/2020	40	0.83	1,194	76,410,635	24	0
5/22/2020	40	0.83	1,196	76,411,831	24	0
5/23/2020	40	0.99	1,432	76,413,263	24	0
5/24/2020	40	0.83	1,194	76,414,457	24	0
5/25/2020	40	0.70	1,005	76,415,462	24	0
5/26/2020	40	0.55	792	76,416,254	24	0
5/27/2020	40	0.55	797	76,417,051	24	0
5/28/2020	40	2.46	3,546	76,420,597	24	0
5/29/2020	40	1.20	1,731	76,422,328	24	0
5/30/2020	40	0.95	1,373	76,423,701	24	0
5/31/2020	40	0.69	989	76,424,690	24	0
	41.0	**1.18**	**52,746**	**76,424,690**	**27**	**90.3%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage

Monthly Flow Calculations
June 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
6/1/2020	40	0.54	775	76,425,465	24	0
6/2/2020	40	0.68	982	76,426,447	24	0
6/3/2020	40	1.24	1,789	76,428,236	24	0
6/4/2020	40	0.69	992	76,429,228	24	0
6/5/2020	40	0.53	763	76,429,991	24	0
6/6/2020	40	0.85	1,225	76,431,216	24	0
6/7/2020	40	1.42	2,050	76,433,266	24	0
6/8/2020	40	0.26	376	76,433,642	24	0
6/9/2020	40	0.27	382	76,434,024	24	0
6/10/2020	40	0.41	587	76,434,611	24	0
6/11/2020	40	0.54	773	76,435,384	24	0
6/12/2020	40	0.13	186	76,435,570	24	0
6/13/2020	40	0.26	377	76,435,947	24	0
6/14/2020	40	0.26	376	76,436,323	24	0
6/15/2020	40	0.14	196	76,436,519	24	0
6/16/2020	40	0.26	376	76,436,895	24	0
6/17/2020	40	0.26	381	76,437,276	24	0
6/18/2020	40	0.13	189	76,437,465	24	0
6/19/2020	40	0.26	381	76,437,846	24	0
6/20/2020	40	0.26	375	76,438,221	24	0
6/21/2020	40	0.27	382	76,438,603	24	0
6/22/2020	40	0.26	381	76,438,984	24	0
6/23/2020	40	0.54	781	76,439,765	24	0
6/24/2020	40	1.07	1,536	76,441,301	24	0
6/25/2020	40	0.40	571	76,441,872	24	0
6/26/2020	40	0.26	376	76,442,248	24	0
6/27/2020	40	0.40	569	76,442,817	24	0
6/28/2020	40	0.53	761	76,443,578	24	0
6/29/2020	40	0.92	1,328	76,444,906	24	0
6/30/2020	40	0.79	1,137	76,446,043	24	0
	40.0	**0.49**	**21,353**	**76,446,043**	**30**	**100%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage

Monthly Flow Calculations
July 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
7/1/2020	40	0.39	568	76,446,611	24	0
7/2/2020	40	0.26	370	76,446,981	24	0
7/3/2020	40	0.39	567	76,447,548	24	0
7/4/2020	40	0.79	1,142	76,448,690	24	0
7/5/2020	40	0.66	946	76,449,636	24	0
7/6/2020	40	0.66	946	76,450,582	24	0
7/7/2020	0	0.00	0	76,450,582	24	0
7/8/2020	40	0.00	0	76,450,582	24	0
7/9/2020	41	0.00	0	76,450,582	24	0
7/10/2020	40	0.26	377	76,450,959	24	0
7/11/2020	40	0.39	561	76,451,520	24	0
7/12/2020	40	0.37	533	76,452,053	24	0
7/13/2020	40	0.39	564	76,452,617	24	0
7/14/2020	40	0.26	375	76,452,992	24	0
7/15/2020	40	0.13	185	76,453,177	24	0
7/16/2020	40	0.38	553	76,453,730	24	0
7/17/2020	40	0.39	566	76,454,296	24	0
7/18/2020	40	0.39	563	76,454,859	24	0
7/19/2020	40	0.39	557	76,455,416	24	0
7/20/2020	40	0.26	376	76,455,792	24	0
7/21/2020	40	0.26	373	76,456,165	24	0
7/22/2020	40	0.39	563	76,456,728	24	0
7/23/2020	40	0.26	373	76,457,101	24	0
7/24/2020	40	0.26	369	76,457,470	24	0
7/25/2020	40	0.25	364	76,457,834	24	0
7/26/2020	40	0.26	372	76,458,206	24	0
7/27/2020	40	0.25	365	76,458,571	24	0
7/28/2020	40	0.25	365	76,458,936	24	0
7/29/2020	40	0.25	361	76,459,297	24	0
7/30/2020	40	0.26	374	76,459,671	24	0
7/31/2020	40	0.26	375	76,460,046	24	0
	41.0	**0.31**	**14,003**	**76,460,046**	**31**	**100%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage

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Monthly Flow Calculations
August 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
8/1/2020	40	0.13	186	76,460,232	24	0
8/2/2020	40	0.26	371	76,460,603	24	0
8/3/2020	40	0.26	373	76,460,976	24	0
8/4/2020	40	0.13	185	76,461,161	24	0
8/5/2020	40	0.26	372	76,461,533	24	0
8/6/2020	40	0.26	373	76,461,906	24	0
8/7/2020	40	0.26	374	76,462,280	24	0
8/8/2020	40	0.13	185	76,462,465	24	0
8/9/2020	40	0.13	187	76,462,652	24	0
8/10/2020	40	0.26	370	76,463,022	24	0
8/11/2020	40	0.13	184	76,463,206	24	0
8/12/2020	40	0.13	184	76,463,390	24	0
8/13/2020	40	0.13	186	76,463,576	24	0
8/14/2020	40	0.13	183	76,463,759	24	0
8/15/2020	40	0.13	185	76,463,944	24	0
8/16/2020	0	0.00	0	76,463,944	24	0
8/17/2020	40	0.13	187	76,464,131	24	0
8/18/2020	40	0.12	176	76,464,307	24	0
8/19/2020	40	0.13	184	76,464,491	24	0
8/20/2020	0	0.00	0	76,464,491	24	0
8/21/2020	40	0.13	184	76,464,675	24	0
8/22/2020	40	0.13	188	76,464,863	24	0
8/23/2020	0	0.00	0	76,464,863	24	0
8/24/2020	40	0.13	187	76,465,050	24	0
8/25/2020	0	0.00	0	76,465,050	24	0
8/26/2020	40	0.13	185	76,465,235	24	0
8/27/2020	40	0.13	186	76,465,421	24	0
8/28/2020	0	0.00	0	76,465,421	24	0
8/29/2020	40	0.13	189	76,465,610	24	0
8/30/2020	0	0.00	0	76,465,610	24	0
8/31/2020	40	0.13	184	76,465,794	24	0
	40.0	**0.13**	**5,748**	**76,465,794**	**31**	**100%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage

Monthly Flow Calculations
September 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
9/1/2020	40	0.13	188	76,465,982	24	0
9/2/2020	0	0.00	0	76,465,982	24	0
9/3/2020	40	0.13	187	76,466,169	24	0
9/4/2020	0	0.00	0	76,466,169	24	0
9/5/2020	40	0.13	187	76,466,356	24	0
9/6/2020	0	0.00	0	76,466,356	24	0
9/7/2020	40	0.13	186	76,466,542	24	0
9/8/2020	0	0.00	0	76,466,542	24	0
9/9/2020	40	0.13	187	76,466,729	24	0
9/10/2020	0	0.00	0	76,466,729	24	0
9/11/2020	40	0.13	187	76,466,916	24	0
9/12/2020	0	0.00	0	76,466,916	24	0
9/13/2020	40	0.13	187	76,467,103	24	0
9/14/2020	0	0.00	0	76,467,103	24	0
9/15/2020	40	0.13	184	76,467,287	24	0
9/16/2020	0	0.00	0	76,467,287	24	0
9/17/2020	40	0.13	185	76,467,472	24	0
9/18/2020	0	0.00	0	76,467,472	24	0
9/19/2020	40	0.13	186	76,467,658	24	0
9/20/2020	0	0.00	0	76,467,658	24	0
9/21/2020	40	0.13	186	76,467,844	24	0
9/22/2020	0	0.00	0	76,467,844	24	0
9/23/2020	40	0.13	187	76,468,031	24	0
9/24/2020	0	0.00	0	76,468,031	24	0
9/25/2020	40	0.13	187	76,468,218	24	0
9/26/2020	0	0.00	0	76,468,218	24	0
9/27/2020	0	0.00	0	76,468,218	24	0
9/28/2020	40	0.13	185	76,468,403	24	0
9/29/2020	40	2.87	4,133	76,472,536	24	0
9/30/2020	39	0.40	581	76,473,117	24	0
	40	**0.17**	**7,323**	**76,473,117**	**30**	**100%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage

Monthly Flow Calculations
October 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
10/1/2020	39	0.27	383	76,473,500	24	0
10/2/2020	39	0.26	376	76,473,876	24	0
10/3/2020	39	0.27	382	76,474,258	24	0
10/4/2020	39	0.26	375	76,474,633	24	0
10/5/2020	39	0.14	198	76,474,831	24	0
10/6/2020	39	0.14	201	76,475,032	24	0
10/7/2020	39	0.52	742	76,475,774	24	0
10/8/2020	39	0.13	194	76,475,968	24	0
10/9/2020	39	0.14	197	76,476,165	24	0
10/10/2020	39	0.26	377	76,476,542	24	0
10/11/2020	39	0.13	186	76,476,728	24	0
10/12/2020	39	0.27	385	76,477,113	24	0
10/13/2020	39	0.27	382	76,477,495	24	0
10/14/2020	51	0.86	1,232	76,478,727	24	0
10/15/2020	45	0.45	652	76,479,379	24	0
10/16/2020	45	0.88	1,269	76,480,648	24	0
10/17/2020	45	0.49	701	76,481,349	24	0
10/18/2020	44	0.17	242	76,481,591	24	0
10/19/2020	45	0.31	450	76,482,041	24	0
10/20/2020	45	0.47	677	76,482,718	24	0
10/21/2020	45	0.44	627	76,483,345	24	0
10/22/2020	45	0.18	252	76,483,597	24	0
10/23/2020	45	1.30	1,865	76,485,462	24	0
10/24/2020	45	1.36	1,954	76,487,416	24	0
10/25/2020	45	0.30	433	76,487,849	24	0
10/26/2020	45	0.14	200	76,488,049	24	0
10/27/2020	45	0.32	466	76,488,515	24	0
10/28/2020	45	0.17	247	76,488,762	24	0
10/29/2020	45	0.17	244	76,489,006	24	0
10/30/2020	45	0.27	383	76,489,389	24	0
10/31/2020	45	0.14	200	76,489,589	24	0
	42	**3**	**121,504**	**75,804,576**	**31**	**100%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage

Monthly Flow Calculations
November 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
11/1/2020	45	0.43	615	76,490,204	24	0
11/2/2020	45	0.15	220	76,490,424	24	0
11/3/2020	45	0.39	556	76,490,980	24	0
11/4/2020	45	0.15	210	76,491,190	24	0
11/5/2020	45	0.16	224	76,491,414	24	0
11/6/2020	45	0.16	232	76,491,646	24	0
11/7/2020	45	0.16	237	76,491,883	24	0
11/8/2020	45	0.17	243	76,492,126	24	0
11/9/2020	45	0.33	478	76,492,604	24	0
11/10/2020	45	0.17	243	76,492,847	24	0
11/11/2020	45	0.27	395	76,493,242	24	0
11/12/2020	45	0.15	215	76,493,457	24	0
11/13/2020	45	0.15	221	76,493,678	24	0
11/14/2020	45	0.16	225	76,493,903	24	0
11/15/2020	45	0.27	392	76,494,295	24	0
11/16/2020	45	0.15	210	76,494,505	24	0
11/17/2020	45	0.15	215	76,494,720	24	0
11/18/2020	45	0.15	213	76,494,933	24	0
11/19/2020	0	0.00	0	76,494,933	24	0
11/20/2020	45	0.15	218	76,495,151	24	0
11/21/2020	45	0.16	226	76,495,377	24	0
11/22/2020	45	0.61	878	76,496,255	24	0
11/23/2020	45	0.46	667	76,496,922	24	0
11/24/2020	45	0.14	196	76,497,118	24	0
11/25/2020	45	0.14	208	76,497,326	24	0
11/26/2020	45	0.44	639	76,497,965	24	0
11/27/2020	45	0.15	211	76,498,176	24	0
11/28/2020	45	0.31	449	76,498,625	24	0
11/29/2020	45	0.16	234	76,498,859	24	0
11/30/2020	45	0.60	871	76,499,730	24	0
	45.0	**0.23**	**10,141**	**76,499,730**	**30**	**100%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage

Monthly Flow Calculations
December 2020

Date	Maximum Flow (gpm)	Average Flow Rate (gpm)	Total Daily Flow (Gal)	Total Gallons To Date (Gal)	Run Time (hours)	Run Time (minutes)
12/1/2020	45	0.71	1,027	76,500,757	24	0
12/2/2020	45	0.46	667	76,501,424	24	0
12/3/2020	45	0.29	419	76,501,843	24	0
12/4/2020	45	0.16	231	76,502,074	24	0
12/5/2020	45	2.50	3,596	76,505,670	24	0
12/6/2020	45	2.83	4,078	76,509,748	24	0
12/7/2020	45	0.17	240	76,509,988	24	0
12/8/2020	45	0.16	232	76,510,220	24	0
12/9/2020	45	0.13	189	76,510,409	24	0
12/10/2020	0	0.00	0	76,510,409	24	0
12/11/2020	0	0.00	0	76,510,409	24	0
12/12/2020	0	0.00	0	76,510,409	24	0
12/13/2020	0	0.00	0	76,510,409	24	0
12/14/2020	0	0.00	0	76,510,409	24	0
12/15/2020	0	0.00	0	76,510,409	24	0
12/16/2020	0	0.00	0	76,510,409	24	0
12/17/2020	45	0.28	408	76,510,817	24	0
12/18/2020	45	0.15	221	76,511,038	24	0
12/19/2020	45	0.32	467	76,511,505	24	0
12/20/2020	45	0.27	387	76,511,892	24	0
12/21/2020	45	0.42	610	76,512,502	24	0
12/22/2020	45	0.28	403	76,512,905	24	0
12/23/2020	45	0.15	217	76,513,122	24	0
12/24/2020	45	0.64	915	76,514,037	24	0
12/25/2020	45	0.62	886	76,514,923	24	0
12/26/2020	45	0.30	435	76,515,358	24	0
12/27/2020	45	0.33	471	76,515,829	24	0
12/28/2020	45	0.63	905	76,516,734	24	0
12/29/2020	45	0.50	722	76,517,456	24	0
12/30/2020	45	0.47	681	76,518,137	24	0
12/31/2020	45	0.49	712	76,518,849	24	0
	45.0	**0.43**	**19,119**	**76,518,849**	**31**	**100%**
	Daily Maximum (GPM)	Monitoring Period Average (GPM)	Monitoring Period Total (GAL)	Cumulative Total (GAL)	Runtime (Days)	Operational Percentage