PERIODIC REVIEW REPORT
FEBRUARY 2020 – FEBRUARY 2023

TIOGA CASTINGS SITE
OWEGO, NEW YORK 13827

NYSDEC Site No. 754012
Work Assignment No. D009812-04

Prepared for:

NEW YORK STATE

Division of Environmental Remediation
625 Broadway, 12th Floor
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JUNE 2023

TRC Project No. 386554

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LIST OF ACRONYMS AND ABBREVIATIONS

AMSL	Above Mean Sea Level
COCs	Contaminants of Concern
DER	Department of Environmental Remediation
DTW	Depth to Water
DUSRs	Data Usability Summary Reports
ECs	Engineering Controls
EE	Environmental Easement
FS	Feasibility Study
ft. bgs	Feet Below Ground Surface
TOC	Top of Casing
ICs	Institutional Controls
IHWDS	Inactive Hazardous Waste Disposal Site
LEL	Lower Explosive Limit
N/A	Not Applicable
ng/L	Nanograms per Liter
ND	Not Detected
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NTU	Nephelometric Turbidity Unit
MCL	Maximum Contaminant Level
PCBs	Polychlorinated Biphenyls
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PID	Photoionization Detector
PRR	Periodic Review Report
RI	Remedial Investigation
ROD	Record of Decision
SBL	Section, Block and Lot
SCG	Standard, Criteria, and Guidance
SIM	Selected Ion Monitoring
SMP	Site Management Plan
SMR	Site Management Report
SVOCs	Semi-volatile Organic Compounds
TAL	Target Analyte List
TOGS	NYSDEC Division of Water Technical and Operational Guidance Series
TRC	TRC Engineers, Inc.
VOCs	Volatile Organic Compounds
WA	Work Assignment
µg/L	Micrograms per Liter
USEPA	United States Environmental Protection Agency

Executive Summary

Category	Summary/Results
Engineering Controls	• Cover system and supporting features • Fencing/access control • Groundwater monitoring well network
Institutional Controls	Site Management Plan – February 2020
Site Classification	Class 4 IHWDS
Site Management Plan	Site Management Plan – February 2020
Certification/Reporting Period	The SMP requires Site monitoring to be conducted semi-annually and a PRR to be prepared every three years.
Inspection	**Frequency**
Site Inspection	Semi-annual
Monitoring	**Frequency**
Groundwater	Every 5th Quarter
Prior PRR/SMR Recommendations	The 2020 PRR recommended continuing site management and reporting activities as specified in the SMP, and continuing analysis of TAL metals and mercury, as part of future groundwater monitoring events.
Site Management Activities	The following site inspections and groundwater sampling events were conducted in accordance with the SMP during this reporting period (2020-2022): • 2020: Site inspections on a semi-annual basis and the collection of groundwater samples. Samples were submitted for analysis of total cyanide and TAL Metals and mercury. • 2021: One site inspection was conducted. • 2022: Site inspections on a semi-annual basis and collection of groundwater samples. Samples were submitted for analysis of TAL Metals and mercury.
Significant Findings or Concerns	1. Holes in the site fence were noted along the northeastern and southern portions of the perimeter fence. 2. The landfill cap, drainage swales, groundwater monitoring wells, access roads were observed to be in good condition. 3. Total iron and sodium in groundwater exceeds the NYSDEC Class GA Standards; however, the Site contaminants of concern (cadmium, chromium, and lead) were not detected above these standards.
Recommendations	1. The perimeter fence should be repaired. 2. The groundwater monitoring frequency should be reduced to biannually (every two years). 3. Vegetation mowing should continue to be performed annually and should be coordinated with TRC so that woody vegetation, especially in the drainage swales and basins, is sufficiently removed. 4. The certification period should be changed to five years with the next PRR to be completed in February 2028.
Cost Evaluations	TRC's cost for site management activities for this reporting period (beginning February 2020 when TRC began managing the Site and ending in February 2023 upon completion of the reporting period) are $56,046. This cost includes labor and expenses incurred by TRC, only; it does not include any costs incurred directly by the NYSDEC.

1.0 Introduction

This PRR has been prepared for the Tioga Castings Site (referred to as "the Site") and covers the period from December 30, 2019 through February 28, 2023. This PRR was prepared in accordance with the New York State Department of Environmental Conservation (NYSDEC) Department of Environmental Remediation (DER) Work Assignment (WA) No. D009812-04 Notice to Proceed dated February 27, 2020, the NYSDEC-approved amended Scope of Work dated July 20, 2020 (WA No. D009812-04.30) and NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation (NYSDEC DER-10). A Site summary and applicable remedial program information are presented below.

Site Information			
Site Name:	Tioga Castings Site	**NYSDEC Site No:**	754012
Site Location:	1 Foundry Street, Owego, Tioga County, New York	**Remedial Program:**	State Superfund Program
Site Type:	Waste disposal site	**Classification:**	Class 4 IHWDS
Parcel Identification(s):	Owego Tax Map – 128.07-2-7	**Parcel Acreage / EE Acreage:**	7 acres / 1 acre
Selected Remedy:	Waste consolidation, cover system and monitoring	**Site COC(s):**	Cadmium, chromium, and lead in groundwater Cadmium, Chromium, and Lead in subsurface soil
Current Remedial Program Phase:	Site Management	**Institutional Controls:**	Site Management Plan – February 2020
Post-Remediation Monitoring and Sampling Frequency:	Site and landfill inspection (semi-annual) and groundwater monitoring (every 5th quarter)	**Engineering Controls:**	Cover system, fencing/access control, and groundwater monitoring well network
Monitoring Locations:	Groundwater monitoring wells (4)	**Required Reporting:**	PRR – Every 3 years (per SMP)

1.1 Site Location, Ownership, and Description

The Tioga Castings Site is approximately one acre in size and is located at Foundry Street in Owego, Tioga County, New York (the "Site"). The Site includes the former foundry facility area and an on-Site landfill area and is bounded by a railroad line to the north, Foundry Street and a non-for-profit organization called Beds 4 Kids to the south, a former foundry to the east, and vacant land to the west. The Site location is shown on **Figure 1,** and the Site Plan is shown on **Figure 2**. The Site is zoned for industrial use and is currently listed by the NYSDEC Registry of Inactive Hazardous Waste Sites as a Class 4 Site. The former

foundry facility area has been remediated; although, the former landfill area still requires semi-annual inspection and periodic groundwater monitoring.

The Site was formerly owned and operated by Tioga Castings between the years 1945 and 1988 as a cupola-type foundry facility to produce gray-iron castings. Facility operations included smelting of scrap iron (including engine blocks), pig iron, limestone and coke, and the use of phenol-formaldehyde treated sand to cast the iron. Solid waste produced by the foundry operations included bentonite, fly ash, cast iron grindings, sand molds, and fine-cupola dust and baghouse ash. Solid waste produced at the facility were reportedly disposed of off-Site until March 1979 when the facility began operating an on-Site landfill for foundry waste disposal. Facility operations ceased in 1988, with waste materials remaining on-Site in the landfill area and throughout the foundry facility including sand casts, drums, and one-ton plastic lined bags of cupola dust. In July 1989, a fire destroyed most of the foundry structure, and the other Site structures were damaged and deemed structurally unsafe.

1.2 Investigation/Remedial History

Due to the Site conditions, two Interim Remedial Measures (IRMs) were conducted by Clean Ventures, Inc. to address potential physical and chemical hazards at the Site. The IRMs included the construction of a perimeter fence around the property to limit access in the fall of 1989, the removal and proper disposal of various drums and their contents by early 1990, and the placement of a temporary cover over the landfill to mitigate the erosion potential of landfill materials in August 1991.

In 1995, a Record of Decision (ROD) was signed for the Site by the NYSDEC which included the following remedial actions:

- Consolidation of soil and waste piles located on and off-Site that contained concentrations greater than the cleanup goals assigned for Site's on-Site landfill;
- Maintaining deed restrictions to prevent Site development in areas of the Site where contaminated materials are present;
- Placement of a low-permeability cover over the on-Site landfill;
- Maintenance of the perimeter fence surrounding the on-Site landfill;
- Clean out and filling of an on-Site septic tank with cement;
- Remedy operation and maintenance (O&M);
- Groundwater monitoring; and
- The establishment of Site-specific cleanup goals for cadmium, chromium, and lead.

Landfill closure was completed in 1997, and asbestos-containing-materials identified in debris piles and building structures were removed from the Site in 2001.

A Work Plan was approved by the NYSDEC for the Site (developed by Malcolm Pirnie, Inc.) in June 2007, and was implemented with Site-specific O&M and groundwater monitoring procedures. Additional investigation activities took place in July 2008 to support the reclassification of the Site from a Class 2 to Class 4 Site in the NYSDEC Registry of Inactive Waste Sites. The investigation included the following:

- Soil borings to evaluate whether concentrations of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), or metals greater than the respective NYSDEC standards or the defined Site-specific cleanup criteria were present in subsurface soils at the Site;
- Sub-slab soil vapor samples beneath the former foundry building slab to evaluate soil vapor intrusion pathways;
- Soil borings within the landfill to evaluate the concentrations of VOCs, metals, and PCBs;
- Installation of three groundwater monitoring wells for evaluating VOC, SVOC, and metals concentrations in groundwater (2009); and
- Surface soil sampling to evaluate concentrations of contaminants in surface soil in impacted areas of the Site (2009).

Following the NYSDEC Site investigation summarized above, the Site was reclassified from a Class 2 to a Class 4 on the NYSDEC Registry of Inactive Hazardous Waste Sites in August 2011, the Site boundary was reduced from approximately seven acres to approximately one acre, encompassing only the on-Site landfill.

Following a Site inspection in September 2011, damages to the north and south sides of the landfill perimeter slope were observed, including soil failure and minor slumping. Arcadis submitted a Work Plan to NYSDEC to facilitate landfill slope repair and inspect the landfill liner and cap. The Work Plan was approved, and the liner inspection and repair work occurred during February and March 2013. During inspection, no perforations to the high-density polyethylene (HDPE) liner were observed though in some sections of liner, particularly where soil failure occurred, folds and wrinkles of the liner were observed. These sections of liner were repaired and tested used a vacuum box to confirm liner repair integrity.

The NYSDEC issued an Environmental Notice (EN) for the Site in June 2012 to restrict excavation or disturbance of the Engineering Controls (ECs), changes to the ECs without NYSDEC written permission, property use, and groundwater usage.

During September and October of 2014, following review of historical groundwater data, six groundwater monitoring wells (primarily located downgradient of the landfill) were abandoned and replaced, and one new down-gradient monitoring well was installed (MW-9, shown on Figure 2).

During a Site inspection in November 2015, Arcadis observed ruts in the cap topsoil from mowing equipment at the northeast corner of the landfill. Further inspection of the liner at the location of the cap damage deemed that the liner was not damaged, thus, the landfill cover was restored.

Arcadis prepared a SMP for the Site which was accepted by NYSDEC in 2015, and OM&M activities have been conducted according to the SMP since. The SMP specifies that Site-wide inspections occur, at minimum, on an annual basis and after severe weather events, and groundwater sampling is to occur once every five quarters to provide seasonal groundwater monitoring information.

1.3 Remaining Contamination

The goals for the Site remedy were developed to render the Site suitable for commercial and/or industrial use, as well as to eliminate, to the extent possible, the potential for direct human and wildlife contact with contaminated soil. The Site remedy consisted of the excavation/consolidation, to the extent possible, of materials impacted with metals, and the placement of a soil cover over non-built areas of the Site where impacted materials remain present. The materials below the former building concrete slab and below the landfill cover are known to still be impacted by metal contamination but are not readily accessible to humans or wildlife.

In July 2008, 28 subsurface soil samples were collected and analyzed for VOCs, SVOCs, and metals. None of these samples exhibited concentrations of VOCs or SVOCs greater than corresponding Commercial SCOs. Arsenic, lead, and manganese concentrations were detected exceeding corresponding Commercial SCOs in three soil samples, and copper concentrations were detected exceeding corresponding Commercial SCOs in two of the soil samples.

In July 2009, six surface soil samples were collected from areas of the Site known to have debris or coal piles or concentrations of metals in subsurface soil or groundwater greater than the respective 6 NYCRR Part 375, NYSDEC Class GA criteria or Site-specific, cleanup goals. Five surface soil samples were also collected from off-Site locations for a comparison of background concentrations of metals in the vicinity of the Site. [This comparison was performed in accordance with the NYSDEC Division of Environmental Remediation Draft DER-10 Technical Guidance for Site Investigation and Remediation (DER-10) and in consultation with NYSDEC and New York State Department of Health (NYSDOH) representatives.] Lead and hexavalent/trivalent chromium concentrations exceeded the Site-Specific Cleanup Objectives but were below the Commercial SCOs. One surface soil sample contained lead at a concentration exceeding the corresponding Site-specific cleanup goal, but below the Commercial SCOs. None of the other soil samples contained metals concentrations greater than respective Commercial SCOs.

During groundwater monitoring in 2017 and 2018, involving four monitoring wells, iron concentrations from three of the four monitoring wells exceeded the NYSDEC Class GA Standard, and sodium levels in one monitoring well exceeded the NYSDEC Class GA Standard. No other metals, including the Site related contaminants of concern (cadmium, chromium, and lead), were detected at concentrations greater than the NYSDEC Class GA standards.

2.0 Institutional and Engineering Control Plan Compliance

Engineering Controls and Institutional Controls (ECs/ICs) have been implemented for the Site as part of the SMP to protect human health and the environment against the contaminated soil and groundwater remaining at the Site.

2.1 Engineering Controls

Engineering Controls implemented at the Site are comprised of a landfill cap system and landfill security measures, as further described below.

Landfill Cap

The landfill cap, constructed in 1991, consisting of (from bottom to top) a 60-mil HDPE liner, geo-composite drainage materials, approximately two feet of compacted barrier protection soil, and six inches of topsoil, is place over the consolidated landfill waste. The cap is in place to prevent exposure of human and environmental receptors to the contaminated soil/fill, and to reduce surface water infiltration into the landfill. An Excavation Work Plan for the cap outlines procedures for if the landfill cap system is breached. The landfill cap is considered a permanent engineering control, and the quality and integrity of the cap is to be inspected annually as stated in the SMP or after severe weather events. Appendix A of the SMP outlines procedures for addressing potential breaches of the landfill cap, if any should be observed during routine inspections.

Landfill Security

Landfill security consists of a perimeter fence surrounding the landfill area. This fence has a locked gate at the entrance, and warning signs mounted at specific intervals along the full perimeter of the landfill area. These security measures are inspected for issues as part of each of the annual landfill cap inspections.

2.2 Institutional Controls

Institutional Controls (ICs) have been put into place for the Site via deed restrictions, as required by the ROD and include the implementation; maintenance and monitoring of the ECs; and limiting the use and redevelopment of the Site such that future uses can only be for commercial purposes. These ICs are required by the EN and implemented under the SMP, with specifications being laid out for O&M of the ECs, the frequency and manner of the inspection of the ECs, the frequency and manner of groundwater and other environmental or public health monitoring, and the manner and frequency of reporting of information and data related to Site Management. The ICs may not be discontinued without prior approval from NYSDEC.

The deed restrictions put in place for the Site are as follows:

- The property may only be used for commercial use provided that the long-term ECs/ICs included in the SMP are implemented and maintained.
- The property may not be used for a higher level of use, such as unrestricted residential use without additional remediation and amendment of the EN, subject to the approval of the NYSDEC.

- All future activities on the property which may disturb remaining contaminated material must be conducted in accordance with this SMP.
- The use of the groundwater underlying the property is prohibited without treatment which would render it safe for its intended use(s).
- Vegetable gardens and farming on the property are prohibited.
- The Site owner or remedial party shall submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls put in place at the Site remain unchanged from the previous certification or that any changes to the controls are approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP.
- NYSDEC retains the right to access such Controlled Property at any time to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC allows, and will be made by an expert that the NYSDEC finds acceptable.

An Excavation Work Plan (EWP) (Appendix A in the 2020 SMP), also exists for the Site to define procedures to be implemented during any future intrusive work that may penetrate the landfill cap system or disturb remaining contamination at the Site. Any work that occurs under the EWP must also follow a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) that are prepared for the Site. The HASP and CAMP have to be developed for specific activities that will occur under the EWP, and must comply with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State, and local regulations.

If enclosed structures are to be constructed at the Site over areas that contain remaining contamination and/or the potential for soil vapor intrusion (SVI), a SVI evaluation must be undertaken to determine whether a soil vapor mitigation system will be needed to address SVI exposures, or a SVI mitigation system can be installed without performing an evaluation. A work plan must be prepared in accordance with NYSDOH guidance, and submitted to NYSDEC and NYSDOH for approval prior to the performance of any SVI evaluations or the installation of any SVI mitigation system(s).

3.0 Monitoring and Sampling Plan Compliance

The 2020 SMP specifies the following Site monitoring and sampling activities:

Summary of SMP Site Monitoring and Sampling Plan				
Site Management Activity	**Frequency**	**Location**	**Laboratory Analysis**	**Completion Date(s)**
Site and Landfill Inspection	Semi-annual	Site property and engineering controls	Not Applicable	08/19/2020, 12/22/2020, 10/28/2021, and 09/07/2022
Groundwater Sampling	Every 5th Quarter	• MW-3D • MW-4 • MW-6 • MW-9	2020 and 2022: Total TAL Metals via EPA method 6010C and Mercury via EPA method 7470A. 2020 Only: TAL Metals and total cyanide via EPA method 335.4	8/19/2020 and 9/07/2022
PRR	Every 3 years	Not Applicable	Not Applicable	Not Applicable

Notes: None.

3.1 Site Inspection

TRC performed Site and Landfill inspections per the SMP on August 19, 2020, December 22, 2020, October 28, 2021, and September 7, 2022. The Site inspections included an assessment of the current Site use(s), condition of the Site, and condition of ECs, i.e., monitoring wells, landfill capping materials, and fencing/access gate.

A summary of the Site inspections is provided below in context with other Site activities performed.

Summary of Site Activities and Site Monitoring and Sampling August 2020 through September 2022		
Site Management Activity	**Summary of Results**	**Maintenance/Corrective Measure**
Site Inspection	August 2020, December 2020, October 2021, and September 2022: The topsoil layer of the landfill cap was observed to be dry and stable, with no visible erosion areas, cracks, settlements, or seeps. The drainage swales and channels did not contain any water and appeared to be in good condition. Vegetation was observed to be short and not to be impeding the flow of water. The swales, channels and basin appeared to be stable with no areas of active erosion being observed.	None.
Monitoring Well Network Assessment	Monitoring wells were found to be in good condition.	None.
Monitoring Well Gauging	Groundwater monitoring wells were gauged in August 2020 and September 2022.	Well locks were not able to be opened and were replaced with new locks with identical codes.
Groundwater Sampling	August 2020: All four monitoring wells were sampled using low-flow sampling methods. Samples were sent to Eurofins/Test America for analysis of TAL metals, total mercury, and total cyanide. September 2022: All four monitoring wells were sampled using low-flow sampling methods. Samples were sent to Con-test for analysis of TAL metals and total mercury.	None.
Site Perimeter Fencing and Gates	The perimeter fence was found to be in acceptable condition in 2020, but was found to be damaged in two places in September 2022 (fence fabric separated from posts near the northeast corner of the Site and a large hole adjacent to the landfill entrance on the south boundary of the Site).	TRC recommends that the noted fence damage (two locations) be repaired.

Site inspection forms including photo graphic logs from the inspection activities are presented in **Appendix A.**

3.2 Groundwater Monitoring Summary

3.2.1 Monitoring Well Gauging

TRC measured depths to water in four Site groundwater monitoring wells on August 19, 2020, and again on September 8, 2022, to evaluate potential groundwater flow direction. The results of these efforts are

presented on **Table 1**. These data with interpretation of groundwater flow direction are presented on **Figures 3** and **4**. A summary of the Site hydrogeologic information is presented below:

August 2020 Hydrogeologic Summary			
Number of Gauged Wells	**Hydrogeologic Units**	**Hydrogeologic Strata**	**Monitoring Wells per Unit**
4	1	Overburden Bedrock	4 0
Overburden Groundwater Elevation Range		**Bedrock Groundwater Elevation Range**	
Lowest groundwater elevation: 793.67 feet AMSL (MW-9) Highest groundwater elevation: 794.73 feet AMSL (MW-4)		Lowest groundwater elevation: Not Applicable Highest groundwater elevation: Not Applicable	
Inferred Overburden Groundwater Flow Direction		**Inferred Bedrock Groundwater Flow Direction**	
East		Not Applicable	

September 2022 Hydrogeologic Summary			
Number of Gauged Wells	**Hydrogeologic Units**	**Hydrogeologic Strata**	**Monitoring Wells per Unit**
4	1	Overburden Bedrock	4 0
Overburden Groundwater Elevation Range		**Bedrock Groundwater Elevation Range**	
Lowest groundwater elevation: 793.14 feet AMSL (MW-9) Highest groundwater elevation: 794.19 feet AMSL (MW-4)		Lowest groundwater elevation: Not Applicable Highest groundwater elevation: Not Applicable	
Inferred Overburden Groundwater Flow Direction		**Inferred Bedrock Groundwater Flow Direction**	
East		Not Applicable	

3.2.2 Groundwater Sampling

During each of the monitoring well gauging events noted above, TRC also collected groundwater samples from four existing monitoring wells (MW-3D, MW-4, MW-6, and MW-9) utilizing low-flow sampling techniques. Each of these sample sets were submitted to Eurofins/Contest Laboratories for analysis of TAL Metals via EPA Method 6010 except mercury which was analyzed via EPA Method 7471. Additionally, in August 2020, samples were submitted for the analysis of total cyanide via EPA Method 335.4. Groundwater sampling logs from these sampling events are included in **Appendix B**.

A summary of the groundwater sampling information and pertinent well details for each well is presented below.

Summary of Groundwater Monitoring Well Details and Sampling Activities								
Well ID	Monitoring Well Details				2020 Groundwater Sampling Event		2022 Groundwater Sampling Event	
	Northing	Easting	Screen Zone (ft. bgs)	Unit Screened	DTW (ft. below TOC)	SMP Analytes	DTW	SMP Analytes
MW-3D	904905.786	767072.562	*15.5 – 25.5	Overburden	18.27	Total cyanide and TAL metals	17.88	TAL metals
MW-4	904760.339	767199.575	*6.5 – 16.5	Overburden	11.60	Total cyanide and TAL metals	11.14	TAL metals
MW-6	904879.787	767407.901	14.0 – 24.0	Overburden	21.33	Total cyanide and TAL metals	20.81	TAL metals
MW-9	905029.390	767179.374	11.0 – 21.0	Overburden	16.30	Total cyanide and TAL metals	15.83	TAL metals

Notes:
DTW – Depth to Water
ft. bgs – Feet below grade surface
TOC – Top of Casing
Mercury was analyzed via EPA Method 7471, while all other TAL metals were analyzed via EPA Method 6010.
Total cyanide was analyzed via EPA Method 335.4.
*Screen zone for wells MW-3D and MW-4 are inferred as the well logs could not be located.

3.2.3 Analytical Results

The groundwater analytical data resulting from the sampling events discussed above are present in **Tables 2 and 3** and summarized below. The associated laboratory analytical reports and associated Data Usability Summary Reports (DUSRs) are presented in **Appendix C**. Detected compounds exceeding their respective Standards, Criteria, and Guidance (SCGs) for the wells sampled in 2020 and 2022 are shown on **Figures 3** and **4,** respectively.

Summary of Groundwater Analytical Results – August 2020				
Constituent	*SCG	Concentration Range (µg/L)	Location with Highest Concentration	Frequency Exceeding SCG
Iron	300	ND – 440	MW-3D	2/4
Sodium	20,000	5,300 – 27,700	MW-6	1/4

Notes:
ND – Non-detect
µg/L – micrograms per liter
* - NYSDEC Ambient Water Quality Standards and Guidance Values for Class GA Water

Summary of Groundwater Analytical Results – September 2022				
Constituent	**SCG**	**Concentration Range (µg/L)**	**Location with Highest Concentration**	**Frequency Exceeding SCG**
Iron	300	37 – 1,600	MW-4	2/4
Sodium	20,000	16,000 – 39,000	MW-6	4/4

Notes:
µg/L – micrograms per liter
* - NYSDEC Ambient Water Quality Standards and Guidance Values for Class GA Water

4.0 Cost Summary

The total cost of the Site management activities Site from February 2020 through February 2023 is estimated to be $60,168.00. This cost is further detailed below and includes all labor and other expenses associated with the performance of the Site management activities discussed above (project management/administration, semi-annual Site inspections, and the gauging and sampling groundwater). This cost does not include costs incurred directly by NYSDEC in support of the project.

Summary of Site Management Costs
February 1, 2020 through February 28, 2023

Cost Item	Amount Expended (February 1, 2020 through February 28, 2023)	Percent of Total Cost (Approximate)
Engineering Support		
TRC	$56,046.00	93%
Call-out Contractor		
Eurofins/TestAmerica & Pace/Con-Test Laboratories	$1,200.00	2%
Expenses		
TRC	$2,922.00	5%
Total Cost	**$60,168.00**	100%

The following provides a review of each cost item:

- Labor costs include project management (e.g., WA Package preparation, monthly invoicing, project scheduling and coordination, etc.), Site inspections, groundwater gauging and sampling, and reporting (i.e., Site Inspection Report, DUSR, and PRR).
- Subcontractor costs include analytical laboratory costs associated with the groundwater sampling events.
- Expense costs include travel, equipment, and supplies in support of the Site inspections, groundwater gauging and sampling events, and routine Site maintenance activities.
- Reporting costs include data validation, DUSRs, electronic data deliverable preparation, and PRR preparation.

5.0 Conclusions and Recommendations

5.1 Conclusions

- Based on groundwater elevations measured during the August 2020 and September 2022 Site visits, groundwater flow in the overburden hydrogeological unit was to the east-southeast. These observations are consistent with historical observations.

- Sodium and iron were encountered exceeding their respective Class GA values in several groundwater samples; however, the TAL metals of concern (cadmium, chromium, and lead) were not detected above these standards.

- Site and groundwater use appeared to be consistent with the restrictions set forth in the ROD and SMP. Site inspections and inspection reports were also completed. The ICs served as intended during this reporting period.

- Based on the trend graphs included in **Appendix E**, the TAL metals of concern (cadmium. Chromium, and lead) have not been detected above their respective Class GA values in monitoring wells MW-3D, MW-4, MW-6, and MW-9 since at least the last eight years.

5.2 Recommendations

- The perimeter fence should be repaired.
- The groundwater monitoring frequency should be reduced to biannually (every two years).
- Vegetation mowing should continue to be performed annually and should be coordinated with TRC so that woody vegetation, especially in the drainage swales and basins, is sufficiently removed.
- The certification period should be changed to five years with the next PRR to be completed in February 2028.

6.0 Certification of Engineering and Institutional Controls

For each of the ECs/ICs identified for the Site, I certify that all of the following statements are true:

- The ECs/ICs implemented at this Site remain unchanged from the date they were put in place, or the date last approved by DER.
- Nothing has occurred that would impair the ability of the ECs/ICs to protect public health and the environment.
- Nothing has occurred that would constitute a violation or failure to comply with any elements of the SMP Site.

The completed Engineering Control/Institutional Control Certification Form is included in **Appendix D**.

TRC Engineers, Inc.

Prepared By: Jonathan Bone
Jonathan Bone
Project Manager

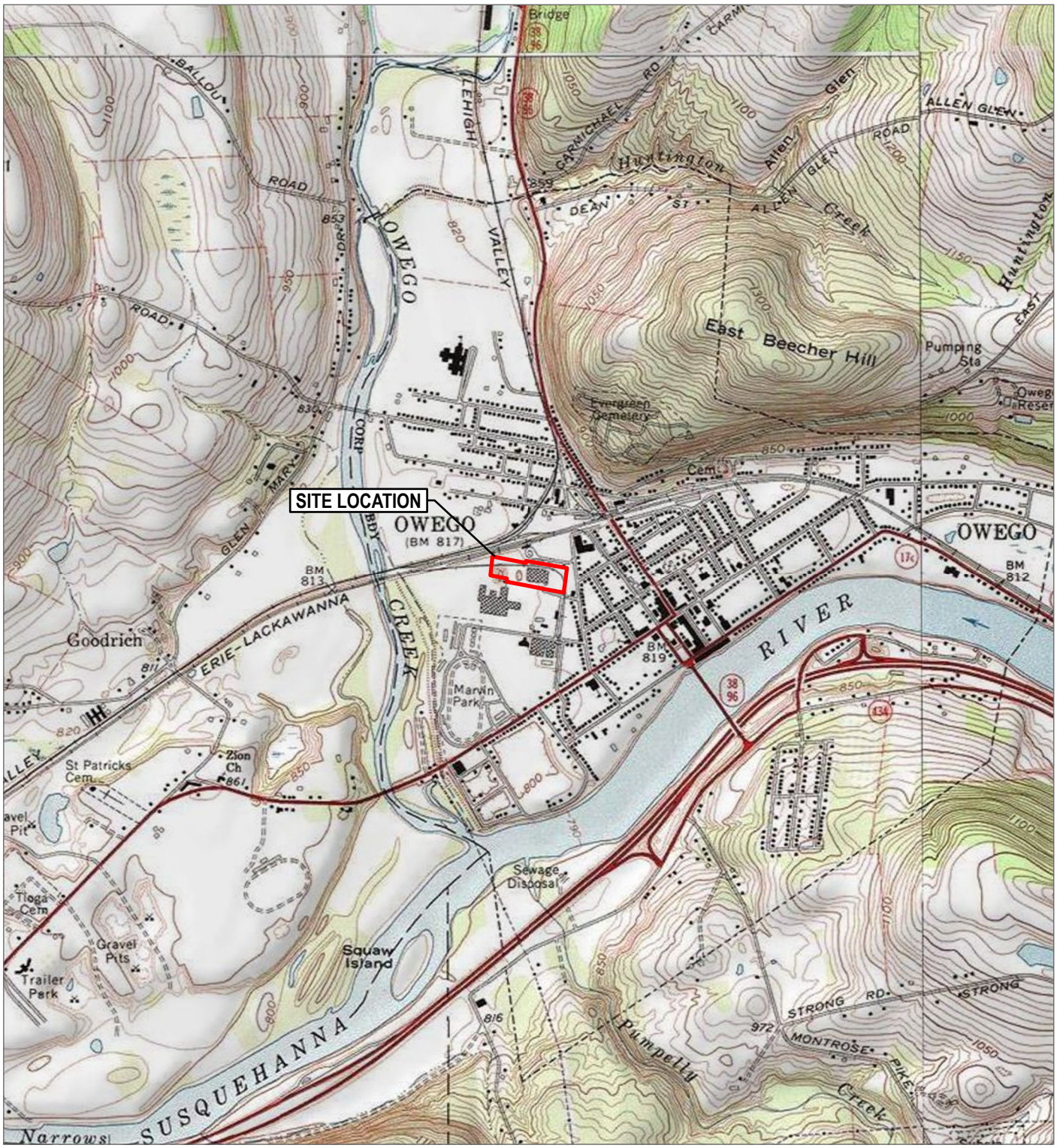
Reviewed By: Derek C. Kaiding
Derek Kaiding, P.E.
Senior Project Manager/Engineer

7.0 Future Site Activities

Based on the recommendations in **Section 5.0,** the following Site management activities will be completed during the next PRR reporting period (February 2023 to February 2026):

- Site Inspection – Semi-Annual (next scheduled Q4 2023);
- Groundwater – Biannually (next scheduled Q3 2024);
- Repair and Corrective Actions – As needed (next scheduled Q3 2023 to address the damage to fence); and
- PRR – Every 5 years (next scheduled February 2028)

Figures



LEGEND

SITE LOCATION

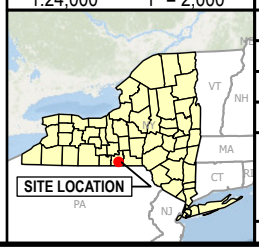
BASE MAP: USA TOPO MAPS MAP SERVICE
DATA SOURCES: TRC

N

0 1,000 2,000

FEET

1:24,000 1" = 2,000'



PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
TIOGA CASTING FACILITIES - SITE NO. 754012
FOUNDRY STREET
OWEGO, NEW YORK 13827

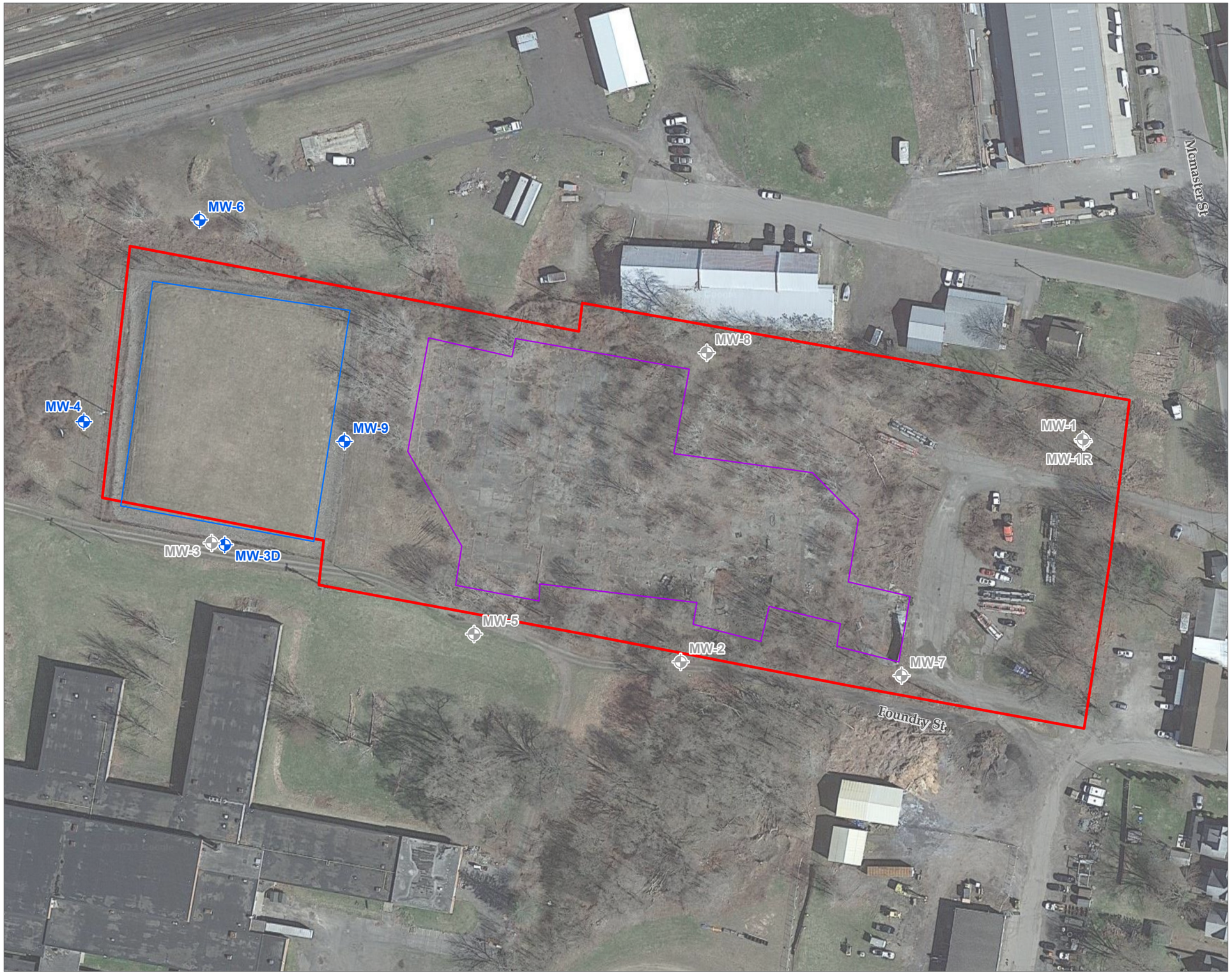
TITLE:

SITE LOCATION MAP

DRAWN BY:	L. LILL	PROJ. NO.:	386554 PHASE 25
CHECKED BY:	J. STAPLETON		
APPROVED BY:	J. BONE		**FIGURE 1**
DATE:	FEBRUARY 2023		

TRC
3 CORPORATE DRIVE
SUITE 202
CLIFTON PARK, NY 12065
PHONE: 518-348-1190

FILE: PRR_2023



LEGEND

- TAX PARCEL BOUNDARY
- FORMER CASTING FACILITY
- ON-SITE LANDFILL/SITE BOUNDARY
- MONITORING WELL
- ABANDONED MONITORING WELL

NOTES:

1. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND BOUNDARIES ARE APPROXIMATE.

BASE MAP: GOOGLE EARTH IMAGERY
DATA SOURCES: TRC, NYGIS TIOGA COUNTY TAX PARCELS, FEBRUARY 2020 PERIODIC REVIEW REPORT PREPARED BY ARCADIS

N

1:1,200
1" = 100'

0 50 100 FEET

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
TIOGA CASTING FACILITIES - SITE NO. 754012
FOUNDRY STREET
OWEGO, NEW YORK 13827

TITLE:
SITE LAYOUT MAP

DRAWN BY:	L. LILL	PROJ. NO.:	386554 PHASE 25
CHECKED BY:	J. STAPLETON		**FIGURE 2**
APPROVED BY:	J. BONE		
DATE:	FEBRUARY 2023		

TRC
3 CORPORATE DRIVE
SUITE 202
CLIFTON PARK, NY 12065
PHONE: 518-348-1190

FILE: PRR_2023.aprx

Coordinate System: NAD 1983 StatePlane New York Central FIPS 3102 Feet; Map Rotation: 0
Saved By J.LILL on 2/9/2023 1:35:58 PM; File Path: T:\PROJECTS\NYSDEC\386554_25_TiogaCastingFacilities\2-APRX\PRR_2023\PRR_2023.aprx; Layout Name: Figure 2 - Site Layout

MW-6	
CONSTITUENT	8/19/2020
Metals, total	µg/L
Sodium	27,700

MW-9	
CONSTITUENT	8/19/2020
Metals, total	µg/L
Iron	340

MW-3D	
CONSTITUENT	8/19/2020
Metals, total	µg/L
Iron	440

MW-6 794.20
MW-4 794.73
MW-9 793.67
MW-3
MW-3D 794.15
MW-8
MW-1
MW-1R
MW-5
MW-2
MW-7
794.25
794
794.5
793.75
Mcmaster St
Foundry St

LEGEND

- TAX PARCEL BOUNDARY
- FORMER CASTING FACILITY
- ON-SITE LANDFILL/SITE BOUNDARY
- GROUNDWATER ELEVATION CONTOUR (0.25' INTERVALS)
- GROUNDWATER FLOW DIRECTION
- MONITORING WELL
- ABANDONED MONITORING WELL

CONSTITUENT	Guidance Value*
Metals	µg/L
Iron	300
Sodium	20,000

NOTES:

1. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND BOUNDARIES ARE APPROXIMATE.
2. POTENTIOMETRIC SURFACE ELEVATIONS WERE COLLECTED ON AUGUST 19, 2020.
3. ONLY COMPOUNDS EXCEEDING NYSDEC CLASS GA VALUES ARE SHOWN ON THIS FIGURE.

ACRONYMS:
µg/L - MICROGRAMS PER LITER
* - NYSDEC AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES FOR CLASS GA WATER, JUNE 1998 WITH THE APRIL 2000 ADDENDUM

BASE MAP: GOOGLE EARTH IMAGERY
DATA SOURCES: TRC, NYGIS TIOGA COUNTY TAX PARCELS, FEBRUARY 2020 PERIODIC REVIEW REPORT PREPARED BY ARCADIS

1:1,200
1" = 100'
0 50 100 FEET

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
TIOGA CASTING FACILITIES - SITE NO. 754012
FOUNDRY STREET
OWEGO, NEW YORK 13827

TITLE:
GROUNDWATER MONITORING MAP - AUGUST 2020

DRAWN BY:	L. LILL	PROJ. NO.:	386554 PHASE 25
CHECKED BY:	J. STAPLETON		FIGURE 3
APPROVED BY:	J. BONE		
DATE:	JUNE 2023		

TRC
3 CORPORATE DRIVE
SUITE 202
CLIFTON PARK, NY 12065
PHONE: 518.348.1190

FILE: PRR_2023.aprx

Coordinate System: NAD 1983 StatePlane New York Central FIPS 3102 Feet. Map Rotation: 0
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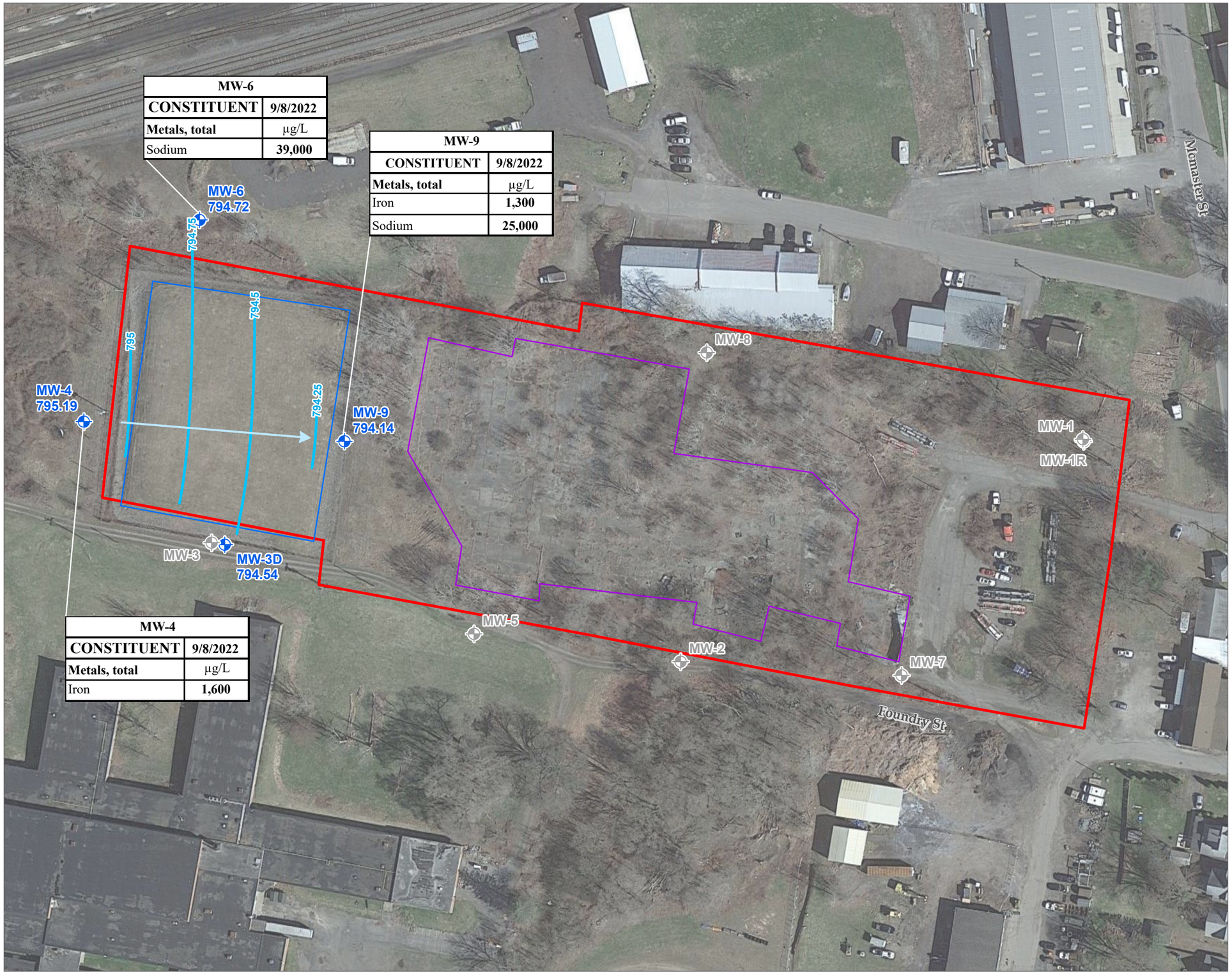


LEGEND

- TAX PARCEL BOUNDARY
- FORMER CASTING FACILITY
- ON-SITE LANDFILL/SITE BOUNDARY
- GROUNDWATER ELEVATION CONTOUR (0.25' INTERVALS)
- GROUNDWATER FLOW DIRECTION
- MONITORING WELL
- ABANDONED MONITORING WELL

CONSTITUENT	Guidance Value*
Metals	µg/L
Iron	300
Sodium	20,000

NOTES:

1. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND BOUNDARIES ARE APPROXIMATE.

2. POTENTIOMETRIC SURFACE ELEVATIONS WERE COLLECTED ON SEPTEMBER 8, 2022.

3. ONLY COMPOUNDS EXCEEDING NYSDEC CLASS GA VALUES ARE SHOWN ON THIS FIGURE.

ACRONYMS:
µg/L - MICROGRAMS PER LITER
* - NYSDEC AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES FOR CLASS GA WATER, JUNE 1998 WITH THE APRIL 2000 ADDENDUM

BASE MAP: GOOGLE EARTH IMAGERY
DATA SOURCES: TRC, NYGIS TIOGA COUNTY TAX PARCELS, FEBRUARY 2020 PERIODIC REVIEW REPORT PREPARED BY ARCADIS

1:1,200
1" = 100'
0 50 100 FEET

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
TIOGA CASTING FACILITIES - SITE NO. 754012
FOUNDRY STREET
OWEGO, NEW YORK 13827

TITLE:
GROUNDWATER MONITORING MAP - SEPTEMBER 2022

DRAWN BY:	L. LILL	PROJ. NO.:	386554 PHASE 25
CHECKED BY:	J. STAPLETON		FIGURE 4
APPROVED BY:	J. BONE		
DATE:	JUNE 2023		

TRC
3 CORPORATE DRIVE
SUITE 202
CLIFTON PARK, NY 12065
PHONE: 518.348.1190

FILE: PRR_2023.aprx

Coordinate System: NAD 1983 StatePlane New York Central FIPS 3102 Feet. Map Rotation: 0
Saved By: LILL on 6/7/2023 1:39:12 PM. File Path: T:\PROJECTS\NSEC\386554_25_TiogaCastingFacilities\2-APRX\PRR_2023\PRR_2023.aprx. Layout Name: Figure 4 - Groundwater Monitoring Map Sept 2022

Tables

Table 1
New York State Department of Environmental Conservation
SMP B - Tioga Casings Site - Site No. 754012
Owego, New York
Summary of Groundwater Surface Elevations

Well ID	Screened Formation	TOC Elevation (feet AMSL)	Date of Measurement	Depth to Water (feet below TOC)	Depth to Bottom (feet below TOC)	Groundwater Elevation (feet AMSL)
MW-3D	Overburden	812.42	8/19/2020	18.27	25.18	794.15
			9/8/2022	17.88	25.09	794.54
MW-4	Overburden	806.33	8/19/2020	11.60	16.08	794.73
			9/8/2022	11.14	16.08	795.19
MW-6	Overburden	815.53	8/19/2020	21.33	27.32	794.20
			9/8/2022	20.81	27.27	794.72
MW-9	Overburden	809.97	8/19/2020	16.30	23.39	793.67
			9/8/2022	15.83	23.34	794.14

Notes:

N/A - Not available

AMSL - Above Mean Sea Level

ID - Identification

TOC - Top of Casing

TOC elevation measurements are from the Periodic Review Report dated February 2020 by Arcadis

Table 2
New York State Department of Environmental Conservation
SMP B - Tioga Casings Site - Site No. 754012
Owego, New York
Summary of Results of Analysis of Groundwater - August 2020

	Sample ID	MW-3D		MW-4		MW-6		MW-9	
	Laboratory ID	480-174018-4		480-174018-2		480-174018-1		480-174018-3	
	Sample Date	8/19/2020		8/19/2020		8/19/2020		8/19/2020	
Analyte	**Class GA Values***	**Results (µg/L)**							
Metals									
Aluminum	NC	**350**		200	U	**96**	**J**	**290**	
Antimony	3	20	U	20	U	20	U	20	U
Arsenic	25	15	U	15	U	15	U	15	U
Barium	1,000	**49**		**46**		**61**		**73**	
Beryllium	3	2	U	2	U	2	U	2	U
Cadmium	5	2	U	2	U	2	U	2	U
Calcium	NC	**50,300**		**48,600**		**61,400**		**67,800**	
Chromium	50	4	U	4	U	4	U	**1.0**	**J**
Cobalt	NC	4	U	4	U	4	U	4	U
Copper	200	10	U	10	U	10	U	10	U
Iron	300	**440**		50	U	**140**		**340**	
Lead	25	10	U	10	U	10	U	10	U
Magnesium	35,000	**9,000**		**8,800**		**10,400**		**9,600**	
Manganese	300	**16**		3	U	**6.4**		**15**	
Nickel	100	10	U	10	U	10	U	10	U
Potassium	NC	**1,400**		**1,100**		**1,800**		**3,700**	
Selenium	10	25	U	25	U	25	U	25	U
Silver	50	6	U	6	U	6	U	6	U
Sodium	20,000	**15,500**		**15,900**		**27,700**		**5,300**	
Thallium	0.5	20	U	20	U	20	U	20	U
Vanadium	NC	5	U	5	U	5	U	5	U
Zinc	2,000	**3.1**	**J**	**3.6**	**J**	10	U	**3.4**	**J**
Cyanide									
Cyanide	200	10	U	10	U	10	U	10	U

Notes:

µg/L - micrograms per liter.

J - Estimated value.

NC - No NYSDEC standards exist for this analyte

U - Analyte was not detected at specified quantitation limit.

Values in **bold** indicate the analyte was detected.

Values shown in bold and shaded type exceed the listed Guidance Value.

Table 3
New York State Department of Environmental Conservation
SMP B - Tioga Castings Site - Site No. 754012
Oswego, New York
Summary of Results of Analysis of Groundwater - September 2022

	Sample ID	MW-3D		MW-3D (Field Dup)		MW-4		MW-6		MW-9	
	Laboratory ID	22I0498-02		22I0498-05		22I0498-03		22I0498-04		22I0498-01	
	Sample Date	9/8/2022		9/8/2022		9/8/2022		9/8/2022		9/8/2022	
Analyte	**Class GA Values***	**Results (µg/L)**									
Metals											
Aluminum	NC	**28**	**J**	**49**	**J**	**670**		**190**		**740**	
Antimony	3	50	U	50	U	50	U	50	U	50	U
Arsenic	25	10	U	10	U	10	U	10	U	10	U
Barium	1,000	**51**		**51**		**52**		**78**		**100**	
Beryllium	3	4	U	4	U	4	U	4	U	4	U
Cadmium	5	4	U	4	U	**1.9**	**J**	**0.87**	**J**	4	U
Calcium	NC	**54,000**		**54,000**		**46,000**		**75,000**		**84,000**	
Chromium	50	10	U	10	U	10	U	10	U	**4.1**	**J**
Cobalt	NC	10	U	10	U	10	U	10	U	10	U
Copper	200	10	U	10	U	**7.4**	**J**	10	U	10	U
Iron	300	**37**	**J**	**63**		**1,600**		**260**		**1,300**	
Lead	25	10	U	10	U	10	U	10	U	10	U
Magnesium	35,000	**9,700**		**9,600**		**8,600**		**13,000**		**12,000**	
Manganese	300	**2.6**	**J**	**3.6**	**J**	**42**		**17**		**52**	
Mercury	0.7	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel	100	10	U	10	U	10	U	10	U	10	U
Potassium	NC	**1,500**	**J**	**1,500**	**J**	**1,400**	**J**	**2,300**		**5,400**	
Selenium	10	50	U	50	U	50	U	50	U	50	U
Silver	50	10	U	10	U	10	U	10	U	10	U
Sodium	20,000	**17,000**		**17,000**		**16,000**		**39,000**		**25,000**	
Thallium	0.5	50	U	50	U	50	U	50	U	50	U
Vanadium	NC	**12**		**9.7**	**J**	**11**		**14**		**16**	
Zinc	2,000	**5.1**	**J**	**5.0**	**J**	**12**		**6.5**	**J**	**11**	

Notes:

µg/L - micrograms per liter.

J - Estimated value.

NC - No NYSDEC standards exist for this analyte

U - Analyte was not detected at specified quantitation limit.

Values in **bold** indicate the analyte was detected.

Values shown in bold and shaded type exceed the listed Guidance Value.

Appendix A

Site Inspection Forms and Photographic Logs

DAILY INSPECTION REPORT

Report No.20200819 **(Site Name) –** Tioga Castings **NYSDEC Site No.** 754012 **Date:** 8/19/2020

NYSDEC
Division of Environmental Remediation

NYSDEC Contract No. D009812

Superintendent:

NYSDEC PM: **Brianna Scharf**

Consultant PM: **Nathan Kranes**

Consultant Site Inspectors:

Steve Johansson & Cait Serowik

Site Location: Owego, New York

Weather Conditions

General Description	Clear, Dry	AM	Clear, Dry	PM
Temperature	68	AM	79	PM
Wind	5mph NE	AM	15mph NE	PM

Health & Safety
If any box below is checked "Yes", provide explanation under "Health & Safety Comments".

Were there any changes to the Health & Safety Plan?	*Yes	No **X**	NA
Were there any exceedances of the perimeter air monitoring reported on this date?	*Yes	No	NA **X**
Were there any nuisance issues reported/observed on this date?	*Yes	No	NA **X**

Health & Safety Comments

Summary of Work Performed	Arrived at site:	**09:30**	Departed Site:	**15:30**

TRC Engineers, Inc. (TRC) conducted a semiannual site inspection and annual groundwater gauging and sampling event on Wednesday, August 19, 2020 at the Tioga Castings Site, located on Foundry Street in the town of Owego, New York. The site inspection was performed to document the status of the monitoring wells, landfill cap, landfill security, and overall site conditions. TRC first conducted an initial site walk and inspection. The inspection included walking the perimeter of the landfill, the landfill slopes, and the cap. The landfill cap was dry and the soil stable, with no visible erosion, cracks, settlement or seeps. The landfill cap appeared intact and in good condition. The drainage swales and channels did not contain any water and appear to be in good condition. Vegetation is currently short and should not impede the flow of water. The swales, channels and basin are stable with no noticeable areas of active erosion. Following the inspection, all site wells were gauged and found to be in good condition. Locks on the wells were unable to be opened. All locks were cut from the wells and the gate and replaced with coded locks set to the last 4 digits of the site number (4012). TRC collected groundwater samples from the 4 on-site monitoring wells. The groundwater samples were submitted to TestAmerica/Eurofins Laboratories, Inc. for analysis using EPA method 6010 for TAL Metals and EPA method 335 for cyanide.

Equipment/Material Tracking
If any box below is checked "Yes", provide explanation under "Material Tracking Comments".

Were there any vehicles which did not display proper D.O.T numbers and placards?	*Yes	No	NA X
Were there any vehicles which were not tarped?	* Yes	No	NA X
Were there any vehicles which were not decontaminated prior to exiting the work site?	* Yes	No	NA X

Personnel and Equipment

Individual	Company	Trade	Total Hours
Steven Johansson	TRC	Project Engineer	6
Cait Serowik	TRC	Project Geologist	6

Equipment Description	Contractor/Vendor	Quantity	Used
PID	Pine Environmental	1	
Landfill Gas Meter	Pine Environmental	1	
Oil/Water Interface Probe	Pine Environmental	1	
YSI	Pine Environmental	1	
Peristaltic Pump	Pine Environmental	1	

Material Description	Imported/ Delivered to Site	Exported off Site	Waste Profile (If Applicable)	Source or Disposal Facility (If Applicable)	Daily Loads	Daily Weight (tons)*
NA						

*On-Site scale for off-site shipment, delivery ticket for material received

Equipment/Material Tracking Comments:

Visitors to Site

Name	Representing	Entered Exclusion/CRZ Zone	
NA		**Yes**	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**

Site Representatives

Name	Representing
NA	

Project Schedule Comments

Issues Pending

Interaction with Public, Property Owners, Media, etc.
NA

Include (insert) figures with markups showing location of work and job progress

Site Photographs (Descriptions Below)	
	
Photo 1: View looking northeast of MW-9.	**Photo 2:** View looking north. Looking at the drainage trench located on the eastern boundary of the on-site landfill
	
Photo 3: View looking south. Overview of the landfill cap.	**Photo 4:** View looking north. View of the northern perimeter fence on site.

	
Photo 5: Looking southwest. Overview of the landfill cap.	

Comments	
Site Inspector(s): Cait Serowik / Steve Johansson	**Date: 8/19/2020**

DAILY HEALTH CHECKLIST

Is social distancing being practiced?	Yes ☒	No ☐
Is the tail gate safety meeting held outdoors?	Yes ☒	No ☐
Are remote/call in job meetings being held in lieu of meeting in person where possible?	Yes ☒	No ☐
Were personal protective gloves, masks, and eye protection being used?	Yes ☒	No ☐
Are sanitizing wipes, wash stations or spray available?	Yes ☒	No ☐
Have any workers/visitors been excluded based on close contact with individuals diagnosed with COVID-19, have recently traveled to restricted areas or countries, or are symptomatic (fever, chills, cough/shortness of breath)?	Yes ☐	No ☒
Comments:		

REMEDIAL ACTIVITIES AT PROPERTIES

1. Have anyone at this location been tested and confirmed to have COVID-19?	Yes ☐	No ☒
2. Is anyone at this location isolated or quarantined for COVID-19?	Yes ☐	No ☒
3. Has anyone at this location had contact with anyone known to have COVID-19 in the past 14 days?	Yes ☐	No ☒
4. Does anyone at this locaton have any symptoms of a respiratory infection (e.g., cough, sore throat, fever, or shortness of breath)?	Yes ☐	No ☒
5. Does the Department and its contractors have your permission to enter the property at this time?	Yes ☐	No ☒
If Yes to any of 1-4 above: • If it is not critical that service/entry be carried out immediately and can be postponed until the risk of COVID-19 is lower, or can be accomplished remotely/without entry, postpone or conduct service without entry. • If it is critical that service/entry be carried out immediately, advise occupants that as a precaution and for our own protection, project personnel will be donning appropriate PPE* (including respiratory protection) - and do so prior to entry.	Yes ☐	No ☐
Comments:		

NUISANCE CHECKLIST

Were there any community complaints related to work on this date?	Yes ☐	No ☐	N/A☒
Were there any odors detected on this date?	Yes ☐	No ☐	N/A☒
Was noise outside specification and/or above background on this date?	Yes ☐	No ☐	N/A☒
Were vibration readings outside specification and/or above background on this date?	Yes ☐	No ☐	N/A☒
Any visible dust observed beyond the work perimeter on this date?	Yes ☐	No ☐	N/A☒
Any visible contrast (turbidity) beyond engineering controls observed on this date?	Yes ☐	No ☐	N/A☒
Was turbidity checked at the Montauk Highway outfall?	AM ☐	PM ☐	N/A☒
Were any property owners NOT provided advance notice for work performed on this property on this date?	Yes ☐	No ☐	N/A☒
Was the temporary fabric structure closed at the end of the day?	Yes ☐	No ☐	N/A☒
Has Contractor failed to protect all foundations and structures adjacent to and adjoining the site which are affected by the excavations or other operations connected with performance of the Work?	Yes ☐	No ☐	N/A☒
If yes, has Contractor been notified?	Yes ☐	No ☐	N/A☒
Comments:			

Report No.20201222 **(Site Name) –** Tioga Castings **NYSDEC Site No.** 754012 **Date:** 12/22/2020

NYSDEC
Division of Environmental Remediation

NYSDEC Contract No. D009812

Superintendent:

NYSDEC PM: **Brianna Scharf**

Consultant PM: **Nathan Kranes**

Consultant Site Inspectors:

Steve Johansson & Cait Serowik

Site Location: Owego, New York

Weather Conditions				
General Description	Clear, Dry	AM	Clear, Dry	PM
Temperature	25°F	AM	28°F	PM
Wind	5mph NE	AM	5 mph NE	PM

Health & Safety
If any box below is checked "Yes", provide explanation under "Health & Safety Comments".

Were there any changes to the Health & Safety Plan?	*Yes	No **X**	NA
Were there any exceedances of the perimeter air monitoring reported on this date?	*Yes	No	NA **X**
Were there any nuisance issues reported/observed on this date?	*Yes	No	NA **X**

Health & Safety Comments

Summary of Work Performed	Arrived at site:	**13:30**	Departed Site:	**15:30**

TRC Engineers, Inc. (TRC) conducted a semiannual site inspection event on Tuesday, December 22, 2020 at the Tioga Castings Site, located on Foundry Street in the town of Owego, New York. The site inspection was performed to document the status of the monitoring wells, landfill cap, landfill security, and overall site conditions. The inspection was limited to the viable extent of the site due to the extensive snow cover during the time of the inspection. Activities performed on site included walking the site service road, a visible inspection of the landfill slopes, cap, and assessable monitoring wells. Due to the snow cover the team was unable to enter the fenced in landfill perimeter, and therefore the landfill was inspected from the exterior. The landfill cap appeared intact and in good condition. The swales, channels and basin were not visible during this inspection. Assessable monitoring wells are in good condition and were locked with coded locks with the coded locks set to the last 4 digits of the site number (4012). It should be noted that the site road was blocked by approximately three feet of snow and created some difficulty with site access.

Equipment/Material Tracking
If any box below is checked "Yes", provide explanation under "Material Tracking Comments".

Were there any vehicles which did not display proper D.O.T numbers and placards?	*Yes	No	NA X
Were there any vehicles which were not tarped?	* Yes	No	NA X
Were there any vehicles which were not decontaminated prior to exiting the work site?	* Yes	No	NA X

Personnel and Equipment

Individual	Company	Trade	Total Hours
Steven Johansson	TRC	Project Engineer	2
Cait Serowik	TRC	Project Geologist	2

Equipment Description	Contractor/Vendor	Quantity	Used

Material Description	Imported/ Delivered to Site	Exported off Site	Waste Profile (If Applicable)	Source or Disposal Facility (If Applicable)	Daily Loads	Daily Weight (tons)*
NA						

*On-Site scale for off-site shipment, delivery ticket for material received

Equipment/Material Tracking Comments:

Visitors to Site

Name	Representing	Entered Exclusion/CRZ Zone	
NA		**Yes**	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**
		Yes	**No**

Site Representatives

Name	Representing
NA	

Project Schedule Comments

Issues Pending

Interaction with Public, Property Owners, Media, etc.
NA

Include (insert) figures with markups showing location of work and job progress

Site Photographs (Descriptions Below)

Photo 1: Looking west. View of service road (Foundry St.) leading to the landfill area.

Photo 2: Looking east. View of service road (Foundry St.) leading to the landfill area.

Photo 3: Looking southwest. View of Foundry St. as taken from the landfill

Photo 4: Looking north. South access gate to the landfill perimeter fence.

	
Photo 5: Looking north at monitoring MW-3D.	**Photo 6:** Looking north at monitoring MW-3D.

Comments	
Site Inspector(s): Cait Serowik / Steve Johansson	**Date: 12/22/2020**

DAILY HEALTH CHECKLIST

Is social distancing being practiced?	Yes ☒	No ☐
Is the tail gate safety meeting held outdoors?	Yes ☒	No ☐
Are remote/call in job meetings being held in lieu of meeting in person where possible?	Yes ☒	No ☐
Were personal protective gloves, masks, and eye protection being used?	Yes ☒	No ☐
Are sanitizing wipes, wash stations or spray available?	Yes ☒	No ☐
Have any workers/visitors been excluded based on close contact with individuals diagnosed with COVID-19, have recently traveled to restricted areas or countries, or are symptomatic (fever, chills, cough/shortness of breath)?	Yes ☐	No ☒
Comments:		

REMEDIAL ACTIVITIES AT PROPERTIES

1. Have anyone at this location been tested and confirmed to have COVID-19?	Yes ☐	No ☒
2. Is anyone at this location isolated or quarantined for COVID-19?	Yes ☐	No ☒
3. Has anyone at this location had contact with anyone known to have COVID-19 in the past 14 days?	Yes ☐	No ☒
4. Does anyone at this locaton have any symptoms of a respiratory infection (e.g., cough, sore throat, fever, or shortness of breath)?	Yes ☐	No ☒
5. Does the Department and its contractors have your permission to enter the property at this time?	Yes ☐	No ☒
If Yes to any of 1-4 above: • If it is not critical that service/entry be carried out immediately and can be postponed until the risk of COVID-19 is lower, or can be accomplished remotely/without entry, postpone or conduct service without entry. • If it is critical that service/entry be carried out immediately, advise occupants that as a precaution and for our own protection, project personnel will be donning appropriate PPE* (including respiratory protection) - and do so prior to entry.	Yes ☐	No ☐
Comments:		

NUISANCE CHECKLIST

Were there any community complaints related to work on this date?	Yes ☐	No ☐	N/A☒
Were there any odors detected on this date?	Yes ☐	No ☐	N/A☒
Was noise outside specification and/or above background on this date?	Yes ☐	No ☐	N/A☒
Were vibration readings outside specification and/or above background on this date?	Yes ☐	No ☐	N/A☒
Any visible dust observed beyond the work perimeter on this date?	Yes ☐	No ☐	N/A☒
Any visible contrast (turbidity) beyond engineering controls observed on this date?	Yes ☐	No ☐	N/A☒
Was turbidity checked at the Montauk Highway outfall?	AM ☐	PM ☐	N/A☒
Were any property owners NOT provided advance notice for work performed on this property on this date?	Yes ☐	No ☐	N/A☒
Was the temporary fabric structure closed at the end of the day?	Yes ☐	No ☐	N/A☒
Has Contractor failed to protect all foundations and structures adjacent to and adjoining the site which are affected by the excavations or other operations connected with performance of the Work?	Yes ☐	No ☐	N/A☒
If yes, has Contractor been notified?	Yes ☐	No ☐	N/A☒
Comments:			

NYSDEC
Division of Environmental Remediation

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYSDEC Contract No. D009812

NYSDEC PM: Brianna Scharf

Consultant PM: Nathan Kranes

Consultant Site Inspectors: Kevin Murphy

Site Location: Foundry Street, Owego, New York

Weather Conditions

General Description	NA	AM	Clear	PM
Temperature	NA	AM	53°F	PM
Wind	NA	AM	5 mph E	PM

Health & Safety
If any box below is checked "Yes", provide explanation under "Health & Safety Comments".

Were there any changes to the Health & Safety Plan?	*Yes	No **X**	NA
Were there any exceedances of the perimeter air monitoring reported on this date?	*Yes	No	NA **X**
Were there any nuisance issues reported/observed on this date?	*Yes	No **X**	NA

Health & Safety Comments

Site-specific HASP was followed accordingly.

Summary of Work Performed	Arrived at site:	**1330**	Departed Site:	**1310**

TRC Engineers, Inc. (TRC) preformed a conducted a post-storm site inspection on Thursday, October 28, 2021, at the Tioga Casting Site (Site), located at Foundry Street in the town of Owego, New York (Site). The objectives of the Site inspection were to note the general Site conditions following the multiple storm events that have occurred in the area.

Upon arrival, TRC conducted a walk of the Site. No signs of significant disturbance were noted during this inspection.

Equipment/Material Tracking
If any box below is checked "Yes", provide explanation under "Material Tracking Comments".

Were there any vehicles which did not display proper D.O.T numbers and placards?	*Yes	No	NA **X**
Were there any vehicles which were not tarped?	* Yes	No	NA **X**
Were there any vehicles which were not decontaminated prior to exiting the work site?	* Yes	No	NA **X**

Personnel and Equipment

Individual	Company	Trade	Total Hours
Kevin Murphy	TRC	Project Scientist	1

Equipment Description	Contractor/Vendor	Quantity	Used

Material Description	Imported/ Delivered to Site	Exported off Site	Waste Profile (If Applicable)	Source or Disposal Facility (If Applicable)	Daily Loads	Daily Weight (tons)*

*On-Site scale for off-site shipment, delivery ticket for material received

Equipment/Material Tracking Comments:

Visitors to Site

Name	Representing	Entered Exclusion/CRZ Zone	
		Yes	No
		Yes	No
		Yes	No
		Yes	No
		Yes	No
		Yes	No
		Yes	No
		Yes	No
		Yes	No

Site Representatives

Name	Representing

Project Schedule Comments

Issues Pending

Interaction with Public, Property Owners, Media, etc.

Include (insert) figures with markups showing location of work and job progress

Photo 1: Looking north at the southwest corner of the site.

Photo 2: Looking east along the site boundary.

Photo 3: Looking northeast at the west adjoining property.

Photo 4: Looking northwest at the eastt adjoining property.

Comments

Site Inspector(s): Kevin Murphy

Date: 10/28/21

DAILY HEALTH CHECKLIST

Is social distancing being practiced?	Yes ☒	No ☐
Is the tail gate safety meeting held outdoors?	Yes ☒	No ☐
Are remote/call in job meetings being held in lieu of meeting in person where possible?	Yes ☒	No ☐
Were personal protective gloves, masks, and eye protection being used?	Yes ☒	No ☐
Are sanitizing wipes, wash stations or spray available?	Yes ☒	No ☐
Have any workers/visitors been excluded based on close contact with individuals diagnosed with COVID-19, have recently traveled to restricted areas or countries, or are symptomatic (fever, chills, cough/shortness of breath)?	Yes ☐	No ☒
Comments:		

REMEDIAL ACTIVITIES AT PROPERTIES

1. Have anyone at this location been tested and confirmed to have COVID-19?	Yes ☐	No ☒
2. Is anyone at this location isolated or quarantined for COVID-19?	Yes ☐	No ☒
3. Has anyone at this location had contact with anyone known to have COVID-19 in the past 14 days?	Yes ☐	No ☒
4. Does anyone at this location have any symptoms of a respiratory infection (e.g., cough, sore throat, fever, or shortness of breath)?	Yes ☐	No ☒
5. Does the Department and its contractors have your permission to enter the property at this time?	Yes ☒	No ☐
If Yes to any of 1-4 above: • If it is not critical that service/entry be carried out immediately and can be postponed until the risk of COVID-19 is lower, or can be accomplished remotely/without entry, postpone or conduct service without entry. • If it is critical that service/entry be carried out immediately, advise occupants that as a precaution and for our own protection, project personnel will be donning appropriate PPE* (including respiratory protection) - and do so prior to entry.	Yes ☐	No ☐

Comments:

NUISANCE CHECKLIST

Were there any community complaints related to work on this date?	Yes ☐	No ☒	N/A☐
Were there any odors detected on this date?	Yes ☐	No ☒	N/A☐
Was noise outside specification and/or above background on this date?	Yes ☐	No ☒	N/A☐
Were vibration readings outside specification and/or above background on this date?	Yes ☐	No ☒	N/A☐
Any visible dust observed beyond the work perimeter on this date?	Yes ☐	No ☒	N/A☐
Any visible contrast (turbidity) beyond engineering controls observed on this date?	Yes ☐	No ☐	N/A☒
Was turbidity checked at the outfall(s)?	AM ☐	PM ☐	N/A☒
Were any property owners NOT provided advance notice for work performed on this property on this date?	Yes ☐	No ☒	N/A☐
Was the temporary fabric structure closed at the end of the day?	Yes ☐	No ☐	N/A☒
Has Contractor failed to protect all foundations and structures adjacent to and adjoining the site which are affected by the excavations or other operations connected with performance of the Work?	Yes ☐	No ☒	N/A☐
If yes, has Contractor been notified?	Yes ☐	No ☐	N/A☒
Comments:			

RESILIENCE/GREEN REMEDIATION CHECKLIST

Is the site supplied with green power and is it properly installed and/or maintained?	Yes ☐	No ☐	N/A☒
Is the site employing 2007 or newer or retrofitted diesel trucks?	Yes ☐	No ☐	N/A☒
Is vehicle idling adequately reduced per 6NYCRR Part 217-3?	Yes ☒	No ☐	N/A☐
Is equipment properly maintained and operated by trained personnel?	Yes ☒	No ☐	N/A☐
Is work being sequenced to avoid double handling?	Yes ☒	No ☐	N/A☐
Is there an onsite recycling program for CONTRACTOR generated wastes and is it complied with?	Yes ☐	No ☐	N/A☒
Are office trailer heating and cooling systems maintained at efficient set points?	AM ☐	PM ☐	N/A☒
Are products and materials appropriately certified (e.g., LEED, Energy Star, Sustainable Forestry Initiative®, etc.)?	Yes ☐	No ☐	N/A☒

Are resiliency features included in the design or completed remedy properly installed and/or maintained (flood control, storm water controls, erosion measures, etc.)?	Yes ☐	No ☐	N/A☒
Are green remediation elements included in the design or completed remedy properly installed and/or maintained (e.g., porous pavement, geothermal, variable speed drives, native plantings, natural stream bank restoration, etc.)?	Yes ☐	No ☐	N/A☒
Are appropriate metrics documented for inclusion on Form A, Summary of Green Remediation Metrics, by the CONTRACTOR?	Yes ☐	No ☐	N/A☒
Has Contractor been notified of any deficiencies?	Yes ☐	No ☐	N/A☒
Comments:			

NYSDEC
Division of Environmental Remediation

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Contract No. D009812
DEC PM – Brianna Scharf
Contractor Supt. – Jim Magda
Engineer PM – Jon Bone
Engineer Insp. – Matthew Schappert and Cait Serowik

Site Location: Tioga Castings Site, Foundry Street Owego, New York

Weather Conditions

General Description	Sunny, Clear	AM	Sunny, Clear	PM
Temperature	60°F	AM	65°F	PM
Wind	6 MPH NE	AM	8 MPH SE	PM

Health & Safety
If any box below is checked "Yes", provide explanation under "Health & Safety Comments".

Were there any changes to the Health & Safety Plan?	*Yes	No X	NA
Were there any exceedances of the perimeter air monitoring reported on this date?	*Yes	No X	NA
Were there any nuisance issues reported/observed on this date?	*Yes	No X	NA

Health & Safety Comments

All work performed in Level D PPE.

Summary of Work Performed	Arrived at site:	**9:30**	Departed Site:	**15:00**

TRC Engineers, Inc. (TRC) performed an annual site inspection and five-quarter groundwater sampling on Wednesday, September 7, 2022, at Tioga Castings Site (Site), located on Foundry Street in the town of Owego, New York. A site inspection was performed that documented the conditions of the landfill cap, drainage swales, groundwater monitoring wells, access roads, and the perimeter fence.

The landfill inspection involved walking the perimeter of the landfill, areas of the landfill slope and the top of the landfill. The landfill cap had recently been mowed. The cap was dry and the soil stable, with no visible erosion, cracks, settlement, or seeps. The landfill cap appeared intact and in good condition. The drainage swales did not contain any water and appear to be in good condition do not contain any obstructions which could potentially prohibit stormwater flow.

The groundwater monitoring wells were inspected for signs of damage during the site inspection. The outside well casings on MW-3D and MW-6 were noted to be rusted, however all wells were documented to be in good, functioning condition. The perimeter fencing was noted in good condition except for a portion of fencing that has been separated in the northeast corner and a large hole located adjacent to the landfill entrance on the south boundary of the site.

TRC collected groundwater samples from the four Site monitoring wells, including QA/QC samples (MS/MSD and Duplicate). The groundwater samples were submitted to Pace Analytical Laboratories for analysis using EPA method 6010 for TAL Metals and 7470A for Mercury. Overall, the third quarter 2022 inspection showed the Site to be in good condition. The landfill cap and drainage system appear to be functioning as intended. TRC recommends, that the fence be repaired in two places as the northeast corner of the fence and the hole on the south boundary has damage allowing unrestricted access to the site.

Equipment/Material Tracking
If any box below is checked "Yes", provide explanation under "Material Tracking Comments".

Were there any vehicles which did not display proper D.O.T numbers and placards?	*Yes	No	**NA**
Were there any vehicles which were not tarped?	* Yes	No	**NA**
Were there any vehicles which were not decontaminated prior to exiting the work site?	* Yes	No	**NA**

Personnel and Equipment

Individual	Company	Trade	Total Hours
Caitlin Serowik	TRC Engineers, Inc.	Project Geologist	5.5
Matthew Schappert	TRC Engineers, Inc.	Project Scientist	5.5

Equipment Description	Contractor/Vendor	Quantity	Used
Heron Oil/Water Interface Probe	Eco-Rental Solutions	1	Yes
Horiba U-52 Water Quality Meter	Eco-Rental Solutions	1	Yes
Geotech Peristaltic Pump	Eco-Rental Solutions	1	Yes

Material Description	Imported/ Delivered to Site	Exported off Site	Waste Profile (If Applicable)	Source or Disposal Facility (If Applicable)	Daily Loads	Daily Weight (tons)*
N/A	N/A	N/A	N/A	N/A	N/A	N/A

*On-Site scale for off-site shipment, delivery ticket for material received

Equipment/Material Tracking Comments:
N/A

Visitors to Site

Name	Representing	Entered Exclusion/CRZ Zone	
N/A	N/A	Yes	No
		Yes	No
		Yes	No
		Yes	No
		Yes	No
		Yes	No
		Yes	No
		Yes	No
		Yes	No

Site Representatives

Name	Representing
N/A	N/A

Project Schedule Comments

Fence repair (TBD)

Issues Pending

N/A
Interaction with Public, Property Owners, Media, etc.
N/A

Site Photographs (Descriptions Below)

Photo 1: Overview of the east side of the landfill cap, facing north.

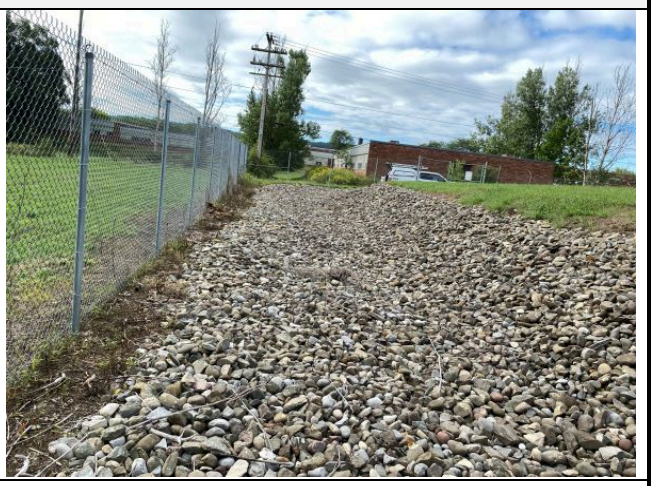


Photo 2: View of the drainage swale on the east portion of the site, which was dry during inspection activities. Looking south.

Photo 3: Overview of the center of the landfill cap, looking northeast.

Photo 4: View of the damaged area of the site fencing located at the northeast corner.

Photo 5: View facing west along the north border of the landfill.

Photo 6: Photograph of the hole in the fencing located along the southern Site boundary.

Photo 7: View of monitoring well MW-9 prior to low-flow sampling.

Photo 8: Facing east, view of the access road (Foundry Street) located along the southern site boundary.

Photo 9: View of monitoring well MW-3D.

Photo 10: View of cooler prior to relinquishment to the Pace Analytical Service Center.

Comments

N/A

Site Inspector(s): Cait Serowik and Matt Schappert	**Date: 9/7/2022**

Videos of discreet operations have been provided to the DEC Project Manager to facilitate understanding of the ongoing work. Yes ☐

DAILY HEALTH CHECKLIST

Is social distancing being practiced?	Yes ☒	No ☐
Is the tail gate safety meeting held outdoors?	Yes ☒	No ☐
Are remote/call in job meetings being held in lieu of meeting in person where possible?	Yes ☒	No ☐
Were personal protective gloves, masks, and eye protection being used?	Yes ☒	No ☐
Are sanitizing wipes, wash stations or spray available?	Yes ☒	No ☐
Have any workers/visitors been excluded based on close contact with individuals diagnosed with COVID-19, have recently traveled to restricted areas or countries, or are symptomatic (fever, chills, cough/shortness of breath)?	Yes ☐	No ☒
Comments:		

REMEDIAL ACTIVITIES AT PROPERTIES

1. Have anyone at this location been tested and confirmed to have COVID-19?	Yes ☐	No ☒
2. Is anyone at this location isolated or quarantined for COVID-19?	Yes ☐	No ☒
3. Has anyone at this location had contact with anyone known to have COVID-19 in the past 14 days?	Yes ☐	No ☒
4. Does anyone at this location have any symptoms of a respiratory infection (e.g., cough, sore throat, fever, or shortness of breath)?	Yes ☐	No ☒
5. Does the Department and its contractors have your permission to enter the property at this time?	Yes ☒	No ☐
If Yes to any of 1-4 above: • If it is not critical that service/entry be carried out immediately and can be postponed until the risk of COVID-19 is lower, or can be accomplished remotely/without entry, postpone or conduct service without entry. • If it is critical that service/entry be carried out immediately, advise occupants that as a precaution and for our own protection, project personnel will be donning appropriate PPE* (including respiratory protection) - and do so prior to entry.	Yes ☒	No ☐

Comments:

On-Site Waste Storage

Drums, roll offs and piles are staged in secure areas?	Yes ☐	No ☐	N/A☒
Liners and berms have been installed if necessary to prevent cross contamination of clean areas?	Yes ☐	No ☐	N/A☒
Containers are in good condition or properly overpacked?	Yes ☐	No ☐	N/A☒
Waste materials are scheduled to be properly characterized and disposed of prior to demobilization?	Yes ☐	No ☐	N/A☒
Complying with RCRA 90 day storage limitation for hazardous waste?	Yes ☐	No ☐	N/A☒
Piles are securely covered when not in use?	Yes ☐	No ☐	N/A☒
Containers are closed when not in use?	Yes ☐	No ☐	N/A☒
Staging areas should be inspected periodically and any issues addressed immediately?	Yes ☐	No ☐	N/A☒
Signage and labeling comply with RCRA requirements for all staging areas and containers?	Yes ☐	No ☐	N/A☒
If any issues noted, has Contractor been notified?	Yes ☐	No ☐	N/A☒
Comments:			

NUISANCE CHECKLIST

Were there any community complaints related to work on this date?	Yes ☐	No ☒	N/A☐
Were there any odors detected on this date?	Yes ☐	No ☒	N/A☐
Was noise outside specification and/or above background on this date?	Yes ☐	No ☒	N/A☐
Were vibration readings outside specification and/or above background on this date?	Yes ☐	No ☒	N/A☐
Any visible dust observed beyond the work perimeter on this date?	Yes ☐	No ☒	N/A☐
Any visible contrast (turbidity) beyond engineering controls observed on this date?	Yes ☐	No ☒	N/A☐
Was turbidity checked at the outfall(s)?	AM ☐	PM ☐	N/A☒
Were any property owners NOT provided advance notice for work performed on this property on this date?	Yes ☐	No ☐	N/A☒
Was the temporary fabric structure closed at the end of the day?	Yes ☐	No ☐	N/A☒
Has Contractor failed to protect all foundations and structures adjacent to and adjoining the site which are affected by the excavations or other operations connected with performance of the Work?	Yes ☐	No ☐	N/A☒
If yes, has Contractor been notified?	Yes ☐	No ☐	N/A☒

Comments:
N/A

RESILIENCE/GREEN REMEDIATION CHECKLIST

Is site power procured from renewable energy sources (e.g., solar, wind, geothermal, biomass and biogas)?	Yes ☐	No ☐	N/A☒
Is the Contractor employing 2007 or newer or retrofitted (BART*) diesel on-road trucks and non-road equipment?	Yes ☐	No ☐	N/A☒
Is vehicle idling adequately reduced per 6NYCRR Part 217-3?	Yes ☐	No ☐	N/A☒
Have equipment operators been trained in the idling requirements of 6NYCRR Part 217-3?	Yes ☐	No ☐	N/A☒
Is BART-equipped equipment properly maintained and working?	Yes ☐	No ☐	N/A☒
Is work being sequenced to avoid double handling?	Yes ☐	No ☐	N/A☒
Is there an onsite recycling program for CONTRACTOR-generated wastes and is it complied with?	Yes ☐	No ☐	N/A☒
Are office trailer heating and cooling systems maintained at efficient set points, have programable thermostats been installed?	Yes ☐	No ☐	N/A☒
Are products and materials used in performance of the work appropriately certified (e.g., LEED, Energy Star, Sustainable Forestry Initiative®, etc.)?	Yes ☐	No ☐	N/A☒
Are resiliency features included in the design, or completed remedy properly installed and/or maintained (flood control, storm water controls, erosion measures, etc.)?	Yes ☐	No ☐	N/A☒
Are green remediation elements included in the design, or completed remedy properly installed and/or maintained (e.g., porous pavement, geothermal, variable speed drives, native plantings, natural stream bank restoration, etc.)?	Yes ☐	No ☐	N/A☒
	Yes ☐	No ☐	N/A☒
Has Contractor been notified of any deficiencies?	Yes ☐	No ☐	N/A☒
Comments: N/A			

* BART – Best Available Retrofit Technology

Appendix B

Groundwater Sampling Logs

LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME Tioga Castings		LOCATION ID MW-3D	DATE 8/19/20
PROJECT NUMBER 386854.0000.0025		START TIME 1540	END TIME 1620
SAMPLE ID TC-MW-3D	SAMPLE TIME 1620	SITE NAME/NUMBER 754012	PAGE 1 OF 1

WELL DIAMETER (INCHES) ☐ 1 [✓ 2] ☐ 4 ☐ 6 ☐ 8 ☐ OTHER ____

TUBING ID (INCHES) ☐ 1/8 ☐ 1/4 [✓ 3/8] ☐ 1/2 ☐ 5/8 ☐ OTHER ____

MEASUREMENT POINT (MP) ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER ____

WELL INTEGRITY

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED	✓		
COLLAR			✓

INITIAL DTW (BMP) 18.31 FT	FINAL DTW (BMP) 18.39 FT	PROT. CASING STICKUP (AGS) ____ FT	TOC/TOR DIFFERENCE ____ FT
WELL DEPTH (BMP) 25.18 FT	SCREEN LENGTH 10 FT	PID AMBIENT AIR ____ PPM	REFILL TIMER SETTING ____ SEC
WATER COLUMN 6.87 FT	DRAWDOWN VOLUME 0.013 GAL (final DTW - initial DTW X well diam. squared X 0.041)	PID WELL MOUTH 0 PPM	DISCHARGE TIMER SETTING ____ SEC
CALCULATED GAL/VOL 1.12668 GAL (column X well diameter squared X 0.041)	TOTAL VOL. PURGED 1.95 ~~2.080~~ GAL (mL per minute X total minutes X 0.00026 gal/mL)	DRAWDOWN/ TOTAL PURGED ____	PRESSURE TO PUMP ____ PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

TIME 3-5 Minutes	DTW (FT) 0.0-0.33 ft Drawdown	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCTANCE (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10 ntu)	REDOX (mv) (+/- 10 mv)	PUMP INTAKE DEPTH (ft)	COMMENTS
1540	BEGIN PURGING									
1550	18.39	250	19.44	0.384	6.60	10.03	3.5	-20	26.18	
1600	18.39	250	17.22	0.399	6.49	5.05	2.6	-13	26.18	
1605	18.39	250	17.18	0.400	6.46	4.96	4.8	-12	26.18	
1610	18.39	250	17.25	0.399	6.46	4.96	3.1	-11	26.18	
1615										

FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures[SF])

TEMP	COND	pH	DO	TURB	ORP
17	0.399	6.5	5.0	3.1	-11

TEMP.: nearest degree (ex. 10.1 = 10)
COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)
pH: nearest tenth (ex. 5.53 = 5.5)
DO: nearest tenth (ex. 3.51 = 3.5)
TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
- [✓] PERISTALTIC
- ☐ SUBMERSIBLE
- ☐ BLADDER
- ☐ WATTERA
- ☐ OTHER
- ☐ OTHER

DECON FLUIDS USED
- [✓] LIQUINOX
- ☐ DEIONIZED WATER
- ☐ POTABLE WATER
- ☐ NITRIC ACID
- ☐ HEXANE
- ☐ METHANOL
- ☐ OTHER

TUBING/PUMP/BLADDER MATERIALS
- [✓] SILICON TUBING
- ☐ TEFLON TUBING
- ☐ TEFLON LINED TUBING
- ☐ HDPE TUBING
- [✓] LDPE TUBING
- ☐ OTHER
- ☐ OTHER
- ☐ S. STEEL PUMP MATERIAL
- ☐ PVC PUMP MATERIAL
- ☐ GEOPROBE SCREEN
- ☐ TEFLON BLADDER
- ☐ OTHER
- ☐ OTHER
- ☐ OTHER

EQUIPMENT USED
- [✓] WL METER
- [✓] PID
- [✓] WQ METER
- [✓] TURB. METER
- [✓] PUMP
- [✓] OTHER
- [✓] FILTERS NO. ____ TYPE ____

ANALYTICAL PARAMETERS

PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS
[✓] refer to chain							

PURGE OBSERVATIONS

PURGE WATER CONTAINERIZED YES ☐ [✓ NO]

NO-PURGE METHOD UTILIZED YES ☐ [✓ NO]

NUMBER OF GALLONS GENERATED 1.95 ~~1.12668~~

If yes, purged approximately 1 standing volume prior to sampling or ________mL for this sample location.

SKETCH/NOTES

Sampler Signature: [illegible]

Print Name: Caitlin Serowik

Checked By:

Date: 2/10/23

TRC

LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME: Tioga Castings		LOCATION ID: MW-4	DATE: 8/19/20
PROJECT NUMBER: 386554.0000.0025		START TIME: 1345	END TIME: 1430
SAMPLE ID: TC-MW-4	SAMPLE TIME: 1430	SITE NAME/NUMBER: 734012	PAGE: 1 OF 1

WELL DIAMETER (INCHES): ☐ 1 ☑ 2 ☐ 4 ☐ 6 ☐ 8 ☐ OTHER

TUBING ID (INCHES): ☐ 1/8 ☐ 1/4 ☑ 3/8 ☐ 1/2 ☐ 5/8 ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

WELL INTEGRITY	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED	✓		
COLLAR			✓

INITIAL DTW (BMP)	11.61 FT	FINAL DTW (BMP)	11.61 FT	PROT. CASING STICKUP (AGS)	FT	TOC/TOR DIFFERENCE	FT
WELL DEPTH (BMP)	16.07 FT	SCREEN LENGTH	10 FT	PID AMBIENT AIR	PPM	REFILL TIMER SETTING	SEC
WATER COLUMN	4.9 FT	DRAWDOWN VOLUME (final DTW - initial DTW X well diam. squared X 0.041)	0 GAL	PID WELL MOUTH	0 PPM	DISCHARGE TIMER SETTING	SEC
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	0.803 GAL	TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	1.82 GAL	DRAWDOWN/ TOTAL PURGED		PRESSURE TO PUMP	PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

TIME 3-5 Minutes	DTW (FT) 0.0-0.33 ft Drawdown	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCTANCE (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10 ntu)	REDOX (mv) (+/- 10 mv)	PUMP INTAKE DEPTH (ft)	COMMENTS
1345	BEGIN PURGING									
1355	11.61	250	16.51	0.375	6.56	11.0	6.3	-17	17.08	
1405	11.61	250	15.31	0.387	6.45	7.43	1.4	-11	17.08	
1410	11.61	250	15.26	0.388	6.44	7.28	1.1	-11	17.08	
1415	11.61	250	15.47	0.389	6.44	6.99	0.90	-11	17.08	
1420	11.61	250	14.91	0.384	6.44	7.08	1	-11	17.08	

FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures[SF])

15	0.384	6.4	7.1	1	-11	

TEMP.: nearest degree (ex. 10.1 = 10)
COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)
pH: nearest tenth (ex. 5.53 = 5.5)
DO: nearest tenth (ex. 3.51 = 3.5)
TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP: ☑ PERISTALTIC ☐ SUBMERSIBLE ☐ BLADDER ☐ _____ ☐ WATTERA ☐ OTHER ☐ OTHER

DECON FLUIDS USED: ☑ LIQUINOX ☐ DEIONIZED WATER ☐ POTABLE WATER ☐ NITRIC ACID ☐ HEXANE ☐ METHANOL ☐ OTHER

TUBING/PUMP/BLADDER MATERIALS: ☑ SILICON TUBING ☐ TEFLON TUBING ☐ TEFLON LINED TUBING ☐ HDPE TUBING ☑ LDPE TUBING ☐ OTHER ☐ OTHER

☐ S. STEEL PUMP MATERIAL ☐ PVC PUMP MATERIAL ☐ GEOPROBE SCREEN ☐ TEFLON BLADDER ☐ OTHER ☐ OTHER ☐ OTHER

EQUIPMENT USED: ☑ WL METER ☑ PID ☑ WQ METER ☑ TURB. METER ☑ PUMP ☐ OTHER ☑ FILTERS NO. ___ TYPE _____

ANALYTICAL PARAMETERS

PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS
☑ refer to chain							

PURGE OBSERVATIONS

PURGE WATER CONTAINERIZED: YES ☐ NO ☑

NO-PURGE METHOD UTILIZED: YES ☐ NO ☑

NUMBER OF GALLONS GENERATED: 1.82

If yes, purged approximately 1 standing volume prior to sampling or _____ mL for this sample location.

SKETCH/NOTES

Sampler Signature: Caitlin Sorensen Print Name: Caitlin Sorensen

Checked By: Date: 2/6/23

LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME: Tioga Castings		LOCATION ID: MW-6	DATE: 8/19/20
PROJECT NUMBER: 386.554.0000.0025		START TIME: 1240	END TIME: 1330
SAMPLE ID: TC-MW-6	SAMPLE TIME: 1330	SITE NAME/NUMBER: 734012	PAGE: 1 OF 1

WELL DIAMETER (INCHES): ☐ 1 ☒ 2 ☐ 4 ☐ 6 ☐ 8 ☐ OTHER

TUBING ID (INCHES): ☐ 1/8 ☐ 1/4 ☒ 3/8 ☐ 1/2 ☐ 5/8 ☐ OTHER

MEASUREMENT POINT (MP): ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

WELL INTEGRITY

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED	✓		
COLLAR			✓

INITIAL DTW (BMP)	21.45 FT	FINAL DTW (BMP)	21.78 FT	PROT. CASING STICKUP (AGS)	FT	TOC/TOR DIFFERENCE	FT
WELL DEPTH (BMP)	27.23 FT	SCREEN LENGTH	10 FT	PID AMBIENT AIR	PPM	REFILL TIMER SETTING	SEC
WATER COLUMN	5.78 FT	DRAWDOWN VOLUME (final DTW - initial DTW X well diam. squared X 0.041)	0.0541 GAL	PID WELL MOUTH	8 PPM	DISCHARGE TIMER SETTING	SEC
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	0.9479 GAL	TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	2.68 GAL	DRAWDOWN/ TOTAL PURGED		PRESSURE TO PUMP	PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

TIME 3-5 Minutes	DTW (FT) 0.0-0.33 ft Drawdown	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCTANCE (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10 ntu)	REDOX (mv) (+/- 10 mv)	PUMP INTAKE DEPTH (ft)	COMMENTS
1240	BEGIN PURGING									
1250	21.78	250	22.85	0.491	7.42	8.30	11.4	-24	28.23	
1300	21.78	250	16.68	0.491	6.62	7.65	7.0	-21	28.23	
1305	21.78	250	16.82	0.496	6.46	7.30	5.9	-13	28.23	
1310	21.78	250	16.97	0.499	6.46	7.55	5.1	-12	28.23	
1315	21.78	250	16.96	0.502	6.45	7.32	4.8	-11	28.23	
1320	21.78	250	16.72	0.500	6.45	7.32	5.0	-11	28.23	

FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures[SF])

	17	0.500	6.5	7.3	5.0	-11

TEMP.: nearest degree (ex. 10.1 = 10)
COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)
pH: nearest tenth (ex. 5.53 = 5.5)
DO: nearest tenth (ex. 3.51 = 3.5)
TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
- ☒ PERISTALTIC
- ☐ SUBMERSIBLE
- ☐ BLADDER
- ☐ _____
- ☐ WATTERA
- ☐ OTHER _____
- ☐ OTHER _____

DECON FLUIDS USED
- ☒ LIQUINOX
- ☐ DEIONIZED WATER
- ☐ POTABLE WATER
- ☐ NITRIC ACID
- ☐ HEXANE
- ☐ METHANOL
- ☐ OTHER _____

TUBING/PUMP/BLADDER MATERIALS
- ☐ SILICON TUBING
- ☐ TEFLON TUBING
- ☐ TEFLON LINED TUBING
- ☐ HDPE TUBING
- ☒ LDPE TUBING
- ☐ OTHER _____
- ☐ OTHER _____

- ☐ S. STEEL PUMP MATERIAL
- ☐ PVC PUMP MATERIAL
- ☐ GEOPROBE SCREEN
- ☐ TEFLON BLADDER
- ☐ OTHER _____
- ☐ OTHER _____
- ☐ OTHER _____

EQUIPMENT USED
- ☒ WL METER _____
- ☐ PID _____
- ☒ WQ METER _____
- ☒ TURB. METER _____
- ☒ PUMP _____
- ☒ OTHER _____
- ☒ FILTERS NO. ___ TYPE _____

ANALYTICAL PARAMETERS

PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ refer to chain							

PURGE OBSERVATIONS

PURGE WATER CONTAINERIZED: YES ☐ NO ☒

NO-PURGE METHOD UTILIZED: YES ☐ NO ☒

NUMBER OF GALLONS GENERATED: 2.68

If yes, purged approximately 1 standing volume prior to sampling or _____mL for this sample location.

SKETCH/NOTES

Sampler Signature: [signature] Print Name: Caitlin Secowik

Checked By: Date: 2/10/23

TRC

LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME: Tioga Castings	LOCATION ID: MW-9
PROJECT NUMBER: 386554.0000.0825	DATE: 8/19/20
SAMPLE ID: TCS-MW-9	START TIME: 1450
SAMPLE TIME: 1530	END TIME: 1530
SITE NAME/NUMBER: 734012	PAGE 1 OF 1

WELL DIAMETER (INCHES) ☐ 1 [✓ 2] ☐ 4 ☐ 6 ☐ 8 ☐ OTHER

TUBING ID (INCHES) ☐ 1/8 ☐ 1/4 [✓ 3/8] ☐ 1/2 ☐ 5/8 ☐ OTHER

MEASUREMENT POINT (MP) ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER

WELL INTEGRITY

	YES	NO	N/A
CAP	✓		
CASING	✓		
LOCKED	✓		
COLLAR			✓

INITIAL DTW (BMP)	16.28 FT	FINAL DTW (BMP)	18.09 FT	PROT. CASING STICKUP (AGS)	FT	TOC/TOR DIFFERENCE	FT
WELL DEPTH (BMP)	23.39 FT	SCREEN LENGTH	10 FT	PID AMBIENT AIR	PPM	REFILL TIMER SETTING	SEC
WATER COLUMN	7.11 FT	DRAWDOWN VOLUME (final DTW - initial DTW X well diam. squared X 0.041)	0.2968 GAL	PID WELL MOUTH	0 PPM	DISCHARGE TIMER SETTING	SEC
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	1.16 GAL	TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL)	2.275 ~~1.82~~ CS GAL	DRAWDOWN/ TOTAL PURGED		PRESSURE TO PUMP	PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

TIME 3-5 Minutes	DTW (FT) 0.0-0.33 ft Drawdown	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCTANCE (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10 ntu)	REDOX (mv) (+/- 10 mv)	PUMP INTAKE DEPTH (ft)	COMMENTS
1450	BEGIN PURGING									
1500	17.32	250	18.74	0.413	6.31	5.33	6.5	-2	24.39	
1510	17.90	250	17.28	0.421	6.19	3.83	7.0	4	24.39	
1515	18.01	250	17.40	0.421	6.18	3.13	6.5	4	24.39	
1520	18.05	250	17.44	0.421	6.18	3.06	6.1	4	24.39	
1525	18.09	250	17.60	0.422	6.18	2.91	6.6	5	24.39	

FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures[SF])

TEMP.	SP. COND.	pH	DO	TURB.	REDOX
18	0.422	6.2	2.9	6.6	5

TEMP.: nearest degree (ex. 10.1 = 10)
COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)
pH: nearest tenth (ex. 5.53 = 5.5)
DO: nearest tenth (ex. 3.51 = 3.5)
TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP: [✓ PERISTALTIC] ☐ SUBMERSIBLE ☐ BLADDER ☐ WATTERA ☐ OTHER ☐ OTHER

DECON FLUIDS USED: [✓ LIQUINOX] ☐ DEIONIZED WATER ☐ POTABLE WATER ☐ NITRIC ACID ☐ HEXANE ☐ METHANOL ☐ OTHER

TUBING/PUMP/BLADDER MATERIALS: [✓ SILICON TUBING] ☐ TEFLON TUBING ☐ TEFLON LINED TUBING ☐ HDPE TUBING [✓ LDPE TUBING] ☐ OTHER ☐ OTHER ☐ S. STEEL PUMP MATERIAL ☐ PVC PUMP MATERIAL ☐ GEOPROBE SCREEN ☐ TEFLON BLADDER ☐ OTHER ☐ OTHER ☐ OTHER

EQUIPMENT USED: [✓ WL METER] [✓ PID] [✓ WQ METER] [✓ TURB. METER] [✓ PUMP] [✓ OTHER] [✓ FILTERS] NO. ___ TYPE ___

ANALYTICAL PARAMETERS

PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS
✓ refer to chain							

PURGE OBSERVATIONS

PURGE WATER CONTAINERIZED: YES ☐ [✓ NO]

NO-PURGE METHOD UTILIZED: YES ☐ [✓ NO]

NUMBER OF GALLONS GENERATED: 2.275 ~~1.82~~ CS

If yes, purged approximately 1 standing volume prior to sampling or ________mL for this sample location.

SKETCH/NOTES

Sampler Signature: [illegible]

Print Name: Caitlin Scravik

Checked By:

Date: 2/10/23

TRC

LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME	Tioga Castings
PROJECT NUMBER	3865540000
SAMPLE ID	TC-MW-3D
SAMPLE TIME	12:00

LOCATION ID	MW-3D
DATE	9/8/2022
START TIME	11:15
END TIME	12:00
SITE NAME/NUMBER	745012
PAGE	1 OF 1

WELL DIAMETER (INCHES) [ ] 1 [X] 2 [ ] 4 [ ] 6 [ ] 8 [ ] OTHER

TUBING ID (INCHES) [ ] 1/8 [X] 1/4 [ ] 3/8 [ ] 1/2 [ ] 5/8 [ ] OTHER

MEASUREMENT POINT (MP) [ ] TOP OF RISER (TOR) [X] TOP OF CASING (TOC) [ ] OTHER

WELL INTEGRITY

	YES	NO	N/A
CAP	X		
CASING	X		
LOCKED	X		
COLLAR			X

INITIAL DTW (BMP)	17.86 FT	**FINAL DTW (BMP)**	17.86 FT	**PROT. CASING STICKUP (AGS)**	FT	**TOC/TOR DIFFERENCE**	FT
WELL DEPTH (BMP)	25.09 FT	**SCREEN LENGTH**	unknown FT	**PID AMBIENT AIR**	PPM	**REFILL TIMER SETTING**	SEC
WATER COLUMN	7.23 FT	**DRAWDOWN VOLUME** (final DTW - initial DTW X well diam. squared X 0.041)	0.00 GAL	**PID WELL MOUTH**	0 PPM	**DISCHARGE TIMER SETTING**	SEC
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	0.59 GAL	**TOTAL VOL. PURGED** (mL per minute X total minutes X 0.00026 gal/mL)	1.82 GAL	**DRAWDOWN/ TOTAL PURGED**	0.00	**PRESSURE TO PUMP**	PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

TIME 3-5 Minutes	DTW (FT) 0.0-0.33 ft Drawdown	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCTANCE (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10 ntu)	REDOX (mv) (+/- 10 mv)	PUMP INTAKE DEPTH (ft)	COMMENTS
1115	**BEGIN PURGING**									
1120	17.86	200	17.70	0.414	6.74	4.56	19.6	366.7	22	
1125	17.86	200	16.80	0.410	6.73	4.53	12.0	395.7	22	
1130	17.86	200	17.10	0.411	6.72	4.49	7.8	404.4	22	
1135	17.86	200	16.80	0.411	6.72	4.47	5.0	423.0	22	
1140	17.86	200	16.80	0.411	6.72	4.44	5.2	336.6	22	
1145	17.86	200	16.50	0.411	6.72	4.45	3.0	440.0	22	
1150	17.86	200	16.60	0.411	6.72	4.45	2.8	443.8	22	

FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures[SF])

	17	**0.411**	**6.7**	**4.5**	**2.8**	**444**

TEMP.: nearest degree (ex. 10.1 = 10)

COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)

pH: nearest tenth (ex. 5.53 = 5.5)

DO: nearest tenth (ex. 3.51 = 3.5)

TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)

ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
- [X] PERISTALTIC
- [ ] SUBMERSIBLE
- [ ] BLADDER
- [ ] WATTERA
- [ ] OTHER
- [ ] OTHER

DECON FLUIDS USED
- [X] LIQUINOX
- [ ] DEIONIZED WATER
- [ ] POTABLE WATER
- [ ] NITRIC ACID
- [ ] HEXANE
- [ ] METHANOL
- [ ] OTHER

TUBING/PUMP/BLADDER MATERIALS
- [X] SILICON TUBING
- [ ] TEFLON TUBING
- [ ] TEFLON LINED TUBING
- [ ] HDPE TUBING
- [X] LDPE TUBING
- [ ] OTHER
- [ ] OTHER

- [ ] S. STEEL PUMP MATERIAL
- [ ] PVC PUMP MATERIAL
- [ ] GEOPROBE SCREEN
- [ ] TEFLON BLADDER
- [ ] OTHER
- [ ] OTHER
- [ ] OTHER

EQUIPMENT USED
- [X] WL METER
- [X] PID
- [X] WQ METER
- [ ] TURB. METER
- [X] PUMP
- [ ] OTHER
- [ ] FILTERS NO. ___ TYPE ___

ANALYTICAL PARAMETERS

	PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS
	See Chain of Custody							

PURGE OBSERVATIONS

	YES	NO
PURGE WATER CONTAINERIZED		X
NO-PURGE METHOD UTILIZED		X

NUMBER OF GALLONS GENERATED: 1.82

If yes, purged approximately 1 standing volume prior to sampling or _____mL for this sample location.

SKETCH/NOTES

Sampler Signature: Caitlin Serowik Print Name: Caitlin Serowik

Checked By: Date: 9/12/2022

LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME	Tioga Castings
PROJECT NUMBER	386554.0000.0000
SAMPLE ID	MW-06
SAMPLE TIME	1340

LOCATION ID	MW-6
DATE	9/8/2022
START TIME	13:05
END TIME	13:40
SITE NAME/NUMBER	754012
PAGE	1 OF 1

WELL DIAMETER (INCHES) [ ] 1 [X] 2 [ ] 4 [ ] 6 [ ] 8 [ ] OTHER

TUBING ID (INCHES) [ ] 1/8 [X] 1/4 [ ] 3/8 [ ] 1/2 [ ] 5/8 [ ] OTHER

MEASUREMENT POINT (MP) [ ] TOP OF RISER (TOR) [X] TOP OF CASING (TOC) [ ] OTHER

WELL INTEGRITY

	YES	NO	N/A
CAP	X		
CASING	X		
LOCKED	X		
COLLAR			X

INITIAL DTW (BMP)	20.81 FT	**FINAL DTW (BMP)**	21.25 FT	**PROT. CASING STICKUP (AGS)**	FT	**TOC/TOR DIFFERENCE**	FT
WELL DEPTH (BMP)	27.27 FT	**SCREEN LENGTH**	unknown FT	**PID AMBIENT AIR**	PPM	**REFILL TIMER SETTING**	SEC
WATER COLUMN	6.46 FT	**DRAWDOWN VOLUME** (final DTW - initial DTW X well diam. squared X 0.041)	0.02 GAL	**PID WELL MOUTH**	0 PPM	**DISCHARGE TIMER SETTING**	SEC
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	1.06 GAL	**TOTAL VOL. PURGED** (mL per minute X total minutes X 0.00026 gal/mL)	1.56 GAL	**DRAWDOWN/ TOTAL PURGED**	0.44	**PRESSURE TO PUMP**	PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

TIME 3-5 Minutes	DTW (FT) 0.0-0.33 ft Drawdown	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCTANCE (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10 ntu)	REDOX (mv) (+/- 10 mv)	PUMP INTAKE DEPTH (ft)	COMMENTS
1305	**BEGIN PURGING**									
1310	21.25	200	14.90	0.618	6.50	6.63	21.7	549.8	25	
1315	21.25	200	14.70	0.618	6.48	6.63	9.9	541.1	25	
1320	21.25	200	14.30	0.624	6.42	6.44	6.4	536.8	25	
1325	21.25	200	14.30	0.628	6.49	6.39	5.8	535.8	25	
1330	21.25	200	14.30	0.625	6.50	6.34	6.5	534.2	25	
1335	21.25	200	14.40	0.631	6.52	6.33	6.4	534.1	25	

FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures[SF])

14	**0.631**	**6.5**	**6.3**	**6.4**	**534**	

TEMP.: nearest degree (ex. 10.1 = 10)

COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)

pH: nearest tenth (ex. 5.53 = 5.5)

DO: nearest tenth (ex. 3.51 = 3.5)

TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)

ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
- [X] PERISTALTIC
- [ ] SUBMERSIBLE
- [ ] BLADDER
- [ ] WATTERA
- [ ] OTHER
- [ ] OTHER

DECON FLUIDS USED
- [X] LIQUINOX
- [ ] DEIONIZED WATER
- [ ] POTABLE WATER
- [ ] NITRIC ACID
- [ ] HEXANE
- [ ] METHANOL
- [ ] OTHER

TUBING/PUMP/BLADDER MATERIALS
- [X] SILICON TUBING
- [ ] TEFLON TUBING
- [ ] TEFLON LINED TUBING
- [ ] HDPE TUBING
- [X] LDPE TUBING
- [ ] OTHER
- [ ] OTHER

- [ ] S. STEEL PUMP MATERIAL
- [ ] PVC PUMP MATERIAL
- [ ] GEOPROBE SCREEN
- [ ] TEFLON BLADDER
- [ ] OTHER
- [ ] OTHER
- [ ] OTHER

EQUIPMENT USED
- [X] WL METER
- [X] PID
- [X] WQ METER
- [ ] TURB. METER
- [X] PUMP
- [ ] OTHER
- [ ] FILTERS NO. ___ TYPE

ANALYTICAL PARAMETERS

PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS
See Chain of Custody							

PURGE OBSERVATIONS

	YES	NO
PURGE WATER CONTAINERIZED	[ ]	[X]
NO-PURGE METHOD UTILIZED	[ ]	[X]

NUMBER OF GALLONS GENERATED: 1.56

If yes, purged approximately 1 standing volume prior to sampling or _____mL for this sample location.

SKETCH/NOTES

Sampler Signature: 

Print Name: Caitlin Serowik

Checked By:

Date: 9/12/2022

LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME	Tioga Castings	**LOCATION ID**	MW-4
PROJECT NUMBER	386554.0000.0000	**DATE**	9/8/2022
SAMPLE ID	TC-MW-04	**START TIME**	12:10
SAMPLE TIME	12:45	**END TIME**	12:45
		SITE NAME/NUMBER	754012
		PAGE	1 OF 1

WELL DIAMETER (INCHES) [ ] 1 [X] 2 [ ] 4 [ ] 6 [ ] 8 [ ] OTHER

TUBING ID (INCHES) [ ] 1/8 [X] 1/4 [ ] 3/8 [ ] 1/2 [ ] 5/8 [ ] OTHER

MEASUREMENT POINT (MP) [ ] TOP OF RISER (TOR) [X] TOP OF CASING (TOC) [ ] OTHER

WELL INTEGRITY

	YES	NO	N/A
CAP		X	
CASING	X		
LOCKED			
COLLAR			X

INITIAL DTW (BMP)	11.14 FT	**FINAL DTW (BMP)**	11.14 FT	**PROT. CASING STICKUP (AGS)**	FT	**TOC/TOR DIFFERENCE**	FT
WELL DEPTH (BMP)	16.08 FT	**SCREEN LENGTH**	unknown FT	**PID AMBIENT AIR**	PPM	**REFILL TIMER SETTING**	SEC
WATER COLUMN	4.94 FT	**DRAWDOWN VOLUME** (final DTW - initial DTW X well diam. squared X 0.041)	0.00 GAL	**PID WELL MOUTH**	0 PPM	**DISCHARGE TIMER SETTING**	SEC
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	0.81 GAL	**TOTAL VOL. PURGED** (mL per minute X total minutes X 0.00026 gal/mL)	1.56 GAL	**DRAWDOWN/ TOTAL PURGED**	0.00	**PRESSURE TO PUMP**	PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

TIME 3-5 Minutes	DTW (FT) 0.0-0.33 ft Drawdown	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCTANCE (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10 ntu)	REDOX (mv) (+/- 10 mv)	PUMP INTAKE DEPTH (ft)	COMMENTS
1210	**BEGIN PURGING**									
1220	11.14	200	16.50	0.379	6.76	5.36	212.0	528.9	13.5	
1225	11.14	200	15.80	0.366	6.72	6.75	39.8	509.7	13.5	
1230	11.14	200	16.00	0.362	6.71	6.75	26.0	507.7	13.5	
1235	11.14	200	15.80	0.360	6.71	6.86	24.7	508.6	13.5	
1240	11.14	200	15.90	0.360	6.71	6.86	26.5	508.7	13.5	

FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures[SF])

	16	**0.36**	**6.7**	**6.9**	**26.5**	**509**

TEMP.: nearest degree (ex. 10.1 = 10)

COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)

pH: nearest tenth (ex. 5.53 = 5.5)

DO: nearest tenth (ex. 3.51 = 3.5)

TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)

ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
- [X] PERISTALTIC
- [ ] SUBMERSIBLE
- [ ] BLADDER
- [ ] WATTERA
- [ ] OTHER
- [ ] OTHER

DECON FLUIDS USED
- [X] LIQUINOX
- [ ] DEIONIZED WATER
- [ ] POTABLE WATER
- [ ] NITRIC ACID
- [ ] HEXANE
- [ ] METHANOL
- [ ] OTHER

TUBING/PUMP/BLADDER MATERIALS
- [X] SILICON TUBING
- [ ] TEFLON TUBING
- [ ] TEFLON LINED TUBING
- [ ] HDPE TUBING
- [X] LDPE TUBING
- [ ] OTHER
- [ ] OTHER

- [ ] S. STEEL PUMP MATERIAL
- [ ] PVC PUMP MATERIAL
- [ ] GEOPROBE SCREEN
- [ ] TEFLON BLADDER
- [ ] OTHER
- [ ] OTHER
- [ ] OTHER

EQUIPMENT USED
- [X] WL METER
- [X] PID
- [X] WQ METER
- [ ] TURB. METER
- [X] PUMP
- [ ] OTHER
- [ ] FILTERS NO. ___ TYPE

ANALYTICAL PARAMETERS

	PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS
	See Chain of Custody							

PURGE OBSERVATIONS

	YES	NO
PURGE WATER CONTAINERIZED		X
NO-PURGE METHOD UTILIZED		X

NUMBER OF GALLONS GENERATED: 1.56

If yes, purged approximately 1 standing volume prior to sampling or _____mL for this sample location.

SKETCH/NOTES

Sampler Signature: Caitlin Serowik Print Name: Caitlin Serowik

Checked By: Date: ###

LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME	Tioga Castings	**LOCATION ID**	MW-9
PROJECT NUMBER	386554.0000.0000	**DATE**	9/8/2022
SAMPLE ID	TC-MW-09	**START TIME**	10:10
SAMPLE TIME	10:50	**END TIME**	10:50
		SITE NAME/NUMBER	754012
		PAGE	1 OF 1

WELL DIAMETER (INCHES) [ ] 1 [X] 2 [ ] 4 [ ] 6 [ ] 8 [ ] OTHER

TUBING ID (INCHES) [ ] 1/8 [X] 1/4 [ ] 3/8 [ ] 1/2 [ ] 5/8 [ ] OTHER

MEASUREMENT POINT (MP) [ ] TOP OF RISER (TOR) [X] TOP OF CASING (TOC) [ ] OTHER

WELL INTEGRITY

	YES	NO	N/A
CAP	X		
CASING	X		
LOCKED	X		
COLLAR			X

INITIAL DTW (BMP)	15.83 FT	**FINAL DTW (BMP)**	16.46 FT	**PROT. CASING STICKUP (AGS)**	FT	**TOC/TOR DIFFERENCE**	FT
WELL DEPTH (BMP)	23.24 FT	**SCREEN LENGTH**	unknown FT	**PID AMBIENT AIR**	PPM	**REFILL TIMER SETTING**	SEC
WATER COLUMN	7.41 FT	**DRAWDOWN VOLUME** (final DTW - initial DTW X well diam. squared X 0.041)	0.10 GAL	**PID WELL MOUTH**	0 PPM	**DISCHARGE TIMER SETTING**	SEC
CALCULATED GAL/VOL (column X well diameter squared X 0.041)	0.61 GAL	**TOTAL VOL. PURGED** (mL per minute X total minutes X 0.00026 gal/mL)	1.56 GAL	**DRAWDOWN/ TOTAL PURGED**	0.63	**PRESSURE TO PUMP**	PSI

FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)

TIME 3-5 Minutes	DTW (FT) 0.0-0.33 ft Drawdown	PURGE RATE (mL/min)	TEMP. (°C) (+/- 3 degrees)	SP. CONDUCTANCE (mS/cm) (+/- 3%)	pH (units) (+/- 0.1 units)	DISS. O_2 (mg/L) (+/- 10%)	TURBIDITY (ntu) (+/- 10% <10 ntu)	REDOX (mv) (+/- 10 mv)	PUMP INTAKE DEPTH (ft)	COMMENTS
1010	**BEGIN PURGING**									
1015	16.19	200	15.40	0.587	6.38	4.57	23.0	315.0	20	
1020	16.29	200	16.00	0.585	6.37	4.49	24.5	334.7	20	
1025	16.46	200	15.90	0.577	6.40	4.40	23.2	396.9	20	
1030	16.46	200	16.50	0.581	6.41	4.37	24.7	383.9	20	
1035	16.46	200	16.60	0.583	6.42	4.34	16.5	405.8	20	
1040	16.46	200	16.90	0.578	6.42	4.27	15.6	408.0	20	
1045	16.46	200	16.90	0.576	6.42	4.22	16.3	413.5	20	

FINAL STABILIZED FIELD PARAMETERS (to appropriate significant figures[SF])

	17	**0.576**	**6.4**	**4.2**	**16.3**	**414**

TEMP.: nearest degree (ex. 10.1 = 10)

COND.: 3 SF max (ex. 3333 = 3330, 0.696 = 0.696)

pH: nearest tenth (ex. 5.53 = 5.5)

DO: nearest tenth (ex. 3.51 = 3.5)

TURB: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)

ORP: 2 SF (44.1 = 44, 191 = 190)

EQUIPMENT DOCUMENTATION

TYPE OF PUMP
- [X] PERISTALTIC
- [ ] SUBMERSIBLE
- [ ] BLADDER
- [ ] WATTERA
- [ ] OTHER
- [ ] OTHER

DECON FLUIDS USED
- [X] LIQUINOX
- [ ] DEIONIZED WATER
- [ ] POTABLE WATER
- [ ] NITRIC ACID
- [ ] HEXANE
- [ ] METHANOL
- [ ] OTHER

TUBING/PUMP/BLADDER MATERIALS
- [X] SILICON TUBING
- [ ] TEFLON TUBING
- [ ] TEFLON LINED TUBING
- [ ] HDPE TUBING
- [ ] LDPE TUBING
- [ ] OTHER
- [ ] OTHER

- [ ] S. STEEL PUMP MATERIAL
- [ ] PVC PUMP MATERIAL
- [ ] GEOPROBE SCREEN
- [ ] TEFLON BLADDER
- [ ] OTHER
- [ ] OTHER
- [ ] OTHER

EQUIPMENT USED
- [X] WL METER
- [X] PID
- [X] WQ METER
- [ ] TURB. METER
- [X] PUMP
- [ ] OTHER
- [ ] FILTERS NO. ___ TYPE ___

ANALYTICAL PARAMETERS

PARAMETER	METHOD NUMBER	FIELD FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	QC COLLECTED	SAMPLE BOTTLE ID NUMBERS
See Chain of Custody							

PURGE OBSERVATIONS

	YES	NO	
PURGE WATER CONTAINERIZED	[ ]	[X]	NUMBER OF GALLONS GENERATED: 1.56
NO-PURGE METHOD UTILIZED	[ ]	[X]	If yes, purged approximately 1 standing volume prior to sampling or _____mL for this sample location.

SKETCH/NOTES

Sampler Signature: Caitlin Serowik Print Name: Caitlin Serowik

Checked By: Date: 9/12/2022

Appendix C

Laboratory Analytical Reports and Data Usability Summary Reports

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-174018-1
Client Project/Site: SMP B - Tioga Castings Site

For:
New York State D.E.C.
625 Broadway
Division of Environmental Remediation
Albany, New York 12233-7014

Attn: Brianna Scharf

Judy Stone

Authorized for release by:
8/27/2020 5:50:18 PM

Judy Stone, Senior Project Manager
(484)685-0868
Judy.Stone@Eurofinset.com

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed within the body of this report. Release of the data contained in this sample data package and in the electronic data deliverable has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Judy Stone
Senior Project Manager
8/27/2020 5:50:18 PM

Table of Contents

Definitions/Glossary

Client: New York State D.E.C.
Job ID: 480-174018-1
Project/Site: SMP B - Tioga Castings Site

Qualifiers

Metals

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Sample result is greater than the MDL but below the CRDL
U	Indicates analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
N	Spiked sample recovery is not within control limits.
U	Indicates analyzed for but not detected.

Glossary

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

Job ID: 480-174018-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-174018-1

Receipt
The samples were received on 8/20/2020 8:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.1° C.

Metals
Method 6010C: The interference check standard solution (ICSA) associated with the following samples showed results for Barium at a level greater than 2 times the limit of detection (LOD). It is believed that the solution contains trace impurities of this element and the results are not due to matrix interference. These results are consistent with those found by the manufacturer of the ICSA solution. TCS-MW-6 (480-174018-1), TCS-MW-4 (480-174018-2), TCS-MW-4 (480-174018-2[MS]), TCS-MW-4 (480-174018-2[MSD]), TCS-MW-9 (480-174018-3), TCS-MW-3D (480-174018-4), (LCS 480-546227/2-A), (LCSD 480-546227/3-A), (MB 480-546227/1-A), (480-174018-A-2-A PDS) and (480-174018-A-2-A SD ^5)

Method 6010C: The low level continuing calibration verification (CCVL 480-546628/29) recovered above the upper control limit for Total Manganese. The samples associated with this CCVL were either less than the reporting limit (RL) for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCVL; therefore, re-analysis of samples TCS-MW-4 (480-174018-2), TCS-MW-4 (480-174018-2[MS]), TCS-MW-4 (480-174018-2[MSD]), (LCS 480-546227/2-A), (LCSD 480-546227/3-A), (MB 480-546227/1-A), (480-174018-A-2-A PDS) and (480-174018-A-2-A SD ^5) was not performed.

Method 6010C: The serial dilution and post spike (480-174018-A-2-A PDS), associated with batch 480-546227, exceeded the quality control limits for Total Calcium. Sample matrix is suspected, therefore, no corrective action was necessary.

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

General Chemistry
Method 335.4: The continuing calibration verification (CCV) associated with batch 480-546389 recovered outside acceptance criteria, low biased, for cyanide. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

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

Detection Summary

Client: New York State D.E.C.
Project/Site: SMP B - Tioga Castings Site

Job ID: 480-174018-1

Client Sample ID: TCS-MW-6 — Lab Sample ID: 480-174018-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	0.096	J	0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.061	^	0.0020	0.00070	mg/L	1		6010C	Total/NA
Calcium	61.4		0.50	0.10	mg/L	1		6010C	Total/NA
Iron	0.14		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	10.4		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.0064		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	1.8		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	27.7		1.0	0.32	mg/L	1		6010C	Total/NA

Client Sample ID: TCS-MW-4 — Lab Sample ID: 480-174018-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.046	^	0.0020	0.00070	mg/L	1		6010C	Total/NA
Calcium	48.6		0.50	0.10	mg/L	1		6010C	Total/NA
Magnesium	8.8		0.20	0.043	mg/L	1		6010C	Total/NA
Potassium	1.1		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	15.9		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.0036	J	0.010	0.0015	mg/L	1		6010C	Total/NA

Client Sample ID: TCS-MW-9 — Lab Sample ID: 480-174018-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	0.29		0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.073	^	0.0020	0.00070	mg/L	1		6010C	Total/NA
Calcium	67.8		0.50	0.10	mg/L	1		6010C	Total/NA
Chromium	0.0010	J	0.0040	0.0010	mg/L	1		6010C	Total/NA
Iron	0.34		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	9.6		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.015		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	3.7		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	5.3		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.0034	J	0.010	0.0015	mg/L	1		6010C	Total/NA

Client Sample ID: TCS-MW-3D — Lab Sample ID: 480-174018-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	0.35		0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.049	^	0.0020	0.00070	mg/L	1		6010C	Total/NA
Calcium	50.3		0.50	0.10	mg/L	1		6010C	Total/NA
Iron	0.44		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	9.0		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.016		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	1.4		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	15.5		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.0031	J	0.010	0.0015	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: TCS-MW-6

Lab Sample ID: 480-174018-1

Date Collected: 08/19/20 13:30

Matrix: Water

Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.096**	**J**	0.20	0.060	mg/L		08/21/20 10:00	08/24/20 14:01	1
Antimony	0.020	U	0.020	0.0068	mg/L		08/21/20 10:00	08/24/20 14:01	1
Arsenic	0.015	U	0.015	0.0056	mg/L		08/21/20 10:00	08/24/20 14:01	1
Barium	**0.061**	**^**	0.0020	0.00070	mg/L		08/21/20 10:00	08/24/20 14:01	1
Beryllium	0.0020	U	0.0020	0.00030	mg/L		08/21/20 10:00	08/24/20 14:01	1
Cadmium	0.0020	U	0.0020	0.00050	mg/L		08/21/20 10:00	08/24/20 14:01	1
Calcium	**61.4**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:01	1
Chromium	0.0040	U	0.0040	0.0010	mg/L		08/21/20 10:00	08/24/20 14:01	1
Cobalt	0.0040	U	0.0040	0.00063	mg/L		08/21/20 10:00	08/24/20 14:01	1
Copper	0.010	U	0.010	0.0016	mg/L		08/21/20 10:00	08/24/20 14:01	1
Iron	**0.14**		0.050	0.019	mg/L		08/21/20 10:00	08/24/20 14:01	1
Lead	0.010	U	0.010	0.0030	mg/L		08/21/20 10:00	08/24/20 14:01	1
Magnesium	**10.4**		0.20	0.043	mg/L		08/21/20 10:00	08/24/20 14:01	1
Manganese	**0.0064**		0.0030	0.00040	mg/L		08/21/20 10:00	08/25/20 14:15	1
Nickel	0.010	U	0.010	0.0013	mg/L		08/21/20 10:00	08/24/20 14:01	1
Potassium	**1.8**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:01	1
Selenium	0.025	U	0.025	0.0087	mg/L		08/21/20 10:00	08/24/20 14:01	1
Silver	0.0060	U	0.0060	0.0017	mg/L		08/21/20 10:00	08/24/20 14:01	1
Sodium	**27.7**		1.0	0.32	mg/L		08/21/20 10:00	08/24/20 14:01	1
Thallium	0.020	U	0.020	0.010	mg/L		08/21/20 10:00	08/24/20 14:01	1
Vanadium	0.0050	U	0.0050	0.0015	mg/L		08/21/20 10:00	08/24/20 14:01	1
Zinc	0.010	U	0.010	0.0015	mg/L		08/21/20 10:00	08/24/20 14:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U ^	0.010	0.0050	mg/L		08/21/20 14:14	08/22/20 16:03	1

Client Sample ID: TCS-MW-4

Lab Sample ID: 480-174018-2

Date Collected: 08/19/20 14:30

Matrix: Water

Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.20	U	0.20	0.060	mg/L		08/21/20 10:00	08/24/20 14:05	1
Antimony	0.020	U	0.020	0.0068	mg/L		08/21/20 10:00	08/24/20 14:05	1
Arsenic	0.015	U	0.015	0.0056	mg/L		08/21/20 10:00	08/24/20 14:05	1
Barium	**0.046**	**^**	0.0020	0.00070	mg/L		08/21/20 10:00	08/24/20 14:05	1
Beryllium	0.0020	U	0.0020	0.00030	mg/L		08/21/20 10:00	08/24/20 14:05	1
Cadmium	0.0020	U	0.0020	0.00050	mg/L		08/21/20 10:00	08/24/20 14:05	1
Calcium	**48.6**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:05	1
Chromium	0.0040	U	0.0040	0.0010	mg/L		08/21/20 10:00	08/24/20 14:05	1
Cobalt	0.0040	U	0.0040	0.00063	mg/L		08/21/20 10:00	08/24/20 14:05	1
Copper	0.010	U	0.010	0.0016	mg/L		08/21/20 10:00	08/24/20 14:05	1
Iron	0.050	U	0.050	0.019	mg/L		08/21/20 10:00	08/24/20 14:05	1
Lead	0.010	U	0.010	0.0030	mg/L		08/21/20 10:00	08/24/20 14:05	1
Magnesium	**8.8**		0.20	0.043	mg/L		08/21/20 10:00	08/24/20 14:05	1
Manganese	0.0030	U	0.0030	0.00040	mg/L		08/21/20 10:00	08/24/20 14:05	1
Nickel	0.010	U	0.010	0.0013	mg/L		08/21/20 10:00	08/24/20 14:05	1
Potassium	**1.1**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:05	1
Selenium	0.025	U	0.025	0.0087	mg/L		08/21/20 10:00	08/24/20 14:05	1

Client Sample ID: TCS-MW-4
Lab Sample ID: 480-174018-2

Date Collected: 08/19/20 14:30
Matrix: Water
Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	0.0060	U	0.0060	0.0017	mg/L		08/21/20 10:00	08/24/20 14:05	1
Sodium	**15.9**		1.0	0.32	mg/L		08/21/20 10:00	08/24/20 14:05	1
Thallium	0.020	U	0.020	0.010	mg/L		08/21/20 10:00	08/24/20 14:05	1
Vanadium	0.0050	U	0.0050	0.0015	mg/L		08/21/20 10:00	08/24/20 14:05	1
Zinc	**0.0036**	**J**	0.010	0.0015	mg/L		08/21/20 10:00	08/24/20 14:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U ^	0.010	0.0050	mg/L		08/21/20 14:14	08/22/20 15:59	1

Client Sample ID: TCS-MW-9
Lab Sample ID: 480-174018-3

Date Collected: 08/19/20 15:30
Matrix: Water
Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.29**		0.20	0.060	mg/L		08/21/20 10:00	08/24/20 14:35	1
Antimony	0.020	U	0.020	0.0068	mg/L		08/21/20 10:00	08/24/20 14:35	1
Arsenic	0.015	U	0.015	0.0056	mg/L		08/21/20 10:00	08/24/20 14:35	1
Barium	**0.073**	**^**	0.0020	0.00070	mg/L		08/21/20 10:00	08/24/20 14:35	1
Beryllium	0.0020	U	0.0020	0.00030	mg/L		08/21/20 10:00	08/24/20 14:35	1
Cadmium	0.0020	U	0.0020	0.00050	mg/L		08/21/20 10:00	08/24/20 14:35	1
Calcium	**67.8**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:35	1
Chromium	**0.0010**	**J**	0.0040	0.0010	mg/L		08/21/20 10:00	08/24/20 14:35	1
Cobalt	0.0040	U	0.0040	0.00063	mg/L		08/21/20 10:00	08/24/20 14:35	1
Copper	0.010	U	0.010	0.0016	mg/L		08/21/20 10:00	08/24/20 14:35	1
Iron	**0.34**		0.050	0.019	mg/L		08/21/20 10:00	08/24/20 14:35	1
Lead	0.010	U	0.010	0.0030	mg/L		08/21/20 10:00	08/24/20 14:35	1
Magnesium	**9.6**		0.20	0.043	mg/L		08/21/20 10:00	08/24/20 14:35	1
Manganese	**0.015**		0.0030	0.00040	mg/L		08/21/20 10:00	08/24/20 14:35	1
Nickel	0.010	U	0.010	0.0013	mg/L		08/21/20 10:00	08/24/20 14:35	1
Potassium	**3.7**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:35	1
Selenium	0.025	U	0.025	0.0087	mg/L		08/21/20 10:00	08/24/20 14:35	1
Silver	0.0060	U	0.0060	0.0017	mg/L		08/21/20 10:00	08/24/20 14:35	1
Sodium	**5.3**		1.0	0.32	mg/L		08/21/20 10:00	08/24/20 14:35	1
Thallium	0.020	U	0.020	0.010	mg/L		08/21/20 10:00	08/24/20 14:35	1
Vanadium	0.0050	U	0.0050	0.0015	mg/L		08/21/20 10:00	08/24/20 14:35	1
Zinc	**0.0034**	**J**	0.010	0.0015	mg/L		08/21/20 10:00	08/24/20 14:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U ^	0.010	0.0050	mg/L		08/21/20 14:14	08/22/20 16:05	1

Client Sample ID: TCS-MW-3D
Lab Sample ID: 480-174018-4

Date Collected: 08/19/20 16:20
Matrix: Water
Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.35**		0.20	0.060	mg/L		08/21/20 10:00	08/24/20 14:38	1
Antimony	0.020	U	0.020	0.0068	mg/L		08/21/20 10:00	08/24/20 14:38	1

Client: New York State D.E.C.
Job ID: 480-174018-1
Project/Site: SMP B - Tioga Castings Site

Client Sample ID: TCS-MW-3D
Lab Sample ID: 480-174018-4
Date Collected: 08/19/20 16:20
Matrix: Water
Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.015	U	0.015	0.0056	mg/L		08/21/20 10:00	08/24/20 14:38	1
Barium	**0.049**	**^**	0.0020	0.00070	mg/L		08/21/20 10:00	08/24/20 14:38	1
Beryllium	0.0020	U	0.0020	0.00030	mg/L		08/21/20 10:00	08/24/20 14:38	1
Cadmium	0.0020	U	0.0020	0.00050	mg/L		08/21/20 10:00	08/24/20 14:38	1
Calcium	**50.3**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:38	1
Chromium	0.0040	U	0.0040	0.0010	mg/L		08/21/20 10:00	08/24/20 14:38	1
Cobalt	0.0040	U	0.0040	0.00063	mg/L		08/21/20 10:00	08/24/20 14:38	1
Copper	0.010	U	0.010	0.0016	mg/L		08/21/20 10:00	08/24/20 14:38	1
Iron	**0.44**		0.050	0.019	mg/L		08/21/20 10:00	08/24/20 14:38	1
Lead	0.010	U	0.010	0.0030	mg/L		08/21/20 10:00	08/24/20 14:38	1
Magnesium	**9.0**		0.20	0.043	mg/L		08/21/20 10:00	08/24/20 14:38	1
Manganese	**0.016**		0.0030	0.00040	mg/L		08/21/20 10:00	08/24/20 14:38	1
Nickel	0.010	U	0.010	0.0013	mg/L		08/21/20 10:00	08/24/20 14:38	1
Potassium	**1.4**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:38	1
Selenium	0.025	U	0.025	0.0087	mg/L		08/21/20 10:00	08/24/20 14:38	1
Silver	0.0060	U	0.0060	0.0017	mg/L		08/21/20 10:00	08/24/20 14:38	1
Sodium	**15.5**		1.0	0.32	mg/L		08/21/20 10:00	08/24/20 14:38	1
Thallium	0.020	U	0.020	0.010	mg/L		08/21/20 10:00	08/24/20 14:38	1
Vanadium	0.0050	U	0.0050	0.0015	mg/L		08/21/20 10:00	08/24/20 14:38	1
Zinc	**0.0031**	**J**	0.010	0.0015	mg/L		08/21/20 10:00	08/24/20 14:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U ^	0.010	0.0050	mg/L		08/21/20 14:14	08/22/20 16:06	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-546227/1-A
Matrix: Water
Analysis Batch: 546628

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 546227

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.20	U	0.20	0.060	mg/L		08/21/20 10:00	08/24/20 13:04	1
Antimony	0.020	U	0.020	0.0068	mg/L		08/21/20 10:00	08/24/20 13:04	1
Arsenic	0.015	U	0.015	0.0056	mg/L		08/21/20 10:00	08/24/20 13:04	1
Barium	0.0020	U ^	0.0020	0.00070	mg/L		08/21/20 10:00	08/24/20 13:04	1
Beryllium	0.0020	U	0.0020	0.00030	mg/L		08/21/20 10:00	08/24/20 13:04	1
Cadmium	0.0020	U	0.0020	0.00050	mg/L		08/21/20 10:00	08/24/20 13:04	1
Calcium	0.50	U	0.50	0.10	mg/L		08/21/20 10:00	08/24/20 13:04	1
Chromium	0.0040	U	0.0040	0.0010	mg/L		08/21/20 10:00	08/24/20 13:04	1
Cobalt	0.000720	J	0.0040	0.00063	mg/L		08/21/20 10:00	08/24/20 13:04	1
Copper	0.010	U	0.010	0.0016	mg/L		08/21/20 10:00	08/24/20 13:04	1
Iron	0.050	U	0.050	0.019	mg/L		08/21/20 10:00	08/24/20 13:04	1
Lead	0.010	U	0.010	0.0030	mg/L		08/21/20 10:00	08/24/20 13:04	1
Magnesium	0.20	U	0.20	0.043	mg/L		08/21/20 10:00	08/24/20 13:04	1
Manganese	0.0030	U	0.0030	0.00040	mg/L		08/21/20 10:00	08/24/20 13:04	1
Nickel	0.010	U	0.010	0.0013	mg/L		08/21/20 10:00	08/24/20 13:04	1
Potassium	0.50	U	0.50	0.10	mg/L		08/21/20 10:00	08/24/20 13:04	1
Selenium	0.025	U	0.025	0.0087	mg/L		08/21/20 10:00	08/24/20 13:04	1
Silver	0.0060	U	0.0060	0.0017	mg/L		08/21/20 10:00	08/24/20 13:04	1
Sodium	1.0	U	1.0	0.32	mg/L		08/21/20 10:00	08/24/20 13:04	1
Thallium	0.020	U	0.020	0.010	mg/L		08/21/20 10:00	08/24/20 13:04	1
Vanadium	0.0050	U	0.0050	0.0015	mg/L		08/21/20 10:00	08/24/20 13:04	1
Zinc	0.010	U	0.010	0.0015	mg/L		08/21/20 10:00	08/24/20 13:04	1

Lab Sample ID: LCS 480-546227/2-A
Matrix: Water
Analysis Batch: 546628

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 546227

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	10.0	9.89		mg/L		99	80 - 120
Antimony	0.200	0.210		mg/L		105	80 - 120
Arsenic	0.200	0.204		mg/L		102	80 - 120
Barium	0.200	0.217	^	mg/L		108	80 - 120
Beryllium	0.200	0.205		mg/L		102	80 - 120
Cadmium	0.200	0.200		mg/L		100	80 - 120
Calcium	10.0	10.11		mg/L		101	80 - 120
Chromium	0.200	0.205		mg/L		102	80 - 120
Cobalt	0.200	0.194		mg/L		97	80 - 120
Copper	0.200	0.197		mg/L		99	80 - 120
Iron	10.0	9.80		mg/L		98	80 - 120
Lead	0.200	0.197		mg/L		98	80 - 120
Magnesium	10.0	9.89		mg/L		99	80 - 120
Manganese	0.200	0.197		mg/L		99	80 - 120
Nickel	0.200	0.193		mg/L		97	80 - 120
Potassium	10.0	9.41		mg/L		94	80 - 120
Selenium	0.200	0.199		mg/L		99	80 - 120
Silver	0.0500	0.0499		mg/L		100	80 - 120
Sodium	10.0	9.54		mg/L		95	80 - 120
Thallium	0.200	0.200		mg/L		100	80 - 120
Vanadium	0.200	0.198		mg/L		99	80 - 120

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 480-546227/2-A
Matrix: Water
Analysis Batch: 546628

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 546227

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	0.200	0.205		mg/L		103	80 - 120

Lab Sample ID: LCSD 480-546227/3-A
Matrix: Water
Analysis Batch: 546628

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 546227

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	10.0	9.91		mg/L		99	80 - 120	0	20
Antimony	0.200	0.208		mg/L		104	80 - 120	1	20
Arsenic	0.200	0.202		mg/L		101	80 - 120	1	20
Barium	0.200	0.215	^	mg/L		108	80 - 120	1	20
Beryllium	0.200	0.203		mg/L		102	80 - 120	1	20
Cadmium	0.200	0.199		mg/L		99	80 - 120	1	20
Calcium	10.0	10.05		mg/L		101	80 - 120	1	20
Chromium	0.200	0.203		mg/L		102	80 - 120	1	20
Cobalt	0.200	0.193		mg/L		96	80 - 120	1	20
Copper	0.200	0.196		mg/L		98	80 - 120	1	20
Iron	10.0	9.74		mg/L		97	80 - 120	1	20
Lead	0.200	0.197		mg/L		98	80 - 120	0	20
Magnesium	10.0	9.79		mg/L		98	80 - 120	1	20
Manganese	0.200	0.197		mg/L		98	80 - 120	0	20
Nickel	0.200	0.193		mg/L		97	80 - 120	0	20
Potassium	10.0	9.44		mg/L		94	80 - 120	0	20
Selenium	0.200	0.196		mg/L		98	80 - 120	1	20
Silver	0.0500	0.0498		mg/L		100	80 - 120	0	20
Sodium	10.0	9.51		mg/L		95	80 - 120	0	20
Thallium	0.200	0.199		mg/L		100	80 - 120	0	20
Vanadium	0.200	0.197		mg/L		99	80 - 120	1	20
Zinc	0.200	0.205		mg/L		102	80 - 120	0	20

Lab Sample ID: 480-174018-2 MS
Matrix: Water
Analysis Batch: 546628

Client Sample ID: TCS-MW-4
Prep Type: Total/NA
Prep Batch: 546227

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	0.20	U	10.0	9.93		mg/L		99	75 - 125
Antimony	0.020	U	0.200	0.211		mg/L		105	75 - 125
Arsenic	0.015	U	0.200	0.210		mg/L		105	75 - 125
Barium	0.046	^	0.200	0.259	^	mg/L		106	75 - 125
Beryllium	0.0020	U	0.200	0.206		mg/L		103	75 - 125
Cadmium	0.0020	U	0.200	0.201		mg/L		100	75 - 125
Calcium	48.6		10.0	57.61	4	mg/L		90	75 - 125
Chromium	0.0040	U	0.200	0.203		mg/L		102	75 - 125
Cobalt	0.0040	U	0.200	0.195		mg/L		97	75 - 125
Copper	0.010	U	0.200	0.198		mg/L		99	75 - 125
Iron	0.050	U	10.0	9.79		mg/L		98	75 - 125
Lead	0.010	U	0.200	0.201		mg/L		100	75 - 125
Magnesium	8.8		10.0	18.38		mg/L		96	75 - 125
Manganese	0.0030	U	0.200	0.197		mg/L		99	75 - 125

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 480-174018-2 MS
Matrix: Water
Analysis Batch: 546628

Client Sample ID: TCS-MW-4
Prep Type: Total/NA
Prep Batch: 546227

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	0.010	U	0.200	0.196		mg/L		98	75 - 125
Potassium	1.1		10.0	10.69		mg/L		96	75 - 125
Selenium	0.025	U	0.200	0.199		mg/L		100	75 - 125
Silver	0.0060	U	0.0500	0.0489		mg/L		98	75 - 125
Sodium	15.9		10.0	24.77		mg/L		89	75 - 125
Thallium	0.020	U	0.200	0.201		mg/L		101	75 - 125
Vanadium	0.0050	U	0.200	0.202		mg/L		101	75 - 125
Zinc	0.0036	J	0.200	0.206		mg/L		101	75 - 125

Lab Sample ID: 480-174018-2 MSD
Matrix: Water
Analysis Batch: 546628

Client Sample ID: TCS-MW-4
Prep Type: Total/NA
Prep Batch: 546227

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	0.20	U	10.0	9.85		mg/L		98	75 - 125	1	20
Antimony	0.020	U	0.200	0.211		mg/L		105	75 - 125	0	20
Arsenic	0.015	U	0.200	0.209		mg/L		104	75 - 125	0	20
Barium	0.046	^	0.200	0.257	^	mg/L		105	75 - 125	1	20
Beryllium	0.0020	U	0.200	0.204		mg/L		102	75 - 125	1	20
Cadmium	0.0020	U	0.200	0.199		mg/L		100	75 - 125	1	20
Calcium	48.6		10.0	56.45	4	mg/L		78	75 - 125	2	20
Chromium	0.0040	U	0.200	0.203		mg/L		101	75 - 125	0	20
Cobalt	0.0040	U	0.200	0.194		mg/L		97	75 - 125	1	20
Copper	0.010	U	0.200	0.197		mg/L		98	75 - 125	1	20
Iron	0.050	U	10.0	9.71		mg/L		97	75 - 125	1	20
Lead	0.010	U	0.200	0.198		mg/L		99	75 - 125	1	20
Magnesium	8.8		10.0	18.21		mg/L		94	75 - 125	1	20
Manganese	0.0030	U	0.200	0.197		mg/L		98	75 - 125	0	20
Nickel	0.010	U	0.200	0.195		mg/L		98	75 - 125	0	20
Potassium	1.1		10.0	10.58		mg/L		95	75 - 125	1	20
Selenium	0.025	U	0.200	0.196		mg/L		98	75 - 125	2	20
Silver	0.0060	U	0.0500	0.0490		mg/L		98	75 - 125	0	20
Sodium	15.9		10.0	28.12		mg/L		122	75 - 125	13	20
Thallium	0.020	U	0.200	0.199		mg/L		100	75 - 125	1	20
Vanadium	0.0050	U	0.200	0.200		mg/L		100	75 - 125	1	20
Zinc	0.0036	J	0.200	0.208		mg/L		102	75 - 125	1	20

Method: 335.4 - Cyanide, Total

Lab Sample ID: MB 480-546327/1-A
Matrix: Water
Analysis Batch: 546389

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 546327

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U ^	0.010	0.0050	mg/L		08/21/20 14:14	08/22/20 15:55	1

Method: 335.4 - Cyanide, Total (Continued)

Lab Sample ID: LCS 480-546327/2-A
Matrix: Water
Analysis Batch: 546389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 546327

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			0.250	0.264	^	mg/L		106	90 - 110		

Lab Sample ID: 480-174018-2 MS
Matrix: Water
Analysis Batch: 546389

Client Sample ID: TCS-MW-4
Prep Type: Total/NA
Prep Batch: 546327

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total	0.010	U ^	0.100	0.109	^	mg/L		109	90 - 110		

Lab Sample ID: 480-174018-2 MSD
Matrix: Water
Analysis Batch: 546389

Client Sample ID: TCS-MW-4
Prep Type: Total/NA
Prep Batch: 546327

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	0.010	U ^	0.100	0.112	N ^	mg/L		112	90 - 110	3	15

Metals

Prep Batch: 546227

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-174018-1	TCS-MW-6	Total/NA	Water	3005A	
480-174018-2	TCS-MW-4	Total/NA	Water	3005A	
480-174018-3	TCS-MW-9	Total/NA	Water	3005A	
480-174018-4	TCS-MW-3D	Total/NA	Water	3005A	
MB 480-546227/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-546227/2-A	Lab Control Sample	Total/NA	Water	3005A	
LCSD 480-546227/3-A	Lab Control Sample Dup	Total/NA	Water	3005A	
480-174018-2 MS	TCS-MW-4	Total/NA	Water	3005A	
480-174018-2 MSD	TCS-MW-4	Total/NA	Water	3005A	

Analysis Batch: 546628

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-174018-1	TCS-MW-6	Total/NA	Water	6010C	546227
480-174018-2	TCS-MW-4	Total/NA	Water	6010C	546227
480-174018-3	TCS-MW-9	Total/NA	Water	6010C	546227
480-174018-4	TCS-MW-3D	Total/NA	Water	6010C	546227
MB 480-546227/1-A	Method Blank	Total/NA	Water	6010C	546227
LCS 480-546227/2-A	Lab Control Sample	Total/NA	Water	6010C	546227
LCSD 480-546227/3-A	Lab Control Sample Dup	Total/NA	Water	6010C	546227
480-174018-2 MS	TCS-MW-4	Total/NA	Water	6010C	546227
480-174018-2 MSD	TCS-MW-4	Total/NA	Water	6010C	546227

Analysis Batch: 546921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-174018-1	TCS-MW-6	Total/NA	Water	6010C	546227

General Chemistry

Prep Batch: 546327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-174018-1	TCS-MW-6	Total/NA	Water	Distill/CN	
480-174018-2	TCS-MW-4	Total/NA	Water	Distill/CN	
480-174018-3	TCS-MW-9	Total/NA	Water	Distill/CN	
480-174018-4	TCS-MW-3D	Total/NA	Water	Distill/CN	
MB 480-546327/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 480-546327/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
480-174018-2 MS	TCS-MW-4	Total/NA	Water	Distill/CN	
480-174018-2 MSD	TCS-MW-4	Total/NA	Water	Distill/CN	

Analysis Batch: 546389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-174018-1	TCS-MW-6	Total/NA	Water	335.4	546327
480-174018-2	TCS-MW-4	Total/NA	Water	335.4	546327
480-174018-3	TCS-MW-9	Total/NA	Water	335.4	546327
480-174018-4	TCS-MW-3D	Total/NA	Water	335.4	546327
MB 480-546327/1-A	Method Blank	Total/NA	Water	335.4	546327
LCS 480-546327/2-A	Lab Control Sample	Total/NA	Water	335.4	546327
480-174018-2 MS	TCS-MW-4	Total/NA	Water	335.4	546327
480-174018-2 MSD	TCS-MW-4	Total/NA	Water	335.4	546327

Lab Chronicle

Client: New York State D.E.C.
Job ID: 480-174018-1
Project/Site: SMP B - Tioga Castings Site

Client Sample ID: TCS-MW-6
Lab Sample ID: 480-174018-1
Date Collected: 08/19/20 13:30
Matrix: Water
Date Received: 08/20/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			546227	08/21/20 10:00	ADM	TAL BUF
Total/NA	Analysis	6010C		1	546628	08/24/20 14:01	LMH	TAL BUF
Total/NA	Prep	3005A			546227	08/21/20 10:00	ADM	TAL BUF
Total/NA	Analysis	6010C		1	546921	08/25/20 14:15	LMH	TAL BUF
Total/NA	Prep	Distill/CN			546327	08/21/20 14:14	CRK	TAL BUF
Total/NA	Analysis	335.4		1	546389	08/22/20 16:03	CRK	TAL BUF

Client Sample ID: TCS-MW-4
Lab Sample ID: 480-174018-2
Date Collected: 08/19/20 14:30
Matrix: Water
Date Received: 08/20/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			546227	08/21/20 10:00	ADM	TAL BUF
Total/NA	Analysis	6010C		1	546628	08/24/20 14:05	LMH	TAL BUF
Total/NA	Prep	Distill/CN			546327	08/21/20 14:14	CRK	TAL BUF
Total/NA	Analysis	335.4		1	546389	08/22/20 15:59	CRK	TAL BUF

Client Sample ID: TCS-MW-9
Lab Sample ID: 480-174018-3
Date Collected: 08/19/20 15:30
Matrix: Water
Date Received: 08/20/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			546227	08/21/20 10:00	ADM	TAL BUF
Total/NA	Analysis	6010C		1	546628	08/24/20 14:35	LMH	TAL BUF
Total/NA	Prep	Distill/CN			546327	08/21/20 14:14	CRK	TAL BUF
Total/NA	Analysis	335.4		1	546389	08/22/20 16:05	CRK	TAL BUF

Client Sample ID: TCS-MW-3D
Lab Sample ID: 480-174018-4
Date Collected: 08/19/20 16:20
Matrix: Water
Date Received: 08/20/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			546227	08/21/20 10:00	ADM	TAL BUF
Total/NA	Analysis	6010C		1	546628	08/24/20 14:38	LMH	TAL BUF
Total/NA	Prep	Distill/CN			546327	08/21/20 14:14	CRK	TAL BUF
Total/NA	Analysis	335.4		1	546389	08/22/20 16:06	CRK	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: New York State D.E.C.
Job ID: 480-174018-1
Project/Site: SMP B - Tioga Castings Site

Laboratory: Eurofins TestAmerica, Buffalo

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-02-21

Method Summary

Client: New York State D.E.C.
Job ID: 480-174018-1
Project/Site: SMP B - Tioga Castings Site

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL BUF
335.4	Cyanide, Total	MCAWW	TAL BUF
3005A	Preparation, Total Metals	SW846	TAL BUF
Distill/CN	Distillation, Cyanide	None	TAL BUF

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

None = None

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

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: New York State D.E.C.
Job ID: 480-174018-1
Project/Site: SMP B - Tioga Castings Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-174018-1	TCS-MW-6	Water	08/19/20 13:30	08/20/20 08:00	
480-174018-2	TCS-MW-4	Water	08/19/20 14:30	08/20/20 08:00	
480-174018-3	TCS-MW-9	Water	08/19/20 15:30	08/20/20 08:00	
480-174018-4	TCS-MW-3D	Water	08/19/20 16:20	08/20/20 08:00	

Eurofins TestAmerica, Buffalo

10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Syracuse #225

Client Information	Sampler: Caitlin Serowik	Lab PM: ~~Fischer, Brian~~ Judy Stone	Carrier Tracking No(s):	COC No: 480-148702-33098.4
Client Contact: Mr. Stephen Johansson	Phone: 315-427-5248	E-Mail: ~~Brian.Fischer@Eurofinset.com~~		Page: Page 4 of 4
Company: TRC Environmental Corporation		Analysis Requested		Job #:
Address: 10 Maxwell Drive Suite 200	Due Date Requested:			
City: Clifton Park	TAT Requested (days): STD			
State, Zip: NY, 12065				
Phone: 516-364-9890(Tel)	PO #: ~~3150-151 Valley Cleaners~~			
Email: SJohansson@trccompanies.com	WO #:			
Project Name: NYSDEC - ~~Valley Falls Dry Cleaners~~ Tioga Castings Site	Project #: ~~48018784~~			
Site:	SSOW#:			

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	~~PFC_IDA - PFAS, Standard List (21 analytes)~~	~~8270D_SIM_MS_ID - SIM List~~	6010 TAL metals	335 Cyanide	Total Number of containers	Special Instructions/Note:
				Preservation Code:			N	N				
TCS-MW-6	8/19/20	1330	G	Water	N	N			X	X		
TCS-MW-4	8/19/20	1430	G	Water	N	Y			X	X		
TCS-MW-9	8/19/20	1530	G	Water	N	N			X	X		
TCS-MW-3D	8/19/20	1620	G	Water	N	N			X	X		

RE 8-19-20

480-174018 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: Caitlin Serowik	Date/Time: 8/19/2020 1830	Company: TRC	Received by: R English	Date/Time: 8-19-20, 1830	Company: Syr
Relinquished by: R English	Date/Time: 8-19-20, 1900	Company: Syr	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by: [signature]	Date/Time: 8/20/20 0800	Company: TAB
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 3.1 #1		

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: New York State D.E.C.

Job Number: 480-174018-1

Login Number: 174018

List Source: Eurofins TestAmerica, Buffalo

List Number: 1

Creator: Yeager, Brian A

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.1 #1 ICE
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	TRC
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Data Usability Summary Report

Site: SMP B - Tioga Castings Site
Laboratory: Eurofins TestAmerica Buffalo – Amherst, NY
SDG No.: 480-174018-1
Parameters: Metals and Cyanide
Data Reviewer: Amy Bass/TRC
Peer Reviewer: Kristen Morin/TRC
Date: March 7, 2023

Sample Reviewed and Evaluation Summary

4 / Groundwater: TCS-MW-3D, TCS-MW-4, TCS-MW-6, TCS-MW-9

The above-listed samples were collected on August 19, 2020 and were analyzed for the following parameters:

- Total Metals by EPA SW-846 Methods 3005A/6010C
- Total Cyanide by EPA Method 335.4

The data validation was performed in accordance with *USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (EPA 542-R-20-006), November 2020*, modified for the methodologies utilized.

The data were evaluated based on the following parameters:

	•	Overall Evaluation of Data and Potential Usability Issues
	•	Data Completeness
*	•	Holding Times and Sample Preservation
	•	Initial and Continuing Calibrations
*	•	Interference Check Sample (ICS) Results (Metals Only)
	•	Blanks
	•	Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Post-Digestion Spike (PDS) Results
NA	•	Laboratory Duplicate Results
	•	Inductively Coupled Plasma (ICP) Serial Dilution Results (Metals Only)
*	•	Laboratory Control Sample/LCS Duplicate (LCS/LCSD) Results
NA	•	Field Duplicate Results
	•	Sample Results and Reported Quantitation Limits (QLs)

*	-	All criteria were met.
NA	-	A laboratory duplicate and field duplicate were not associated with this sample set.

Overall Evaluation of Data and Potential Usability Issues

All results are usable for the project objectives. Qualifications applied to the data as a result of sampling error were not required. Qualifications applied to the data as a result of analytical error are discussed below.

- Potential uncertainty exists for select metals results that were detected between the method detection limit (MDL) and QL. These results were qualified as estimated (J) by the

laboratory. These results can be used for project objectives as estimated values, which may have a minor impact on the data usability.

- The positive results for iron in samples TCS-MW-3D and TCS-MW-9 were qualified as estimated (J-) with a potential low bias due to low recovery in the low-level calibration standard, and the positive result for iron in sample TCS-MW-6 was qualified as estimated (J) due to low recovery in the low-level calibration standard and calibration blank contamination. These results can be used for project objectives as estimated values, which may have a minor impact on the data usability.

- The nondetect result for iron in sample TCS-MW-4 was qualified as estimated (UJ) due to low recovery in the low-level calibration standard. This result can be used for project objectives as nondetect with an estimated QL, which may have a minor impact on the data usability.

- The positive results for barium and calcium in samples TCS-MW-3D, TCS-MW-4, TCS-MW-6, and TCS-MW-9 were qualified as estimated (J) based on ICP serial dilution variability. These results can be used for project objectives as estimated values, which may have a minor impact on the data usability.

Data Completeness

The data package was a complete Level IV data deliverable package with the following exceptions; no validation actions were required on this basis.

- Page numbering was incorrect on the chain-of-custody (COC) form; the COC was a single page but was indicated as page 4 of 4.

- Sample preservation was not indicated on the COC.

- It was noted that the laboratory narrative states that the continuing calibration verification standard (CCV) for cyanide recovered outside the acceptance criteria, low biased; however, the noted result recovered outside the acceptance criteria with high bias (rather than low). This discrepancy is noted, but no validation action was required on this basis.

Holding Times and Sample Preservation

All holding time and sample preservation criteria were met. Sample preservation was not recorded on the COC; however, the laboratory Login Sample Receipt Checklist noted that the sample preservation was verified, and the laboratory Job Narrative stated that the samples were properly preserved.

Initial and Continuing Calibrations

All initial calibration correlation coefficients for the metals and cyanide were >0.995.

The initial calibration verification (ICV) for the metals analyses and CCV percent recoveries (%Rs) for the metals and cyanide analyses met the method acceptance limits (90-110%) with one exception.

- The %R (113%) for cyanide exceeded the method acceptance limits (90-110%) in one of the CCVs (08/22/2020 16:09) relevant to the analysis of all samples of this data set. Sample qualification was not required on this basis since the indicated bias was high, and cyanide was nondetect in all samples of the data set.

Low-level calibration verification (CCVL) standards were analyzed prior to the sample analyses for metals. The CCVL %Rs for the metals analyses met the method acceptance limits (80-120%) with the following exceptions:

- CCVL %Rs (70%-77%) for iron were below the acceptance limits (80-120%) in the analytical sequence associated with all samples of this data set. The positive results for iron in samples TCS-MW-3D and TCS-MW-9 and the nondetect result for iron in sample TCS-MW-4 was qualified as estimated (J-/UJ) with a potential low bias based on the low CCVL %Rs and detection < 10x the QL. The positive result for iron in sample TCS-MW-6 was qualified as estimated (J) based on the low CCVL %Rs, detection < 10x the QL, and detection in an associated calibration blank (discussed later in this review).

- One CCVL %R (131%) for manganese, associated with the 8/24/20 analyses of samples TCW-MW-4 and TCS-MW-6, exceeded the acceptance limits (80-120%). The result for manganese in sample TCS-MW-6 was reported from a different analytical sequence with acceptable CCVL %Rs for manganese; thus, no qualification was required on this basis for this sample. Sample qualification was not required on this basis for sample TCS-MW-4 since manganese was nondetect in this sample.

ICS Results (Metals Only)

All spiked analytes recovered within the acceptance limits in the ICSA and ICSAB sample analyses. The interferent concentrations (aluminum, calcium, iron, and magnesium) in all samples were less than 90% of the found ICSA concentrations; thus, no further evaluation of potential interferences was performed. No validation action was required on this basis.

Blanks

Cyanide was not detected in the associated method blank or in the associated continuing calibration blanks (CCBs). Metals were detected in the associated method blank and in one of the CCBs associated with all sample analyses. Note that initial calibration blanks were not used for sample qualification since these did not bracket any of the sample analyses. The following table summarizes the metal detected in the laboratory method blank, the concentration detected, the associated samples, and the resulting validation actions.

Method Blank ID	Analyte	Blank Concentration (mg/L)	Validation Actions
MB 480-546227/1-A	Cobalt	0.000720 J	Qualification was not required on this basis since cobalt was not detected in the associated samples.
Associated samples: All samples in this data set.			

Beryllium (0.000590 J mg/L), calcium (0.108 J mg/L), and iron (0.0289 J mg/L) were detected in one CCB (CCB 480-546628/40; 08/24/2020 14:27) related to all samples in this data set. Sample qualification was not required for beryllium in the associated samples or for iron in sample TCS-MW-4 since these results were nondetect. The positive result for iron in sample TCS-MW-6 was

qualified as estimated (J) since this result was > the QL and <10× the blank concentration; high bias was not applied since this result was also qualified based on low recovery in the associated CCVL as noted previously. Qualification was not required for calcium in the associated samples or iron in samples TCS-MW-3D or TCS-MW-9 since these results were ≥10× the blank concentrations.

MS/MSD and PDS Results

MS/MSD analyses for metals and cyanide and PDS analysis for metals were performed on sample TCS-MW-4. The MS and MSD %Rs for all metals were within the acceptance limits (75-125%), and the MS/MSD relative percent differences (RPDs) for all metals and cyanide analyses were within the acceptance limits (20% for metals; 15% for cyanide). Note that PDS analysis for metals is required only if MS/MSD %Rs are outside the acceptance limits. Since the MS/MSD %Rs for the metals analyses were within the acceptance limits, the PDS results were not evaluated or summarized in this report; no validation action was required on this basis. The MSD %R for cyanide (112%) exceeded the laboratory acceptance limits (90-110%). Qualification was not required on this basis since the indicated bias was high, and cyanide was not detected in the samples of this data set.

Laboratory Duplicate Results

Laboratory duplicate analyses were not performed on samples from this data set.

ICP Serial Dilution Results (Metals Only)

ICP serial dilution analysis for metals was performed on sample TCS-MW-4. All criteria (percent difference [%D] ≤ 20% when serial dilution results > the QL and sample results >50x the MDL) were met with the exception of two metals.

- The %Ds for barium (162%) and calcium (34.2%) exceeded the acceptance limit, and the sample concentration (>50x the MDL) and serial dilution concentration (>QL) met the evaluation requirements. The positive results for barium and calcium in samples TCS-MW-3D, TCS-MW-4, TCS-MW-6, and TCS-MW-9 were qualified as estimated (J) based on the noted ICP serial dilution variability.

LCS/LCSD Results

LCS and LCSD analyses were performed with the metals analyses, and LCS analysis was performed with the cyanide analyses. The LCS and LCSD %Rs, where applicable, met the acceptance criteria of 80-120% for metals and 90-110% for cyanide. The LCS/LCSD RPDs for metals met the acceptance criteria of ≤20%.

Field Duplicate Results

No field duplicate pairs were submitted with this sample set.

Sample Results and Reported Quantitation Limits

Select results for the metals were reported between the MDL and QL in the associated samples. These results were qualified as estimated (J) by the laboratory.

Sample calculations were spot-checked, and no errors were noted.

No dilutions were performed for the metals or cyanide analyses.

QUALIFIED FORM 1s

Client Sample ID: TCS-MW-6
Lab Sample ID: 480-174018-1
Date Collected: 08/19/20 13:30
Matrix: Water
Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.096**	**J**	0.20	0.060	mg/L		08/21/20 10:00	08/24/20 14:01	1
Antimony	0.020	U	0.020	0.0068	mg/L		08/21/20 10:00	08/24/20 14:01	1
Arsenic	0.015	U	0.015	0.0056	mg/L		08/21/20 10:00	08/24/20 14:01	1
Barium	**0.061**	~~F~~ J	0.0020	0.00070	mg/L		08/21/20 10:00	08/24/20 14:01	1
Beryllium	0.0020	U	0.0020	0.00030	mg/L		08/21/20 10:00	08/24/20 14:01	1
Cadmium	0.0020	U	0.0020	0.00050	mg/L		08/21/20 10:00	08/24/20 14:01	1
Calcium	**61.4**	J	0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:01	1
Chromium	0.0040	U	0.0040	0.0010	mg/L		08/21/20 10:00	08/24/20 14:01	1
Cobalt	0.0040	U	0.0040	0.00063	mg/L		08/21/20 10:00	08/24/20 14:01	1
Copper	0.010	U	0.010	0.0016	mg/L		08/21/20 10:00	08/24/20 14:01	1
Iron	**0.14**	J	0.050	0.019	mg/L		08/21/20 10:00	08/24/20 14:01	1
Lead	0.010	U	0.010	0.0030	mg/L		08/21/20 10:00	08/24/20 14:01	1
Magnesium	**10.4**		0.20	0.043	mg/L		08/21/20 10:00	08/24/20 14:01	1
Manganese	**0.0064**		0.0030	0.00040	mg/L		08/21/20 10:00	08/25/20 14:15	1
Nickel	0.010	U	0.010	0.0013	mg/L		08/21/20 10:00	08/24/20 14:01	1
Potassium	**1.8**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:01	1
Selenium	0.025	U	0.025	0.0087	mg/L		08/21/20 10:00	08/24/20 14:01	1
Silver	0.0060	U	0.0060	0.0017	mg/L		08/21/20 10:00	08/24/20 14:01	1
Sodium	**27.7**		1.0	0.32	mg/L		08/21/20 10:00	08/24/20 14:01	1
Thallium	0.020	U	0.020	0.010	mg/L		08/21/20 10:00	08/24/20 14:01	1
Vanadium	0.0050	U	0.0050	0.0015	mg/L		08/21/20 10:00	08/24/20 14:01	1
Zinc	0.010	U	0.010	0.0015	mg/L		08/21/20 10:00	08/24/20 14:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U~~F~~	0.010	0.0050	mg/L		08/21/20 14:14	08/22/20 16:03	1

Client Sample ID: TCS-MW-4
Lab Sample ID: 480-174018-2
Date Collected: 08/19/20 14:30
Matrix: Water
Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.20	U	0.20	0.060	mg/L		08/21/20 10:00	08/24/20 14:05	1
Antimony	0.020	U	0.020	0.0068	mg/L		08/21/20 10:00	08/24/20 14:05	1
Arsenic	0.015	U	0.015	0.0056	mg/L		08/21/20 10:00	08/24/20 14:05	1
Barium	**0.046**	~~F~~ J	0.0020	0.00070	mg/L		08/21/20 10:00	08/24/20 14:05	1
Beryllium	0.0020	U	0.0020	0.00030	mg/L		08/21/20 10:00	08/24/20 14:05	1
Cadmium	0.0020	U	0.0020	0.00050	mg/L		08/21/20 10:00	08/24/20 14:05	1
Calcium	**48.6**	J	0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:05	1
Chromium	0.0040	U	0.0040	0.0010	mg/L		08/21/20 10:00	08/24/20 14:05	1
Cobalt	0.0040	U	0.0040	0.00063	mg/L		08/21/20 10:00	08/24/20 14:05	1
Copper	0.010	U	0.010	0.0016	mg/L		08/21/20 10:00	08/24/20 14:05	1
Iron	0.050	~~U~~ UJ	0.050	0.019	mg/L		08/21/20 10:00	08/24/20 14:05	1
Lead	0.010	U	0.010	0.0030	mg/L		08/21/20 10:00	08/24/20 14:05	1
Magnesium	**8.8**		0.20	0.043	mg/L		08/21/20 10:00	08/24/20 14:05	1
Manganese	0.0030	U	0.0030	0.00040	mg/L		08/21/20 10:00	08/24/20 14:05	1
Nickel	0.010	U	0.010	0.0013	mg/L		08/21/20 10:00	08/24/20 14:05	1
Potassium	**1.1**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:05	1
Selenium	0.025	U	0.025	0.0087	mg/L		08/21/20 10:00	08/24/20 14:05	1

Client Sample ID: TCS-MW-4
Lab Sample ID: 480-174018-2
Date Collected: 08/19/20 14:30
Matrix: Water
Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	0.0060	U	0.0060	0.0017	mg/L		08/21/20 10:00	08/24/20 14:05	1
Sodium	**15.9**		1.0	0.32	mg/L		08/21/20 10:00	08/24/20 14:05	1
Thallium	0.020	U	0.020	0.010	mg/L		08/21/20 10:00	08/24/20 14:05	1
Vanadium	0.0050	U	0.0050	0.0015	mg/L		08/21/20 10:00	08/24/20 14:05	1
Zinc	**0.0036**	**J**	0.010	0.0015	mg/L		08/21/20 10:00	08/24/20 14:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U	0.010	0.0050	mg/L		08/21/20 14:14	08/22/20 15:59	1

Client Sample ID: TCS-MW-9
Lab Sample ID: 480-174018-3
Date Collected: 08/19/20 15:30
Matrix: Water
Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.29**		0.20	0.060	mg/L		08/21/20 10:00	08/24/20 14:35	1
Antimony	0.020	U	0.020	0.0068	mg/L		08/21/20 10:00	08/24/20 14:35	1
Arsenic	0.015	U	0.015	0.0056	mg/L		08/21/20 10:00	08/24/20 14:35	1
Barium	**0.073**	J	0.0020	0.00070	mg/L		08/21/20 10:00	08/24/20 14:35	1
Beryllium	0.0020	U	0.0020	0.00030	mg/L		08/21/20 10:00	08/24/20 14:35	1
Cadmium	0.0020	U	0.0020	0.00050	mg/L		08/21/20 10:00	08/24/20 14:35	1
Calcium	**67.8**	J	0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:35	1
Chromium	**0.0010**	**J**	0.0040	0.0010	mg/L		08/21/20 10:00	08/24/20 14:35	1
Cobalt	0.0040	U	0.0040	0.00063	mg/L		08/21/20 10:00	08/24/20 14:35	1
Copper	0.010	U	0.010	0.0016	mg/L		08/21/20 10:00	08/24/20 14:35	1
Iron	**0.34**	J-	0.050	0.019	mg/L		08/21/20 10:00	08/24/20 14:35	1
Lead	0.010	U	0.010	0.0030	mg/L		08/21/20 10:00	08/24/20 14:35	1
Magnesium	**9.6**		0.20	0.043	mg/L		08/21/20 10:00	08/24/20 14:35	1
Manganese	**0.015**		0.0030	0.00040	mg/L		08/21/20 10:00	08/24/20 14:35	1
Nickel	0.010	U	0.010	0.0013	mg/L		08/21/20 10:00	08/24/20 14:35	1
Potassium	**3.7**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:35	1
Selenium	0.025	U	0.025	0.0087	mg/L		08/21/20 10:00	08/24/20 14:35	1
Silver	0.0060	U	0.0060	0.0017	mg/L		08/21/20 10:00	08/24/20 14:35	1
Sodium	**5.3**		1.0	0.32	mg/L		08/21/20 10:00	08/24/20 14:35	1
Thallium	0.020	U	0.020	0.010	mg/L		08/21/20 10:00	08/24/20 14:35	1
Vanadium	0.0050	U	0.0050	0.0015	mg/L		08/21/20 10:00	08/24/20 14:35	1
Zinc	**0.0034**	**J**	0.010	0.0015	mg/L		08/21/20 10:00	08/24/20 14:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U	0.010	0.0050	mg/L		08/21/20 14:14	08/22/20 16:05	1

Client Sample ID: TCS-MW-3D
Lab Sample ID: 480-174018-4
Date Collected: 08/19/20 16:20
Matrix: Water
Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.35**		0.20	0.060	mg/L		08/21/20 10:00	08/24/20 14:38	1
Antimony	0.020	U	0.020	0.0068	mg/L		08/21/20 10:00	08/24/20 14:38	1

Client Sample ID: TCS-MW-3D
Lab Sample ID: 480-174018-4

Date Collected: 08/19/20 16:20
Matrix: Water

Date Received: 08/20/20 08:00

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.015	U	0.015	0.0056	mg/L		08/21/20 10:00	08/24/20 14:38	1
Barium	**0.049**	J	0.0020	0.00070	mg/L		08/21/20 10:00	08/24/20 14:38	1
Beryllium	0.0020	U	0.0020	0.00030	mg/L		08/21/20 10:00	08/24/20 14:38	1
Cadmium	0.0020	U	0.0020	0.00050	mg/L		08/21/20 10:00	08/24/20 14:38	1
Calcium	**50.3**	J	0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:38	1
Chromium	0.0040	U	0.0040	0.0010	mg/L		08/21/20 10:00	08/24/20 14:38	1
Cobalt	0.0040	U	0.0040	0.00063	mg/L		08/21/20 10:00	08/24/20 14:38	1
Copper	0.010	U	0.010	0.0016	mg/L		08/21/20 10:00	08/24/20 14:38	1
Iron	**0.44**	J-	0.050	0.019	mg/L		08/21/20 10:00	08/24/20 14:38	1
Lead	0.010	U	0.010	0.0030	mg/L		08/21/20 10:00	08/24/20 14:38	1
Magnesium	**9.0**		0.20	0.043	mg/L		08/21/20 10:00	08/24/20 14:38	1
Manganese	**0.016**		0.0030	0.00040	mg/L		08/21/20 10:00	08/24/20 14:38	1
Nickel	0.010	U	0.010	0.0013	mg/L		08/21/20 10:00	08/24/20 14:38	1
Potassium	**1.4**		0.50	0.10	mg/L		08/21/20 10:00	08/24/20 14:38	1
Selenium	0.025	U	0.025	0.0087	mg/L		08/21/20 10:00	08/24/20 14:38	1
Silver	0.0060	U	0.0060	0.0017	mg/L		08/21/20 10:00	08/24/20 14:38	1
Sodium	**15.5**		1.0	0.32	mg/L		08/21/20 10:00	08/24/20 14:38	1
Thallium	0.020	U	0.020	0.010	mg/L		08/21/20 10:00	08/24/20 14:38	1
Vanadium	0.0050	U	0.0050	0.0015	mg/L		08/21/20 10:00	08/24/20 14:38	1
Zinc	**0.0031**	J	0.010	0.0015	mg/L		08/21/20 10:00	08/24/20 14:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.010	U	0.010	0.0050	mg/L		08/21/20 14:14	08/22/20 16:06	1

QC NONCONFORMANCE DOCUMENTATION

2-IN

CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Buffalo Job No.: 480-174018-1

SDG No.:

Analyst: CRK Batch Start Date: 08/22/2020

Reporting Units: mg/L Analytical Batch No.: 546389

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	CCV	15:52	Cyanide, Total	0.274	0.250	110	90-110		CN CCV_01360
2	CCB	15:53	Cyanide, Total	0.010				U	
13	CCV	16:09	Cyanide, Total	0.282	0.250	113	90-110		CN CCV_01360
14	CCB	16:11	Cyanide, Total	0.010				U	

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

FORM II-IN

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Buffalo Job No.: 480-174018-1

SDG No.:

ICV Source: MEI_10_CCVL_00334 Concentration Units: mg/L

CCV Source: MEI_10_CCVL_00334

Analyte	ICVL 480-546628/7 08/24/2020 12:22				CCVL 480-546628/17 08/24/2020 13:01				CCVL 480-546628/29 08/24/2020 13:46			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	0.184	J	0.200	92	0.191	J	0.200	96	0.170	J	0.200	85
Antimony	0.0182	J	0.0200	91	0.0169	J	0.0200	85	0.0177	J	0.0200	88
Arsenic	0.0159		0.0150	106	0.0159		0.0150	106	0.0164		0.0150	109
Barium	0.00191	J	0.00200	96	0.00186	J	0.00200	93	0.00208		0.00200	104
Beryllium	0.00187	J	0.00200	94	0.00168	J	0.00200	84	0.00176	J	0.00200	88
Cadmium	0.00194	J	0.00200	97	0.00191	J	0.00200	96	0.00197	J	0.00200	99
Calcium	0.537		0.500	107	0.515		0.500	103	0.503		0.500	101
Chromium	0.00406		0.00400	102	0.00416		0.00400	104	0.00412		0.00400	103
Cobalt	0.00365	J	0.00400	91	0.00388	J	0.00400	97	0.00371	J	0.00400	93
Copper	0.0103		0.0100	103	0.00957	J	0.0100	96	0.00992	J	0.0100	99
Iron	0.0416	J	0.0500	83	0.0379	J	0.0500	76	0.0385	J	0.0500	77
Lead	0.00987	J	0.0100	99	0.00937	J	0.0100	94	0.00915	J	0.0100	92
Magnesium	0.199	J	0.200	99	0.194	J	0.200	97	0.201		0.200	100
Manganese	0.00351		0.00300	117	0.00320		0.00300	107	0.00394		0.00300	131
Nickel	0.00959	J	0.0100	96	0.00959	J	0.0100	96	0.00989	J	0.0100	99
Potassium	0.448	J	0.500	90	0.414	J	0.500	83	0.364	J	0.500	73
Selenium	0.0256		0.0250	102	0.0238	J	0.0250	95	0.0256		0.0250	103
Silver	0.00556	J	0.00600	93	0.00603		0.00600	101	0.00646		0.00600	108
Sodium	0.883	J	1.01	88	0.809	J	1.01	80	0.808	J	1.01	80
Thallium	0.0196	J	0.0200	98	0.0191	J	0.0200	95	0.0189	J	0.0200	95
Vanadium	0.00448	J	0.00500	90	0.00449	J	0.00500	90	0.00497	J	0.00500	99
Zinc	0.0120		0.0100	120	0.0100		0.0100	100	0.00941	J	0.0100	94

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

Lab Name: Eurofins TestAmerica, Buffalo Job No.: 480-174018-1

SDG No.:

ICV Source: MEI_10_CCVL_00334 Concentration Units: mg/L

CCV Source: MEI_10_CCVL_00334

Analyte	CCVL 480-546628/41 08/24/2020 14:31				CCVL 480-546628/49 08/24/2020 15:16							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	0.166	J	0.200	83	0.192	J	0.200	96				
Antimony	0.0187	J	0.0200	94	0.0185	J	0.0200	93				
Arsenic	0.0168		0.0150	112	0.0166		0.0150	110				
Barium	0.00191	J	0.00200	96	0.00184	J	0.00200	92				
Beryllium	0.00173	J	0.00200	87	0.00176	J	0.00200	88				
Cadmium	0.00185	J	0.00200	93	0.00180	J	0.00200	90				
Calcium	0.495	J	0.500	99	0.488	J	0.500	98				
Chromium	0.00378	J	0.00400	95	0.00368	J	0.00400	92				
Cobalt	0.00359	J	0.00400	90	0.00340	J	0.00400	85				
Copper	0.00918	J	0.0100	92	0.00903	J	0.0100	90				
Iron	0.0356	J	0.0500	71	0.0351	J	0.0500	70				
Lead	0.00888	J	0.0100	89	0.00892	J	0.0100	89				
Magnesium	0.191	J	0.200	96	0.187	J	0.200	94				
Manganese	0.00285	J	0.00300	95	0.00280	J	0.00300	93				
Nickel	0.00961	J	0.0100	96	0.00940	J	0.0100	94				
Potassium	0.426	J	0.500	85	0.397	J	0.500	79				
Selenium	0.0267		0.0250	107	0.0250		0.0250	100				
Silver	0.00593	J	0.00600	99	0.00539	J	0.00600	90				
Sodium	0.803	J	1.01	80	0.798	J	1.01	79				
Thallium	0.0192	J	0.0200	96	0.0189	J	0.0200	94				
Vanadium	0.00453	J	0.00500	91	0.00475	J	0.00500	95				
Zinc	0.00918	J	0.0100	92	0.00958	J	0.0100	96				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

3-IN
METHOD BLANK
METALS

Lab Name: Eurofins TestAmerica, Buffalo Job No.: 480-174018-1

SDG No.:

Concentration Units: mg/L Lab Sample ID: MB 480-546227/1-A

Instrument Code: ICAP1 Batch No.: 546628

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	0.20	U		6010C
7440-36-0	Antimony	0.020	U		6010C
7440-38-2	Arsenic	0.015	U		6010C
7440-39-3	Barium	0.0020	U	^	6010C
7440-41-7	Beryllium	0.0020	U		6010C
7440-43-9	Cadmium	0.0020	U		6010C
7440-70-2	Calcium	0.50	U		6010C
7440-47-3	Chromium	0.0040	U		6010C
7440-48-4	Cobalt	0.000720	J		6010C
7440-50-8	Copper	0.010	U		6010C
7439-89-6	Iron	0.050	U		6010C
7439-92-1	Lead	0.010	U		6010C
7439-95-4	Magnesium	0.20	U		6010C
7439-96-5	Manganese	0.0030	U		6010C
7440-02-0	Nickel	0.010	U		6010C
7440-09-7	Potassium	0.50	U		6010C
7782-49-2	Selenium	0.025	U		6010C
7440-22-4	Silver	0.0060	U		6010C
7440-23-5	Sodium	1.0	U		6010C
7440-28-0	Thallium	0.020	U		6010C
7440-62-2	Vanadium	0.0050	U		6010C
7440-66-6	Zinc	0.010	U		6010C

Lab Name: Eurofins TestAmerica, Buffalo Job No.: 480-174018-1

SDG No.:

Concentration Units: mg/L

Analyte	RL	ICB 480-546628/6 08/24/2020 12:18		CCB 480-546628/16 08/24/2020 12:56		CCB 480-546628/28 08/24/2020 13:42		CCB 480-546628/40 08/24/2020 14:27	
		Found	C	Found	C	Found	C	Found	C
Aluminum	0.20	0.20	U	0.20	U	0.20	U	0.20	U
Antimony	0.020	0.020	U	0.020	U	0.020	U	0.020	U
Arsenic	0.015	0.015	U	0.015	U	0.015	U	0.015	U
Barium	0.0020	0.0020	U	0.0020	U	0.0020	U	0.0020	U
Beryllium	0.0020	0.0020	U	0.0020	U	0.0020	U	0.000590	J
Cadmium	0.0020	0.000980	J	0.0020	U	0.0020	U	0.0020	U
Calcium	0.50	0.50	U	0.50	U	0.50	U	0.108	J
Chromium	0.0040	0.0040	U	0.0040	U	0.0040	U	0.0040	U
Cobalt	0.0040	0.000860	J	0.0040	U	0.0040	U	0.0040	U
Copper	0.010	0.010	U	0.010	U	0.010	U	0.010	U
Iron	0.050	0.050	U	0.050	U	0.050	U	0.0289	J
Lead	0.010	0.010	U	0.010	U	0.010	U	0.010	U
Magnesium	0.20	0.20	U	0.20	U	0.20	U	0.20	U
Manganese	0.0030	0.0030	U	0.0030	U	0.0030	U	0.0030	U
Nickel	0.010	0.010	U	0.010	U	0.010	U	0.010	U
Potassium	0.50	0.50	U	0.50	U	0.50	U	0.50	U
Selenium	0.025	0.025	U	0.025	U	0.025	U	0.025	U
Silver	0.0060	0.0060	U	0.0060	U	0.0060	U	0.0060	U
Sodium	1.0	1.0	U	1.0	U	1.0	U	1.0	U
Thallium	0.020	0.020	U	0.020	U	0.020	U	0.020	U
Vanadium	0.0050	0.0050	U	0.0050	U	0.0050	U	0.0050	U
Zinc	0.010	0.010	U	0.010	U	0.010	U	0.010	U

Italicized analytes were not requested for this sequence.

5-IN

MATRIX SPIKE DUPLICATE SAMPLE RECOVERY

GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Buffalo Job No.: 480-174018-1

SDG No.:

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 546389	Date: 08/22/2020 16:02		Prep Batch: 546327		Date: 08/21/2020 14:14						
335.4	480-174018-2 MSD	Cyanide, Total	0.112		mg/L	0.100	112	90-110	3	15	N ^

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

FORM V-IN

8-IN

ICP-AES AND ICP-MS SERIAL DILUTIONS

METALS

Lab ID: 480-174018-2

SDG No:

Lab Name: Eurofins TestAmerica, Buffalo Job No: 480-174018-1

Matrix: Water Concentration Units: mg/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	Method
	MDL		QL				
Aluminum	0.20	U	6.28		NC		6010C
Antimony	0.020	U	0.10	U	NC		6010C
Arsenic	0.015	U	0.075	U	NC		6010C
Barium	0.00070 0.046		0.0020 0.121		162	^	6010C
Beryllium	0.0020	U	0.010	U	NC		6010C
Cadmium	0.0020	U	0.010	U	NC		6010C
Calcium	0.10 48.6		0.50 65.20		34		6010C
Chromium	0.0040	U	0.020	U	NC		6010C
Cobalt	0.0040	U	0.020	U	NC		6010C
Copper	0.010	U	0.050	U	NC		6010C
Iron	0.050	U	0.25	U	NC		6010C
Lead	0.010	U	0.050	U	NC		6010C
Magnesium	0.043 8.8		0.20 9.34		6.5		6010C
Manganese	0.0030	U	0.00470	J	NC		6010C
Nickel	0.010	U	0.050	U	NC		6010C
Potassium	0.10 1.1		0.50 1.50	J	NC		6010C
Selenium	0.025	U	0.13	U	NC		6010C
Silver	0.0060	U	0.030	U	NC		6010C
Sodium	0.32 15.9		1.0 16.06		1.3		6010C
Thallium	0.020	U	0.10	U	NC		6010C
Vanadium	0.0050	U	0.025	U	NC		6010C
Zinc	0.0015 0.0036	J	0.010 0.050	U	NC		6010C

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

FORM VIII-IN

Appendix D

Institutional and Engineering Controls Certification Form

Enclosure 1
Engineering Controls - Standby Consultant/Contractor Certification Form

Site Details **Box 1**

Site No. 754012

Site Name Tioga Casting Facilities

Site Address: Foundry Street Zip Code: 13827
City/Town: Owego
County: Tioga
Site Acreage: 1.0

Reporting Period: December 30, 2019 to December 30, 2022

	YES	NO
1. Is the information above correct?	X	☐
If NO, include handwritten above or on a separate sheet.		
2. To your knowledge has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	X
3. To your knowledge has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	X
4. To your knowledge have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	X
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. To your knowledge is the site currently undergoing development?	☐	X

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Commercial and Industrial	X	☐
7. Are all ICs/ECs in place and functioning as designed?	X	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and contact the DEC PM regarding the development of a Corrective Measures Work Plan to address these issues.

_____ _____
Signature of Standby Consultant/Contractor Date

SITE NO. 754012 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
128.07-2-7	John Sweet III	Ground Water Use Restriction Soil Management Plan Landuse Restriction O&M Plan IC/EC Plan Monitoring Plan Site Management Plan

Institutional Controls include: An Environmental Notice which includes restrictions on land use and groundwater use, and compliance with a site management plan that details the 0peration, maintenanc monitoring and reporting that is required at the site.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
128.07-2-7	Cover System Fencing/Access Control

As per the Record of Decision,signed March 20, 1995, the remedy required consolidation of contaminated sc into a landfill at the western edge of the property. The landfill was properly closed and capped with a syntheti liner. Then the landfill was encompassed with a perimeter fence.

Engineering Controls include: Perimeter fence, cap, monitoring well network.

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification, including data and material prepared by previous contractors for the current certifying period, if any;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
X	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) nothing has occurred that would constitute a failure to comply with the Site Management Plan, or equivalent if no Site Management Plan exists.

YES	NO
X	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and contact the DEC PM regarding the development of a Corrective Measures Work Plan to address these issues.

_____ _____

Signature of Standby Consultant/Contractor Date

Box 6

IC/EC CERTIFICATIONS

Professional Engineer Signature

I certify that all information in Boxes 2 through 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

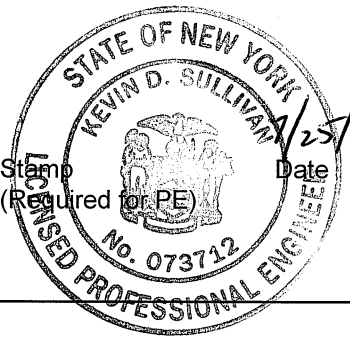
I Kevin D. Sullivan at TRC Engineers, Inc.
print name

1090 Union Road, Suite 280

West Seneca, N.Y. 14224,
(print business address)

am certifying as a Professional Engineer.

Signature of Professional Engineer



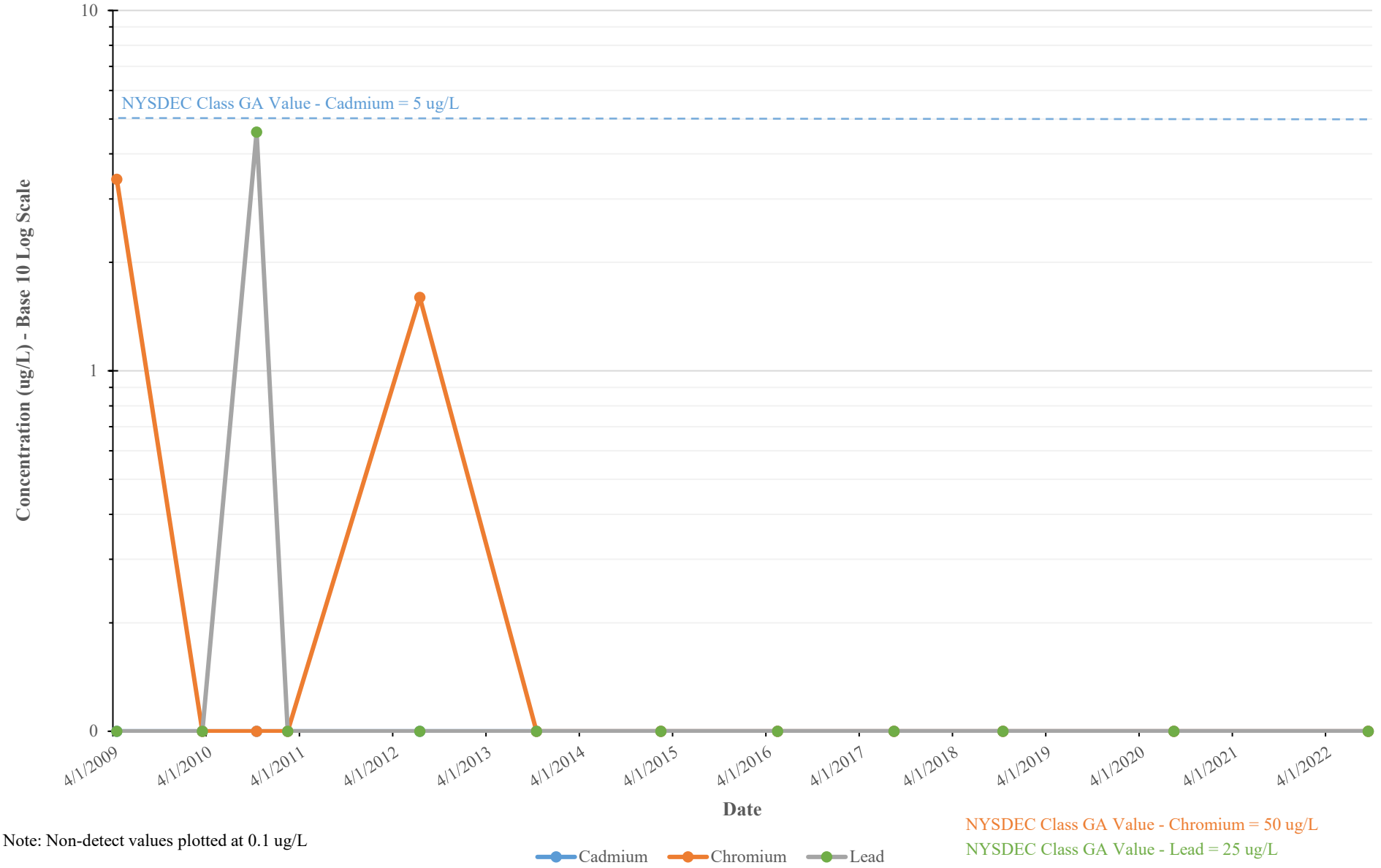
Stamp (Required for PE)

1/25/23
Date

Appendix E

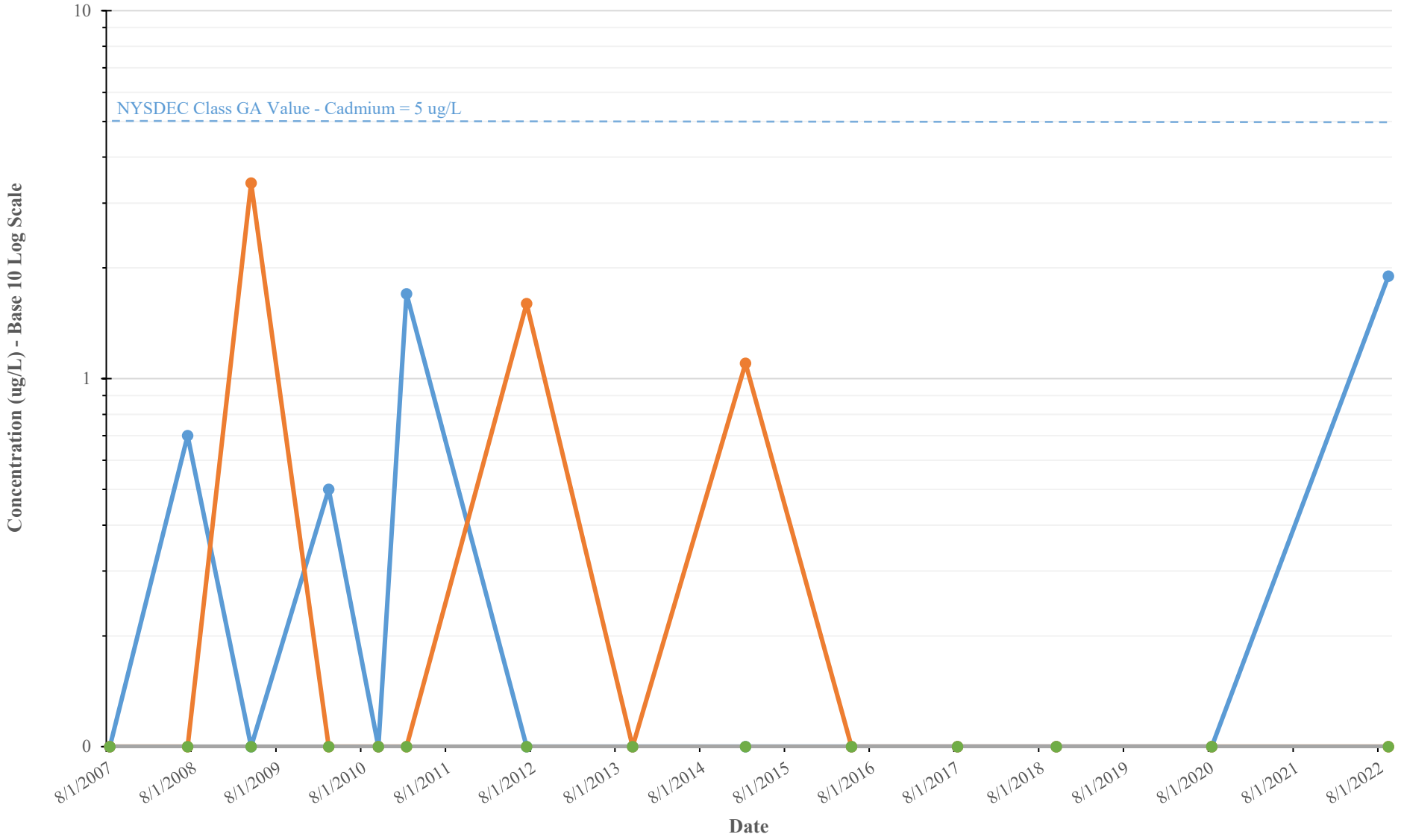
Concentration Trend Graphs

Figure E-1
Monitoring Well Concentration Trends over Time: MW-3D
Tioga Castings Site (NYSDEC Site No. 754012)



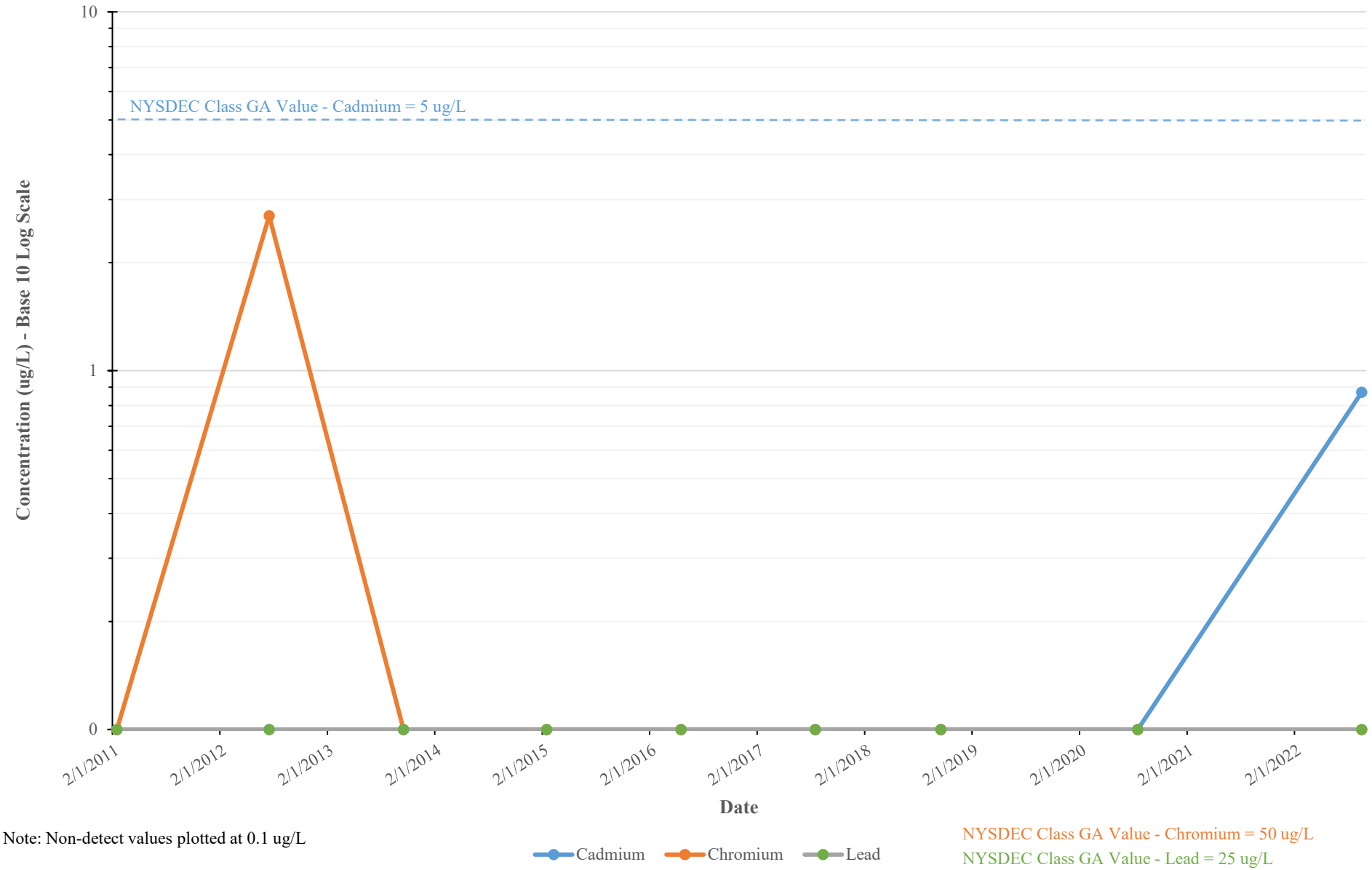
Note: Non-detect values plotted at 0.1 ug/L

Figure E-2
Monitoring Well Concentration Trends over Time: MW-4
Tioga Castings Site (NYSDEC Site No. 754012)



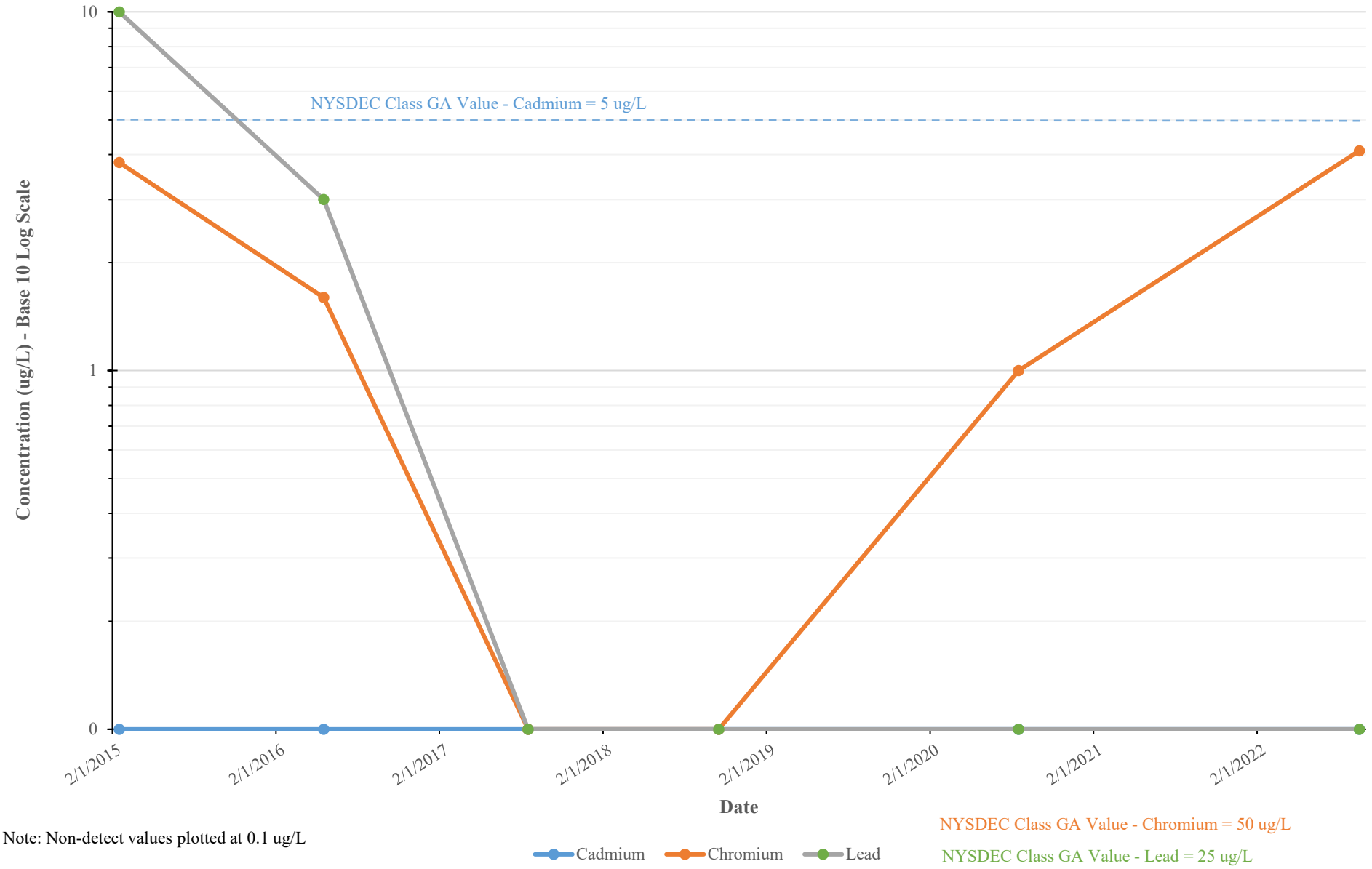
Note: Non-detect values plotted at 0.1 ug/L

Figure E-3
Monitoring Well Concentration Trends over Time: MW-6
Tioga Castings Site (NYSDEC Site No. 754012)



Note: Non-detect values plotted at 0.1 ug/L

Figure E-4
Monitoring Well Concentration Trends over Time: MW-9
Tioga Castings Site (NYSDEC Site No. 754012)



Note: Non-detect values plotted at 0.1 ug/L