2019 ANNUAL MONITORING REPORT

NIAGARA COUNTY REFUSE DISTRICT SITE

Wheatfield, Niagara County, New York **(NYSDEC Site No. 9-32-026)**

SUBMITTED TO:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NEW YORK STATE DEPARMENT OF ENVIRONMENTAL CONSERVATION

SUBMITTED BY:

Niagara County Refuse District and PRP Group

PREPARED BY:

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June 2019

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Submitted To:

The New York State Department of Environmental Conservation Division of Hazardous Waste Remediation

and

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INTRODUCTION

1.1 INTRODUCTION

In accordance with the United States Environmental Protection Agency (USEPA) Record of Decision (USEPA, 1993), the United States District Court Consent Decree (USA, 1995), and the USEPA-approved Operation, Maintenance, and Monitoring (OM&M) Manual (CRA, 2000), the Niagara County Refuse Site Potentially Responsible Parties (PRP) Group performed a remedial action at the Niagara County Refuse Site (Site), Wheatfield, New York. The PRP Group currently provides site-related OM&M services. This Annual Monitoring Report summarizes monitoring activities from January through April 2019. Future reporting periods will cover an annual period from May through April each year.

The Site is a closed municipal landfill, approximately 60 acres in size, located along the eastern border of the Town of Wheatfield, New York, and the western border of the City of North Tonawanda, New York. The southern edge of the Site lies approximately 500 feet north of the Niagara River. A perimeter collection system and a perimeter barrier system are used to provide hydraulic containment of Site-related leachate and groundwater. These systems began operation in November of 2000.

1.2 PROCEDURES

1.2.1 Groundwater Sampling

In accordance with the OM&M Manual (CRA, 2000), samples were collected from wells NCR-3S, NCR-4S, NCR-5S, and NCR-13S in April 2019. These four wells are screened in the shallow overburden materials. Groundwater sampling on an annual schedule commenced in 2006.

Each groundwater monitoring well was purged prior to sample collection using a dedicated disposable HDPE bailer. Each well was bailed dry the day prior to sampling. Physical parameters including pH, temperature, conductivity, and turbidity of the purge water were periodically measured and recorded. All purge water was placed in an onsite wet-well. Wet well water is discharged to the City of North Tonawanda publicly owned treatment works (POTW). The dedicated disposable bailer was also used to collect the groundwater samples.

Since 2006, volatile organic compounds (VOCs) and semi-volatile organic compound (SVOCs) samples have been collected every other year and total metals samples have been collected annually. Beginning in 2019, collection of groundwater samples for VOCs, SVOCs, and mercury analysis have been eliminated from the sampling requirements. In April 2019, in accordance with this schedule, groundwater samples were collected and analyzed for inorganics in accordance with EPA Method 200.7 and Method SW-6010.

The groundwater samples were analyzed by TestAmerica Laboratories of Amherst, New York. A chain-of-custody (COC) accompanied the sample bottles from the laboratory, to the field, and back to the laboratory.

Beginning in 2014, in addition to samples for total metals, samples for dissolved-phase metals were also collected and analyzed. Samples for dissolved-phase metals samples were

collected based on comments in the USEPA's Third Five Year Review Report (September 2014) concerning metals concentrations and the potential for sample turbidity to change the total metals concentrations.

1.2.2 Effluent Sampling

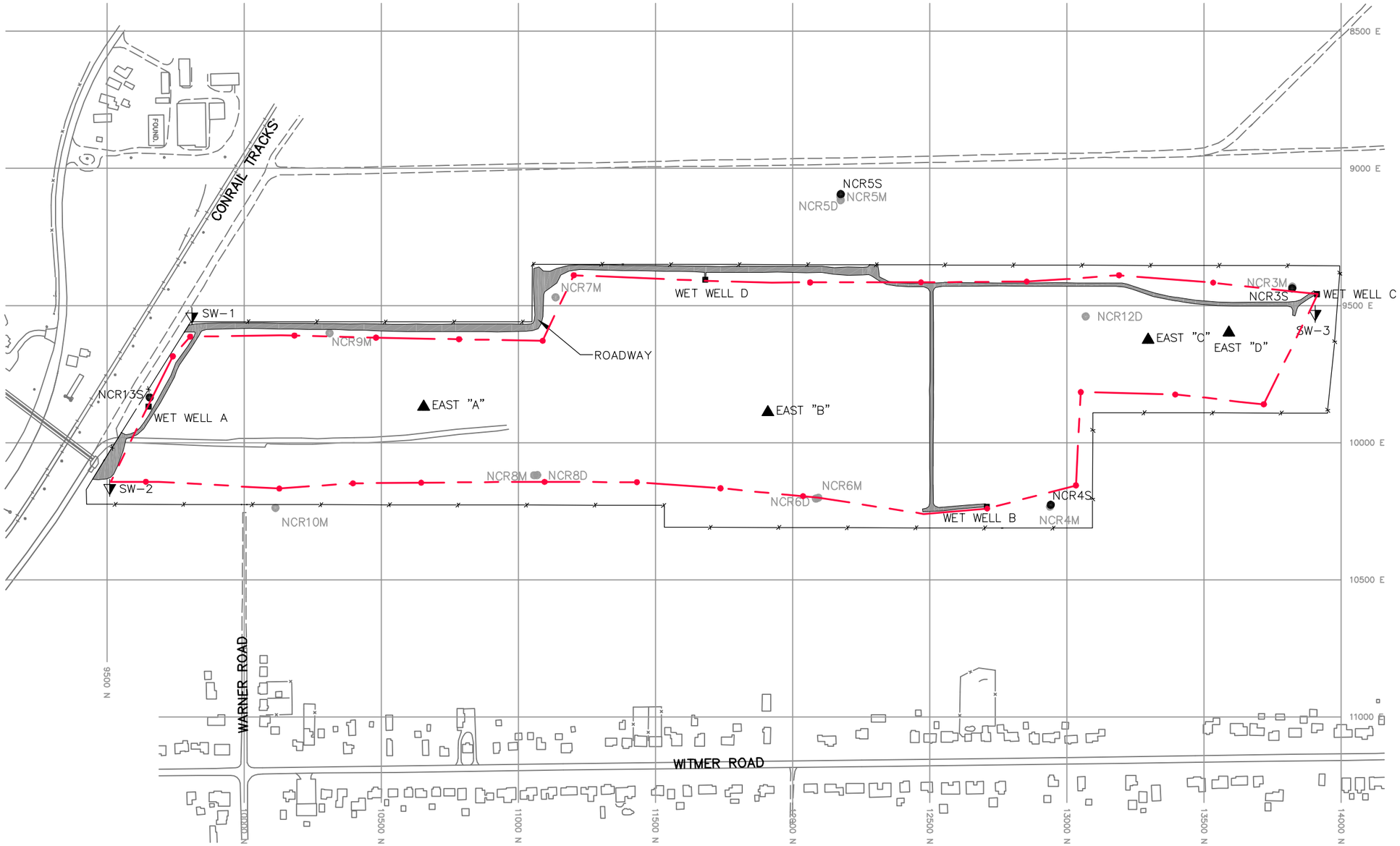
Groundwater from the perimeter collection system is discharged to the City of North Tonawanda treatment system without pre-treatment. A monitoring station in Wet Well A allows both the effluent water quality and the volume of effluent to be verified by the City of North Tonawanda. In compliance with the City of North Tonawanda Industrial Wastewater Discharge Permit (the Permit), the effluent was sampled monthly through February 2007. A revised permit was issued covering from February 2007 through March 2010, requiring only semi-annual sampling. A new Industrial Wastewater Discharge Permit (Appendix A) was issued by the City of North Tonawanda in 2019 and is effective from March 31, 2019 through April 1, 2022. The new permit has a reduced analytical parameter list compared to the original permit, but continues to require a semi-annual sampling frequency. The first of 2019's Semi-annual samples was collected in April. The effluent samples were collected in compliance with the permit using the procedures identified in the OM&M Manual. Effluent samples were analyzed by the City of North Tonawanda. The sole purpose of these analyses is for compliance with the Industrial Wastewater Discharge Permit.

1.2.3 Water Levels

Water levels (depths to water) were measured in four monitoring well locations and at four wet well locations inside the limits of the landfill. Water level measurements were collected monthly during the reporting period in 2019. The water levels were measured with an electronic water level indicator, and reported as an elevation above mean sea level. Figure 1.1 shows the locations of the water level monitoring points.

1.2.4 Site Inspections

The Site was inspected by GHD on a monthly basis during the reporting period in 2019, in accordance with procedures in the OM&M Manual. The perimeter collection system, offsite force main, wetlands, perimeter fence, drainage ditches, swale outlets, culverts, gas vents, wells, and landfill cap were visually inspected, and the results documented on inspection logs.



LEGEND

▲EAST "A"	WATER LEVEL MONITORING WELL LOCATION
▼SW-2	SURFACE WATER MONITORING LOCATION
■ WET WELL A	EFFLUENT MONITORING LOCATION
● NCR13S	GROUNDWATER QUALITY MONITORING LOCATION SHADED IF ABANDONED)
——X——	FENCELINE
— — —	PERIMETER BARRIER TRENCH
●	PERIMETER COLLECTION SYSTEM MANHOLE

400 200 0 400 800

SCALE: 1"=400'

FILE NAME: P:\738641\TECH\CAD\38641C001-PCS.DWG
PLOT DATE: 2/21/2019 8:17 AM PLOTTED BY: RUSSO, JILL

FIGURE 1.1

NIAGARA COUNTY REFUSE SITE
WHEATFIELD, NEW YORK

SITE PLAN

PARSONS
180 LAWRENCE BELL DRIVE, SUITE 104, WILLIAMSVILLE, N.Y. 14221, PHONE: 716-633-7074

SECTION 2
RESULTS

2.1 ANALYTICAL RESULTS

2.1.1 Effluent Samples

Effluent samples were collected in April 2019 by GHD and analyzed by the City of North Tonawanda. The analytical results from these samples were used by the City to confirm that the effluent received from the Site met the criteria for acceptance by the City treatment system. All analytical results were found to be compliant with the March 31, 2019 discharge permit. Effluent analytical results for April 2019 and the Permit are presented in Appendix A.

2.1.2 Groundwater Analytical Results

Analytical results for the sampling event during this reporting period are summarized in Table 2.1. The results were compared to NYSDEC ambient water quality standards (AWQS), NYSDOH maximum contaminant levels (MCLs), and USEPA MCLs (see Table 2.1). This reporting period includes months 219 to 222, since the start-up of the perimeter collection system in November 2000. The collection of quarterly and semi-annual groundwater samples has been completed as outlined in the OM&M Manual. Annual collection and analysis of groundwater samples began in 2006. Groundwater sample analytes are currently scheduled to include inorganics annually, as approved by the USEPA (see Appendix B). The groundwater samples collected during this reporting period were analyzed for total and dissolved inorganics. VOCs, SVOCs, and mercury have been eliminated from the analysis list, as approved by the USEPA (see Appendix B).

Beginning in 2014, in addition to total mercury and inorganic samples, dissolved-phase mercury and inorganic samples were also collected and analyzed. Sampling for both total and dissolved-phase inorganics is planned to continue in future annual groundwater sampling events.

The analytical results received from the laboratory are presented in Appendix C, along with the COC. A Sample Collection Data Sheet for each well, which includes required and actual purge volumes, sample date, time, description, required analyses, and the COC number, is included in Appendix C. This sheet also indicates which well was used to collect the matrix spike (MS) and the matrix spike duplicate (MSD). Well purging information, including pH, conductivity, turbidity, odor, comments, and well volumes, is also provided in Appendix C.

April 2019 Event

Monitoring wells NCR-3S, NCR-4S, NCR-5S, and NCR-13S were sampled on April 11, 2019. The locations of the monitoring wells are provided in Figure 1.1. The data validation report is presented in Appendix D.

Fourteen metals were identified in one or more of the groundwater samples. Three of the detected metals exceeded either the NYSDEC AWQS, NYSDOH MCLs, or USEPA MCLs (screening criteria), which is consistent with previous sampling events. In general, the detected values are consistent with ranges observed in previous sampling events. Plots of selected total

metals concentrations over time are presented in Figures 2.1A through Figure 2.1C. Key results are summarized below.

- Total iron was identified in each of the samples and exceeded the AWQS and the NYSDOH MCL in NCR-4S. The Record of Decision (ROD) (USEPA, 1993) identifies iron as typically exceeding MCLs in the regional groundwater indicating that exceedances of iron are likely related to background conditions. Dissolved iron was detected in each of the four samples and exceeded the NYSDEC AWQS and NYSDOH MCL in the sample from NCR-4S.
- Total and dissolved magnesium were identified in each of the four samples and exceeded the AWQS guidance value (not a standard) in each of the samples. Historically, total magnesium has exceeded the AWQS guidance value.
- Total and dissolved sodium was found above the NYSDEC AWQS, the NYSDOH MCL, and USEPA MCL in one of the four samples (NCR-4S). The ROD identifies sodium as typically exceeding MCLs in the regional groundwater, indicating that exceedances of sodium are likely related to background conditions.

Data Validation

Groundwater analytical results were reviewed and validated by Parsons for usability (see Appendix D for the complete report). The laboratory data packages were found to be of good overall quality. Groundwater samples were collected, properly preserved, shipped under a COC record, and received at the laboratory within one day of sampling. The analytical results are considered compliant and usable. A summary of the data validation report is provided below:

Although all metals sample results were considered usable following data validation, five minor issues were noted:

- Blank contamination – The laboratory preparation blank associated with the project samples contained total chromium and total manganese below the reporting limits at concentrations of 0.00221 and 0.0006 mg/L, respectively. Therefore, results for these analytes less than validation action concentrations were considered not detected and qualified "U" for the affected samples.
- Matrix spike recoveries – All MS/MSD recoveries were considered acceptable and within 75-125%R QC limit for all analytes with the exception of the MS/MSD recoveries for total sodium (223%R, 235%R) associated with sample NCR-5S. Therefore, the positive total sodium result was considered estimated and qualified "J" for the affected sample.
- Field duplicate precision – All field duplicate results were considered acceptable with the exception of dissolved iron (89%RPD) and dissolved sodium (63%RPD) associated with sample NCR-13S and its field duplicate sample NCR-6S. Therefore, results for these analytes were considered estimated and qualified "J" for these samples.

- It was noted that dissolved results were significantly higher than total results for iron and sodium in sample NCR-6S. Therefore, results for total and dissolved iron and sodium were considered estimated and qualified "J" for the affected samples.

2.2 SITE INSPECTIONS

Monthly Site inspections were conducted between January and April 2019. During the inspections, the perimeter collection system, offsite force main, manholes, wet wells, landfill cap, wetlands, perimeter fence, drainage ditches, swale outlets, culverts, gas vents, and monitoring wells were each visually inspected. A summary of the inspection findings is included in Table 2.2. Copies of the Monthly Inspection Logs have been included in Appendix E.

Each of the inspections found the manholes and wet wells to be in good condition. Water levels in the wet wells were measured during each inspection visit (see Table 2.3). Examination of the landfill cap vegetative cover included checking for erosion, bare areas, washouts, leachate seeps, length of vegetation, and dead/dying vegetation. Additionally, during the examination of the landfill cap, the access roads were examined for bare areas, dead/dying vegetation, erosion, potholes/puddles, and obstructions. No surface erosion, bare spots, or leachate seeps were noted. No issues with the condition of the grass covering on the landfill were noted during each of the inspections. The landfill cap was not mowed during the reporting period.

Post-construction monitoring of the wetland replacement was performed annually between 2001 and 2005. Monitoring results indicated that the wetland creation was successful. Although the formal annual inspections are no longer required, monthly visual inspection of the wetlands has continued, to document general conditions. A drainage project was completed by the City of North Tonawanda in December 2012. This project included excavation of a drainage ditch across the northern end of the landfill property, north of the landfill's northern perimeter collection system and perimeter barrier system in an effort to alleviate seasonal flooding in the yards of homes along Witmer Road. The excavation was oriented through the wetlands in an east-west direction. The drainage project does not appear to have affected the water balance or the established vegetation in the wetland area.

The wetlands were visually examined during monthly inspections for growth and propagation of wetland species, dead/dying vegetation, presence of invasive species (i.e., purple loosestrife), change in water budget, and general conditions. No signs of damage to the wetlands due to loss of vegetation, or changes in the water budget, were observed during each of the inspections. No issues were identified in changes in the water budget of the wetlands during each of the inspections during the reporting period between January and April 2019. No issues were identified with the wetland vegetation (no dead or dying vegetation) during each of the inspections during the reporting period.

The complete landfill system, including the perimeter fence, drainage ditches, swale outlets, culverts, gas vents, monitoring wells, and wetlands was found to be in acceptable condition.

2.3 MAINTENANCE

No scheduled maintenance was completed during the reporting period. Occasional unscheduled maintenance at the landfill is required. During this reporting period, two unscheduled maintenance items were addressed:

- Branches were removed from the access roadway to the landfill. Branches were moved to the side of the roadway allowing access to the site.
- The flow totalizer was found to not be operating properly. The unit was removed and replaced with a used spare unit.

Maintenance Record Logs are included in Appendix F.

2.4 WATER LEVELS

Monthly water level measurements were collected to (1) ensure that water levels inside the landfill are lowered by the operation of the perimeter collection system; and (2) allow planning for groundwater sampling dates, when the maximum number of wells could be sampled. Water levels were collected from the wet wells, the piezometers (hydraulic monitoring locations) within the limits of the landfill, and the groundwater monitoring wells (see Figure 1.1). Water levels in the wet wells were collected during the monthly inspections and recorded on water level records (Appendix G). The water level data, including depths to water and elevations, are summarized on Table 2.3. During the reporting period, water levels were collected from the monitoring wells on a monthly basis. Water levels varied (rose or fell) between 0.5 and 1.4 feet over the course of the reporting period.

2.5 PERIMETER COLLECTION SYSTEM (PCS)

The PCS encloses the landfill and capped area of the Site. Leachate is passively collected at Wet Wells B, C, and D and pumped to Wet Well A, which then discharges the leachate to the City of North Tonawanda Waste Water Treatment Plant. The PCS is functioning as designed, based on the following observations:

- The effectiveness of the PCS is directly observed through collection of groundwater samples from the four monitoring wells that are located outside the perimeter of the PCS. Historic analytical results from the groundwater samples have shown that VOCs or SVOCs have not been observed outside the PCS.
- Analytical results for inorganics analyses have not shown sustained concentration increases or increasing trends which could potentially indicate a breach of the PCS.

Table 2.1
Detected Analytes in Groundwater Samples
Niagara County Refuse Site
Wheatfield, Niagara County, New York

City of North Tonawanda NY1A8791 North Tonawanda, NY C/O Niagara County Refuse Site Validated Groundwater Sampling Event April 2019 Detected Compound Summary		Location ID: Sample ID: Lab Sample Id: Source: SDG: Matrix: Sampled: Validated:	NYS DEC AWQS*	NYS DOH MCL	US EPA MCL	NCR3S WG-11109668-041119-DST-NCR3S 480-151872-1 TALBUFF 4801518721 WATER 4/11/2019 9:00 5/13/2019	NCR4S WG-11109668-041119-DST-NCR4S 480-151872-2 TALBUFF 4801518721 WATER 4/11/2019 9:10 5/13/2019	NCR5S WG-11109668-041119-DST-NCR5S 480-151872-3 TALBUFF 4801518721 WATER 4/11/2019 8:40 5/13/2019	NCR13S WG-11109668-041119-DST-NCR13S 480-151872-5 TALBUFF 4801518721 WATER 4/11/2019 8:15 5/13/2019	Duplicate of WG-11109668-041119-DST-NCR13S NCR13S WG-11109668-041119-DST-NCR6S 480-151872-4 TALBUFF 4801518721 WATER 4/11/2019 8:15 5/13/2019
CAS NO.	COMPOUND	UNITS:								
	METALS									
7429-90-5	ALUMINUM	mg/l	-	-	-	0.1 J	1.5	0.078 J	0.062 J	ND
7440-39-3	BARIUM	mg/l	1	2	2	0.041	0.053	0.15	0.042	0.044
7440-70-2	CALCIUM	mg/l	-	-	-	97	144	85.5	132	130
7440-47-3	CHROMIUM, TOTAL	mg/l	0.05	0.10	0.10	0.0014 J	0.0018 J	ND	ND	ND
7440-48-4	COBALT	mg/l	-	-	-	ND	0.00065 J	ND	ND	ND
7440-50-8	COPPER	mg/l	0.2	-	-	0.0051 J	0.0028 J	0.0021 J	ND	0.0019 J
7439-89-6	IRON	mg/l	0.3>	0.3+	-	0.16	**4.2**	0.067	0.066	0.054 J
7439-95-4	MAGNESIUM	mg/l	35	-	-	**46.1**	**48.2**	**45.7**	**49.4**	**46.9**
7439-96-5	MANGANESE	mg/l	0.3>	0.3+	-	0.0038	0.23	0.0019 J	0.072	0.061
7440-02-0	NICKEL	mg/l	0.10	-	-	0.0045 J	0.0021 J	0.0015 J	0.002 J	0.0015 J
7440-09-7	POTASSIUM	mg/l	-	-	-	1.7	9.9	0.4 J	0.74	0.86
7440-23-5	SODIUM	mg/l	20	20	20	3.9	**25.6**	8.1 J	8.1	7 J
7440-66-6	ZINC	mg/l	2.0+	5	-	0.011	0.074	ND	0.0017 J	ND
	DISSOLVEDMETALS									
7429-90-5	ALUMINUM	mg/l	-	-	-	ND	0.07 J	0.13 J	ND	0.073 J
7440-39-3	BARIUM	mg/l	1	2	2	0.04	0.049	0.14	0.036	0.033
7440-43-9	CADMIUM	mg/l	0.005	0.005	0.005	0.00051 J	0.00052 J	0.0005 J	0.0005 J	0.00063 J
7440-70-2	CALCIUM	mg/l	-	-	-	99.2	148	85.9	134	143
7440-50-8	COPPER	mg/l	0.2	-	-	0.0035 J	ND	0.0028 J	0.0017 J	0.002 J
7439-89-6	IRON	mg/l	0.3>	0.3+	-	0.024 J	**0.46**	0.07	0.042 J	0.11 J
7439-95-4	MAGNESIUM	mg/l	35	-	-	**46.4**	**48.4**	**42.9**	**55.7**	**73.5**
7439-96-5	MANGANESE	mg/l	0.3>	0.3+	-	0.002 J	0.22	0.0019 J	0.067	0.077
7440-02-0	NICKEL	mg/l	0.10	-	-	0.0022 J	0.0018 J	ND	0.0026 J	0.0033 J
7440-09-7	POTASSIUM	mg/l	-	-	-	1.6	10.1	0.32 J	0.7	0.63
7440-23-5	SODIUM	mg/l	20	20	20	4.1	**27**	8.1	14.7 J	**28.2 J**
7440-66-6	ZINC	mg/l	2.0+	5	-	0.01	0.015	0.0029 J	0.0028 J	0.0048 J

* = NYSDEC Ambient Water Quality Standards + = Guidance value

> = Sum of iron and manganese should not exceed 500 ug/L NYSDEC or 300 ug/L NYSDOH

J = estimated value. J+ = estimated biased high. - = No standard identified. U = Not detected at given value.

Boxed values exceed NYSDEC AWQS.

Bold values exceed NYSDOH maximum contaminant levels (MCL).

Shaded values exceed USEPA maximum contaminant levels.

Table 2.2 Monthly Site Inspection Summary

Inspection Item	Acceptable	Not Acceptable	Comments
Manholes	X		
Wet Wells	X		Water levels were measured monthly.
Wetlands	X		No issues were observed in the wetlands or their water levels during the monthly inspections.
Perimeter Fence	X		No repairs were required.
Condition of Roads	X		No erosion or other problems other than removal of branches.
Integrity of the Cap	X		No problems were noted.
Drainage Ditches/Swales	X		
Gas Venting System	X		
Wells	X		Water levels were measured monthly.
Culverts	X		
Vegetative Cover	X		No issues were identified with the vegetative cover on the cap.

Table 2.3
Niagara County Refuse Site
Water Level Measurements

Observation Point	Elevation Top of Casing (ft. msl)	12/5/2000 Depth to Water (ft)	12/5/2000 Elevation (ft. msl)	1/8/2001 Depth to Water (ft)	1/8/2001 Elevation (ft. msl)	2/1/2001 Depth to Water (ft)	2/1/2001 Elevation (ft. msl)	3/8/2001 Depth to Water (ft)	3/8/2001 Elevation (ft. msl)	4/4/2001 Depth to Water (ft)	4/4/2001 Elevation (ft. msl)	5/8/2001 Depth to Water (ft)	5/8/2001 Elevation (ft. msl)	6/5/2001 Depth to Water (ft)	6/5/2001 Elevation (ft. msl)	7/2/2001 Depth to Water (ft)	7/2/2001 Elevation (ft. msl)	8/1/2001 Depth to Water (ft)	8/1/2001 Elevation (ft. msl)	9/5/2001 Depth to Water (ft)	9/5/2001 Elevation (ft. msl)	10/4/2001 Depth to Water (ft)	10/4/2001 Elevation (ft. msl)	11/5/2001 Depth to Water (ft)	11/5/2001 Elevation (ft. msl)	12/11/2001 Depth to Water (ft)	12/11/2001 Elevation (ft. msl)
East "A"	598.93	22.05	576.88	-	-	-	-	21.34	577.59	-	-	22.21	576.72	21.98	576.95	-	-	22.51	576.42	22.63	576.30	22.61	576.32	22.74	576.19	22.88	576.05
East "B"	596.23	19.12	577.11	-	-	-	-	19.35	576.88	-	-	19.23	577.00	19.30	576.93	-	-	20.50	575.73	19.44	576.79	19.22	577.01	19.36	576.87	19.44	576.79
East "C"	598.69	17.46	581.23	-	-	-	-	17.86	580.83	-	-	18.37	580.32	18.38	580.31	-	-	18.65	580.04	18.64	580.05	18.20	580.49	18.80	579.89	18.75	579.94
East "D"	593.20	11.10	582.10	-	-	-	-	12.45	580.75	-	-	12.86	580.34	12.79	580.41	-	-	13.00	580.20	12.8	580.40	12.24	580.96	12.74	580.46	12.94	580.26
WW A	-	2.50	-	2.67	-	2.33	-	1.13	-	2.29	-	1.83	-	2.17	-	1.58	-	1.83	-	-	-	1.83	-	2.33	-	2.08	-
WW B	-	2.20	-	2.42	-	1.96	-	1.09	-	1.79	-	2.17	-	1.92	-	1.50	-	2.00	-	1.92	-	1.58	-	1.50	-	2.08	-
WW C	-	1.50	-	2.42	-	1.70	-	0.92	-	2.04	-	2.00	-	1.67	-	1.33	-	2.08	-	2.33	-	1.25	-	2.00	-	1.58	-
WW D	-	1.70	-	-	-	1.50	-	0.99	-	1.08	-	1.50	-	1.33	-	2.0	-	1.25	-	2.25	-	2.00	-	2.08	-	1.33	-
NCR-3S	579.60	-	-	-	-	-	-	-	-	-	-	-	-	3.71	575.89	-	-	dry	-	dry	-	dry	-	5.10	574.50	4.64	574.96
NCR-4S	577.88	-	-	-	-	-	-	-	-	-	-	-	-	4.28	573.60	-	-	dry	-	dry	-	dry	-	4.51	573.37	3.92	573.96
NCR-5S	579.34	-	-	-	-	-	-	-	-	-	-	-	-	9.10	570.24	-	-	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-13S	577.15	-	-	-	-	-	-	-	-	-	-	-	-	7.05	570.10	-	-	7.85	569.30	7.80	569.35	7.70	569.45	6.65	570.50	6.11	571.04

Observation Point	Elevation Top of Casing (ft. msl)	1/2/2002 Depth to Water (ft)	1/2/2002 Elevation (ft. msl)	2/4/2002 Depth to Water (ft)	2/4/2002 Elevation (ft. msl)	3/4/2002 Depth to Water (ft)	3/4/2002 Elevation (ft. msl)	4/1/2002 Depth to Water (ft)	4/1/2002 Elevation (ft. msl)	5/3/2002 Depth to Water (ft)	5/3/2002 Elevation (ft. msl)	6/4/2002 Depth to Water (ft)	6/4/2002 Elevation (ft. msl)	7/2/2002 Depth to Water (ft)	7/2/2002 Elevation (ft. msl)	8/7/2002 Depth to Water (ft)	8/7/2002 Elevation (ft. msl)	9/6/2002 Depth to Water (ft)	9/6/2002 Elevation (ft. msl)	10/3/2002 Depth to Water (ft)	10/3/2002 Elevation (ft. msl)	11/7/2002 Depth to Water (ft)	11/7/2002 Elevation (ft. msl)	12/3/2002 Depth to Water (ft)	12/3/2002 Elevation (ft. msl)
East "A"	598.93	22.90	576.03	22.81	576.12	22.03	576.90	22.25	576.68	20.06	578.87	19.84	579.09	22.00	576.93	22.65	576.28	22.78	576.15	28.48	570.45	23.25	575.68	23.36	575.57
East "B"	596.23	19.63	576.60	19.39	576.84	19.46	576.77	19.49	576.74	19.44	576.79	20.59	575.64	19.56	576.67	19.40	576.83	19.40	576.83	19.46	576.77	19.35	576.88	-	-
East "C"	598.69	18.70	579.99	18.51	580.18	18.70	579.99	18.63	580.06	18.80	579.89	18.74	579.95	18.78	579.91	18.95	579.74	18.92	579.77	18.99	579.70	19.30	579.39	19.35	579.34
East "D"	593.20	13.16	580.04	12.95	580.25	13.3	579.90	13.35	579.85	13.50	579.70	13.73	579.47	13.74	579.46	13.81	579.39	13.58	579.62	14.01	579.19	13.2	580.00	13.54	579.66
WW A	-	1.17	-	2.17	-	1.67	-	2.00	-	2.00	-	2.17	-	1.50	-	2.50	-	1.83	-	1.50	-	1.42	-	2.00	-
WW B	-	1.00	-	2.00	-	1.25	-	1.33	-	1.67	-	2.00	-	1.58	-	1.67	-	1.42	-	1.33	-	1.17	-	1.25	-
WW C	-	1.50	-	1.42	-	1.58	-	1.50	-	1.83	-	1.25	-	1.67	-	2.17	-	1.50	-	1.33	-	1.25	-	1.50	-
WW D	-	1.50	-	1.00	-	1.42	-	1.17	-	1.58	-	1.50	-	1.92	-	2.00	-	1.67	-	2.00	-	1.33	-	1.50	-
NCR-3S	579.60	4.54	575.06	4.52	575.08	3.90	575.70	4.10	575.50	4.43	575.17	5.20	574.40	5.71	573.89	5.90	573.70	dry	-	5.91	573.69	dry	-	4.46	575.14
NCR-4S	577.88	3.71	574.17	3.70	574.18	3.80	574.08	3.66	574.22	3.75	574.13	4.02	573.86	4.45	573.43	dry	-	dry	-	dry	-	dry	-	3.95	573.93
NCR-5S	579.34	8.42	570.92	7.69	571.65	7.68	571.66	7.61	571.73	8.28	571.06	9.10	570.24	9.52	569.82	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-13S	577.15	5.85	571.30	5.76	571.39	5.74	571.41	5.81	571.34	6.07	571.08	6.27	570.88	7.25	569.90	7.57	569.58	dry	-	7.78	569.37	dry	-	6.40	570.75

Notes:

- = measurment not collected.

dry = no water in well.

Table 2.3
Niagara County Refuse Site
Water Level Measurements

Observation Point	Elevation Top of Casing (ft. msl)	1/6/2003 Depth to Water (ft)	1/6/2003 Elevation (ft. msl)	2/5/2003 Depth to Water (ft)	2/5/2003 Elevation (ft. msl)	3/6/2003 Depth to Water (ft)	3/6/2003 Elevation (ft. msl)	4/2/2003 Depth to Water (ft)	4/2/2003 Elevation (ft. msl)	5/5/2003 Depth to Water (ft)	5/5/2003 Elevation (ft. msl)	6/5/2003 Depth to Water (ft)	6/5/2003 Elevation (ft. msl)	7/1/2003 Depth to Water (ft)	7/1/2003 Elevation (ft. msl)	8/11/2003 Depth to Water (ft)	8/11/2003 Elevation (ft. msl)	9/2/2003 Depth to Water (ft)	9/2/2003 Elevation (ft. msl)	10/8/2003 Depth to Water (ft)	10/8/2003 Elevation (ft. msl)	11/12/2003 Depth to Water (ft)	11/12/2003 Elevation (ft. msl)	12/6/2003 Depth to Water (ft)	12/6/2003 Elevation (ft. msl)
East "A"	598.93	23.48	575.45	23.51	575.42	23.65	575.28	23.75	575.18	23.81	575.12	23.25	575.68	23.11	575.82	23.25	575.68	23.41	575.52	23.35	575.58	23.71	575.22	23.85	575.08
East "B"	596.23	19.53	576.70	19.40	576.83	19.59	576.64	19.61	576.62	19.70	576.53	19.66	576.57	19.77	576.46	19.58	576.65	19.64	576.59	19.59	576.64	19.65	576.58	NA	-
East "C"	598.69	18.82	579.87	19.11	579.58	18.99	579.70	19.07	579.62	18.98	579.71	19.00	579.69	19.39	579.30	19.19	579.50	19.25	579.44	19.24	579.45	18.81	579.88	19.27	579.42
East "D"	593.20	13.24	579.96	13.52	579.68	13.7	579.50	13.88	579.32	14.15	579.05	14.07	579.13	14.31	578.89	14.04	579.16	14.04	579.16	13.97	579.23	13.64	579.56	14.02	579.18
WW A	-	1.42	-	1.25	-	1.50	-	1.42	-	1.58	-	1.33	-	1.33	-	1.17	-	1.42	-	1.33	-	2.00	-	1.33	-
WW B	-	1.08	-	1.17	-	1.67	-	1.17	-	0.75	-	1.25	-	1.42	-	1.50	-	1.50	-	1.17	-	1.42	-	1.67	-
WW C	-	1.33	-	1.50	-	1.25	-	1.33	-	1.50	-	1.42	-	1.00	-	1.08	-	1.08	-	1.08	-	1.00	-	1.67	-
WW D	-	1.42	-	1.67	-	1.08	-	1.25	-	1.50	-	1.50	-	1.25	-	1.58	-	1.33	-	1.50	-	1.58	-	1.50	-
NCR-3S	579.60	3.84	575.76	4.06	575.54	4.55	575.05	4.39	575.21	4.39	575.21	4.41	575.19	5.80	573.80	5.92	573.68	dry	-	dry	-	4.45	575.15	4.24	575.36
NCR-4S	577.88	2.91	574.97	-	-	-	-	3.65	574.23	3.60	574.28	2.65	575.23	4.05	573.83	3.98	573.90	dry	-	4.37	573.51	2.93	574.95	2.88	575.00
NCR-5S	579.34	7.95	571.39	8.69	570.65	8.11	571.23	7.66	571.68	8.58	570.76	8.08	571.26	9.26	570.08	10.12	569.22	10.95	568.39	dry	-	10.40	568.94	8.11	571.23
NCR-13S	577.15	5.89	571.26	5.54	571.61	6.16	570.99	6.05	571.10	6.13	571.02	6.11	571.04	7.21	569.94	7.48	569.67	7.59	569.56	7.77	569.38	6.35	570.80	6.07	571.08

Observation Point	Elevation Top of Casing (ft. msl)	1/2/2004 Depth to Water (ft)	1/2/2004 Elevation (ft. msl)	2/5/2004 Depth to Water (ft)	2/5/2004 Elevation (ft. msl)	3/1/2004 Depth to Water (ft)	3/1/2004 Elevation (ft. msl)	4/5/2004 Depth to Water (ft)	4/5/2004 Elevation (ft. msl)	5/4/2004 Depth to Water (ft)	5/4/2004 Elevation (ft. msl)	6/11/2004 Depth to Water (ft)	6/11/2004 Elevation (ft. msl)	7/10/2004 Depth to Water (ft)	7/10/2004 Elevation (ft. msl)	8/9/2004 Depth to Water (ft)	8/9/2004 Elevation (ft. msl)	9/8/2004 Depth to Water (ft)	9/8/2004 Elevation (ft. msl)	10/2/2004 Depth to Water (ft)	10/2/2004 Elevation (ft. msl)	11/4/2004 Depth to Water (ft)	11/4/2004 Elevation (ft. msl)	12/3/2004 Depth to Water (ft)	12/3/2004 Elevation (ft. msl)
East "A"	598.93	23.90	575.03	23.93	575.00	24.00	574.93	23.26	575.67	22.14	576.79	19.44	579.49	19.19	579.74	20.70	578.23	23.31	575.62	23.34	575.59	22.44	576.49	22.48	576.45
East "B"	596.23	19.83	576.40	NA	-	NA	-	19.60	576.63	19.65	576.58	19.81	576.42	19.75	576.48	19.85	576.38	19.68	576.55	19.53	576.70	17.51	578.72	17.49	578.74
East "C"	598.69	19.12	579.57	19.79	578.90	19.22	579.47	19.36	579.33	19.24	579.45	19.42	579.27	19.28	579.41	19.56	579.13	19.48	579.21	19.36	579.33	18.95	579.74	18.94	579.75
East "D"	593.20	13.9	579.30	14.52	578.68	14.11	579.09	14.05	579.15	14.25	578.95	14.5	578.70	14.4	578.80	14.64	578.56	14.3	578.90	14.18	579.02	14.05	579.15	14.01	579.19
WW A	-	1.58	-	1.17	-	2.17	-	0.75	-	1.25	-	1.50	-	1.25	-	1.25	-	1.33	-	1.25	-	1.42	-	1.67	-
WW B	-	1.33	-	NA	-	1.50	-	1.30	-	1.17	-	1.17	-	1.17	-	1.25	-	1.00	-	1.00	-	1.17	-	0.42	-
WW C	-	1.08	-	1.00	-	1.17	-	1.17	-	1.00	-	1.08	-	1.17	-	1.08	-	1.17	-	1.17	-	1.58	-	0.25	-
WW D	-	1.17	-	1.08	-	1.67	-	0.65	-	1.50	-	1.33	-	1.00	-	1.00	-	1.25	-	1.00	-	1.17	-	0.25	-
NCR-3S	579.60	4.11	575.49	4.21	575.39	3.19	576.41	4.09	575.51	3.37	576.23	4.92	574.68	dry	-	4.36	575.24	5.44	574.16	dry	-	2.42	577.18	3.06	576.54
NCR-4S	577.88	2.65	575.23	2.72	575.16	2.42	575.46	2.53	575.35	2.76	575.12	2.99	574.89	3.74	574.14	3.50	574.38	3.32	574.56	3.65	574.23	2.74	575.14	2.75	575.13
NCR-5S	579.34	7.53	571.81	8.34	571.00	7.01	572.33	7.10	572.24	7.99	571.35	8.80	570.54	9.20	570.14	9.40	569.94	9.20	570.14	9.28	570.06	9.90	569.44	7.27	572.07
NCR-13S	577.15	5.72	571.43	5.95	571.20	5.88	571.27	5.49	571.66	6.08	571.07	6.22	570.93	7.08	570.07	7.09	570.06	6.75	570.40	7.16	569.99	5.95	571.20	4.28	572.87

Notes:

- = measurment not collected.

dry = no water in well.

Table 2.3
Niagara County Refuse Site
Water Level Measurements

Observation Point	Elevation Top of Casing (ft. msl)	1/5/2005 Depth to Water (ft)	1/5/2005 Elevation (ft. msl)	2/3/2005 Depth to Water (ft)	2/3/2005 Elevation (ft. msl)	3/9/2005 Depth to Water (ft)	3/9/2005 Elevation (ft. msl)	4/2/2005 Depth to Water (ft)	4/2/2005 Elevation (ft. msl)	6/4/2005 Depth to Water (ft)	6/4/2005 Elevation (ft. msl)	7/6/2005 Depth to Water (ft)	7/6/2005 Elevation (ft. msl)	8/4/2005 Depth to Water (ft)	8/4/2005 Elevation (ft. msl)	9/3/2005 Depth to Water (ft)	9/3/2005 Elevation (ft. msl)	10/7/2005 Depth to Water (ft)	10/7/2005 Elevation (ft. msl)	12/10/2005 Depth to Water (ft)	12/10/2005 Elevation (ft. msl)
East "A"	598.93	24.20	574.73	21.21	577.72	19.45	579.48	22.21	576.72	22.19	576.74	23.24	575.69	23.49	575.44	23.57	575.36	24.07	574.86	24.47	574.46
East "B"	596.23	19.68	576.55	19.52	576.71	19.79	576.44	19.66	576.57	19.97	576.26	19.89	576.34	19.96	576.27	19.70	576.53	19.51	576.72	19.50	576.73
East "C"	598.69	19.60	579.09	19.42	579.27	19.33	579.36	19.15	579.54	19.71	578.98	19.76	578.93	19.57	579.12	19.51	579.18	19.65	579.04	19.39	579.30
East "D"	593.20	14.2	579.00	14.35	578.85	13.89	579.31	14.29	578.91	14.68	578.52	14.64	578.56	14.62	578.58	14.47	578.73	14.4	578.80	14.24	578.96
WW A	-	0.58	-	1.08	-	0.50	-	1.00	-	1.00	-	1.00	-	1.25	-	1.17	-	1.33	-	1.50	-
WW B	-	1.50	-	1.17	-	0.83	-	1.25	-	1.17	-	1.50	-	1.42	-	0.92	-	1.17	-	1.17	-
WW C	-	0.67	-	1.00	-	1.00	-	1.00	-	1.25	-	0.92	-	1.25	-	1.00	-	1.00	-	0.83	-
WW D	-	1.25	-	1.25	-	1.00	-	1.17	-	1.33	-	0.92	-	1.50	-	1.00	-	1.08	-	1.08	-
NCR-3S	579.60	1.82	577.78	3.39	576.21	3.11	576.49	1.50	578.10	5.93	573.67	dry	-	5.96	573.64	dry	-	5.63	573.97	4.21	575.39
NCR-4S	577.88	2.60	575.28	3.08	574.80	frozen	-	2.51	575.37	3.87	574.01	dry	-	dry	-	dry	-	3.69	574.19	2.99	574.89
NCR-5S	579.34	5.46	573.88	6.57	572.77	6.14	573.20	6.36	572.98	8.10	571.24	10.60	568.74	dry	-	dry	-	dry	-	8.17	571.17
NCR-13S	577.15	3.60	573.55	5.14	572.01	4.34	572.81	3.19	573.96	6.59	570.56	7.52	569.63	7.79	569.36	dry	-	7.21	569.94	6.06	571.09

Observation Point	Elevation Top of Casing (ft. msl)	1/13/2006 Depth to Water (ft)	1/13/2006 Elevation (ft. msl)	2/10/2006 Depth to Water (ft)	2/10/2006 Elevation (ft. msl)	3/3/2006 Depth to Water (ft)	3/3/2006 Elevation (ft. msl)	4/8/2006 Depth to Water (ft)	4/8/2006 Elevation (ft. msl)	5/1/2006 Depth to Water (ft)	5/1/2006 Elevation (ft. msl)	6/7/2006 Depth to Water (ft)	6/7/2006 Elevation (ft. msl)	7/14/2006 Depth to Water (ft)	7/14/2006 Elevation (ft. msl)	8/8/2006 Depth to Water (ft)	8/8/2006 Elevation (ft. msl)	9/18/2006 Depth to Water (ft)	9/18/2006 Elevation (ft. msl)	10/7/2006 Depth to Water (ft)	10/7/2006 Elevation (ft. msl)	11/3/2006 Depth to Water (ft)	11/3/2006 Elevation (ft. msl)	12/1/2006 Depth to Water (ft)	12/1/2006 Elevation (ft. msl)
East "A"	598.93	24.55	574.38	24.68	574.25	24.72	574.21	24.22	574.71	24.81	574.12	23.53	575.40	24.77	574.16	24.23	574.70	24.68	574.25	24.78	574.15	24.74	574.19	24.53	574.40
East "B"	596.23	19.45	576.78	19.85	576.38	19.87	576.36	19.86	576.37	21.10	575.13	19.80	576.43	19.79	576.44	19.84	576.39	19.51	576.72	19.80	576.43	19.86	576.37	18.80	577.43
East "C"	598.69	19.28	579.41	19.75	578.94	19.84	578.85	19.77	578.92	20.09	578.60	19.69	579.00	19.71	578.98	19.66	579.03	19.37	579.32	20.78	577.91	20.03	578.66	19.26	579.43
East "D"	593.20	14.15	579.05	14.48	578.72	14.44	578.76	14.46	578.74	14.74	578.46	14.87	578.33	14.83	578.37	14.71	578.49	14.45	578.75	14.95	578.25	14.67	578.53	14.45	578.75
WW A	-	1.17	-	1.17	-	1.17	-	1.00	-	1.25	-	1.25	-	1.00	-	1.17	-	1.17	-	1.17	-	1.08	-	1.33	-
WW B	-	0.83	-	1.17	-	0.92	-	1.08	-	1.08	-	1.08	-	1.25	-	1.00	-	0.83	-	0.92	-	1.00	-	0.83	-
WW C	-	0.92	-	1.00	-	1.00	-	1.08	-	1.08	-	1.00	-	1.25	-	1.00	-	0.83	-	1.00	-	0.92	-	0.67	-
WW D	-	1.08	-	1.00	-	0.92	-	0.92	-	1.00	-	1.17	-	0.92	-	0.92	-	0.92	-	1.00	-	1.00	-	1.00	-
NCR-3S	579.60	2.77	576.83	3.02	576.58	3.48	576.12	2.45	577.15	3.44	576.16	dry	-	dry	-	5.85	573.75	3.67	575.93	3.06	576.54	3.51	576.09	1.35	578.25
NCR-4S	577.88	2.83	575.05	2.91	574.97	3.30	574.58	2.72	575.16	3.26	574.62	4.31	573.57	4.59	573.29	dry	-	3.51	574.37	2.97	574.91	3.15	574.73	2.44	575.44
NCR-5S	579.34	7.43	571.91	7.96	571.38	8.58	570.76	7.91	571.43	8.79	570.55	8.97	570.37	dry	-	dry	-	dry	-	7.37	571.97	6.22	573.12	4.21	575.13
NCR-13S	577.15	5.78	571.37	5.99	571.16	6.08	571.07	5.84	571.31	6.15	571.00	7.33	569.82	7.57	569.58	7.69	569.46	6.36	570.79	5.72	571.43	4.33	572.82	2.77	574.38

Notes:

- = measurment not collected.

dry = no water in well.

Table 2.3
Niagara County Refuse Site
Water Level Measurements

Observation Point	Elevation Top of Casing (ft. msl)	1/19/2007		2/9/2007		3/10/2007		4/2/2007		5/4/2007		6/1/2007		7/2/2007		8/2/2007		9/17/2007		10/12/2007		11/1/2007		12/1/2007	
		Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)
East "A"	598.93	24.98	573.95	24.65	574.28	24.84	574.09	24.88	574.05	25.02	573.91	25.50	573.43	24.98	573.95	24.96	573.97	25.03	573.90	24.98	573.95	25.11	573.82	25.13	573.80
East "B"	596.23	19.38	576.85	19.56	576.67	-	-	19.98	576.25	20.07	576.16	19.78	576.45	19.86	576.37	19.85	576.38	19.81	576.42	19.50	576.73	19.52	576.71	19.59	576.64
East "C"	598.69	19.51	579.18	19.81	578.88	19.71	578.98	20.10	578.59	20.17	578.52	19.87	578.82	19.99	578.70	19.97	578.72	20.19	578.50	19.78	578.91	19.93	578.76	19.97	578.72
East "D"	593.20	14.38	578.82	14.68	578.52	14.82	578.38	15.24	577.96	15.09	578.11	15.1	578.10	15.19	578.01	15.11	578.09	15.16	578.04	14.64	578.56	14.8	578.40	14.86	578.34
WW A	-	1.17	-	1.08	-	1.25	-	1.08	-	1.25	-	1.17	-	1.00	-	0.83	-	0.67	-	1.00	-	0.92	-	1.00	-
WW B	-	1.00	-	1.00	-	0.67	-	1.17	-	0.75	-	0.92	-	0.83	-	0.83	-	0.83	-	0.92	-	1.08	-	1.17	-
WW C	-	0.83	-	0.83	-	0.67	-	0.83	-	0.83	-	0.83	-	0.67	-	0.50	-	0.67	-	0.50	-	1.00	-	1.08	-
WW D	-	1.00	-	0.83	-	1.00	-	0.83	-	0.83	-	1.00	-	0.83	-	1.00	-	0.75	-	0.83	-	1.00	-	1.00	-
NCR-3S	579.60	3.04	576.56	3.75	575.85	2.70	576.90	3.26	576.34	3.50	576.10	5.89	573.71	dry	-	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-4S	577.88	2.94	574.94	3.42	574.46	2.80	575.08	2.93	574.95	3.19	574.69	3.90	573.98	dry	-	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-5S	579.34	5.77	573.57	6.83	572.51	6.28	573.06	6.08	573.26	6.75	572.59	8.87	570.47	10.99	568.35	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-13S	577.15	3.85	573.30	4.51	572.64	4.39	572.76	4.25	572.90	4.81	572.34	7.01	570.14	7.44	569.71	7.70	569.45	dry	-	7.72	569.43	7.75	569.40	dry	-

Observation Point	Elevation Top of Casing (ft. msl)	1/4/2008		2/8/2008		3/7/2008		4/4/2008		5/8/2008		6/5/2008		7/1/2008		8/7/2008		9/11/2008		10/9/2008		11/3/2008		12/5/2008	
		Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)
East "A"	598.93	25.31	573.62	25.22	573.71	25.27	573.66	25.37	573.56	25.39	573.54	25.46	573.47	25.49	573.44	25.44	573.49	25.50	573.43	25.41	573.52	25.39	573.54	25.41	573.52
East "B"	596.23	19.95	576.28	19.65	576.58	19.90	576.33	19.70	576.53	19.71	576.52	19.96	576.27	19.91	576.32	19.87	576.36	20.04	576.19	19.60	576.63	19.83	576.40	19.99	576.24
East "C"	598.69	20.30	578.39	19.97	578.72	20.26	578.43	19.85	578.84	19.99	578.70	20.18	578.51	20.20	578.49	20.13	578.56	20.44	578.25	20.03	578.66	20.20	578.49	20.20	578.49
East "D"	593.20	15.15	578.05	14.66	578.54	14.89	578.31	15.11	578.09	15.02	578.18	15.2	578.00	15.4	577.80	15.34	577.86	15.51	577.69	15.16	578.04	15.4	577.80	15.13	578.07
WW A	-	1.00	-	0.83	-	1.08	-	0.92	-	1.08	-	1.00	-	0.83	-	0.83	-	0.83	-	0.83	-	1.00	-	1.00	-
WW B	-	0.83	-	0.92	-	1.00	-	1.00	-	0.83	-	0.83	-	0.83	-	0.83	-	0.67	-	0.75	-	0.67	-	0.92	-
WW C	-	1.00	-	0.83	-	0.75	-	0.50	-	0.75	-	0.83	-	0.67	-	0.83	-	0.42	-	0.50	-	0.58	-	0.83	-
WW D	-	1.08	-	1.00	-	0.83	-	0.33	-	0.50	-	0.50	-	0.59	-	0.67	-	0.50	-	0.50	-	0.50	-	0.50	-
NCR-3S	579.60	3.46	576.14	3.29	576.31	3.56	576.04	3.21	576.39	4.17	575.43	dry	-	dry	-	3.81	575.79	dry	-	5.44	574.16	3.81	-	3.22	576.38
NCR-4S	577.88	3.06	574.82	2.82	575.06	2.89	574.99	2.59	575.29	2.91	574.97	3.61	574.27	4.53	573.35	3.43	574.45	4.27	573.61	3.90	573.98	3.17	574.71	3.52	574.36
NCR-5S	579.34	10.80	568.54	6.26	573.08	7.11	572.23	5.84	573.50	7.45	571.89	9.00	570.34	10.24	569.10	dry	-	dry	-	dry	-	7.75	571.59	6.24	573.10
NCR-13S	577.15	4.64	572.51	4.30	572.85	4.74	572.41	4.16	572.99	5.31	571.84	6.92	570.23	7.47	569.68	7.26	569.89	7.54	569.61	7.48	569.67	5.75	571.40	4.53	572.62

Notes:

- = measurment not collected.

dry = no water in well.

Table 2.3
Niagara County Refuse Site
Water Level Measurements

Observation Point	Elevation Top of Casing (ft. msl)	1/9/2009		2/5/2009		3/5/2009		4/3/2009		5/1/2009		6/4/2009		7/10/2009		8/12/2009		9/5/2009		10/9/2009		11/8/2009		12/4/2009	
		Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)
East "A"	598.93	25.34	573.59	25.54	573.39	25.60	573.33	25.42	573.51	25.64	573.29	25.66	573.27	25.62	573.31	25.51	573.42	25.52	573.41	25.45	573.48	25.63	573.30	25.53	573.40
East "B"	596.23	19.85	576.38	20.05	576.18	19.94	576.29	19.44	576.79	19.99	576.24	20.00	576.23	20.15	576.08	19.77	576.46	19.83	576.40	19.78	576.45	19.85	576.38	19.66	576.57
East "C"	598.69	20.22	578.47	20.56	578.13	20.20	578.49	19.36	579.33	20.35	578.34	20.55	578.14	20.51	578.18	20.33	578.36	20.30	578.39	20.04	578.65	20.45	578.24	20.30	578.39
East "D"	593.20	14.85	578.35	15.25	577.95	15.54	577.66	14.81	578.39	15.65	577.55	15.75	577.45	15.62	577.58	15.51	577.69	15.69	577.51	15.22	577.98	15.45	577.75	18.98	574.22
WW A	-	1.33	-	0.83	-	0.83	-	1.00	-	0.83	-	0.83	-	0.67	-	0.50	-	0.75	-	1.00	-	0.75	-	0.75	-
WW B	-	1.00	-	0.67	-	1.00	-	0.92	-	1.00	-	0.67	-	0.83	-	0.83	-	0.67	-	1.00	-	1.00	-	0.42	-
WW C	-	0.75	-	0.67	-	0.50	-	0.50	-	0.50	-	0.58	-	0.50	-	0.58	-	0.50	-	0.42	-	0.33	-	0.83	-
WW D	-	0.67	-	1.00	-	0.50	-	0.58	-	0.50	-	0.50	-	0.42	-	0.67	-	0.50	-	0.67	-	0.58	-	0.75	-
NCR-3S	579.60	2.97	576.63	4.11	575.49	3.55	576.05	2.20	577.40	3.48	576.12	dry	-	dry	-	3.66	575.94	dry	-	4.52	575.08	3.74	575.86	2.57	577.03
NCR-4S	577.88	2.90	574.98	3.19	574.69	3.36	574.52	2.39	575.49	2.90	574.98	dry	-	4.65	573.23	2.98	574.90	dry	-	3.49	574.39	3.15	574.73	2.78	575.10
NCR-5S	579.34	6.33	573.01	7.42	571.92	6.78	572.56	8.00	571.34	6.46	572.88	6.87	572.47	10.10	569.24	7.47	571.87	9.88	569.46	dry	-	9.78	569.56	5.92	573.42
NCR-13S	577.15	4.40	572.75	5.09	572.06	5.01	572.14	4.04	573.11	4.77	572.38	5.95	571.20	7.47	569.68	5.92	571.23	7.45	569.70	dry	-	6.16	570.99	4.27	572.88

Observation Point	Elevation Top of Casing (ft. msl)	1/7/2010		2/1/2010		3/11/2010		4/1/2010		5/6/2010		6/1/2010		7/2/2010		8/12/2010		9/16/2010		10/8/2010		11/5/2010		12/2/2010	
		Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)
East "A"	598.93	25.62	573.31	25.72	573.21	25.77	573.16	25.81	573.12	25.79	573.14	25.73	573.20	25.78	573.15	25.74	573.19	25.78	573.15	25.77	573.16	25.82	573.11	25.88	573.05
East "B"	596.23	19.78	576.45	19.97	576.26	19.83	576.40	19.83	576.40	19.79	576.44	19.83	576.40	19.99	576.24	19.84	576.39	19.87	576.36	19.70	576.53	19.52	576.71	19.52	576.71
East "C"	598.69	20.24	578.45	20.46	578.23	20.25	578.44	20.31	578.38	20.21	578.48	20.24	578.45	20.65	578.04	20.22	578.47	20.19	578.50	20.32	578.37	19.98	578.71	20.40	578.29
East "D"	593.20	15.25	577.95	15.42	577.78	15.38	577.82	15.48	577.72	15.49	577.71	15.59	577.61	15.7	577.50	15.65	577.55	15.65	577.55	15.43	577.77	15.53	577.67	15.22	577.98
WW A	-	0.83	-	0.83	-	0.83	-	0.67	-	0.58	-	0.83	-	0.67	-	0.75	-	0.67	-	0.67	-	0.83	-	0.67	-
WW B	-	0.58	-	0.58	-	0.75	-	0.50	-	0.50	-	0.50	-	0.42	-	0.50	-	0.50	-	0.50	-	0.42	-	0.42	-
WW C	-	0.33	-	0.50	-	0.50	-	0.50	-	0.50	-	0.58	-	0.67	-	0.58	-	0.58	-	0.42	-	0.58	-	0.67	-
WW D	-	0.67	-	0.58	-	0.92	-	0.58	-	0.67	-	0.50	-	0.50	-	0.50	-	0.50	-	0.58	-	0.50	-	0.50	-
NCR-3S	579.60	3.19	576.41	3.48	576.12	2.06	577.54	3.30	576.30	4.61	574.99	3.98	575.62	dry	-	dry	-	dry	-	dry	-	dry	-	2.78	576.82
NCR-4S	577.88	2.85	575.03	frozen	frozen	2.60	575.28	2.94	574.94	2.84	575.04	2.86	575.02	dry	-	dry	-	dry	-	dry	-	dry	-	2.91	574.97
NCR-5S	579.34	6.45	572.89	6.33	573.01	5.81	573.53	6.18	573.16	7.93	571.41	7.75	571.59	9.11	570.23	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-13S	577.15	4.64	572.51	4.65	572.50	3.68	573.47	4.71	572.44	5.10	572.05	4.97	572.18	7.40	569.75	dry	-	dry	-	dry	-	dry	-	5.82	571.33

Notes:

- = measurment not collected.

dry = no water in well.

Table 2.3
Niagara County Refuse Site
Water Level Measurements

Observation Point	Elevation Top of Casing (ft. msl)	1/7/2011 Depth to Water (ft)	1/7/2011 Elevation (ft. msl)	2/9/2011 Depth to Water (ft)	2/9/2011 Elevation (ft. msl)	3/3/2011 Depth to Water (ft)	3/3/2011 Elevation (ft. msl)	4/9/2011 Depth to Water (ft)	4/9/2011 Elevation (ft. msl)	5/6/2011 Depth to Water (ft)	5/6/2011 Elevation (ft. msl)	6/3/2011 Depth to Water (ft)	6/3/2011 Elevation (ft. msl)	7/15/2011 Depth to Water (ft)	7/15/2011 Elevation (ft. msl)	8/5/2011 Depth to Water (ft)	8/5/2011 Elevation (ft. msl)	9/5/2011 Depth to Water (ft)	9/5/2011 Elevation (ft. msl)	10/7/2011 Depth to Water (ft)	10/7/2011 Elevation (ft. msl)	11/3/2011 Depth to Water (ft)	11/3/2011 Elevation (ft. msl)	12//2011 Depth to Water (ft)	12//2011 Elevation (ft. msl)
East "A"	598.93	25.88	573.05	26.05	572.88	26.12	572.81	26.13	572.80	26.15	572.78	26.22	572.71	25.78	573.15	26.44	573.42	26.54	573.41	26.10	572.83	26.05	572.88	26.04	572.89
East "B"	596.23	19.43	576.80	19.95	576.28	20.17	576.06	20.12	576.11	20.31	575.92	19.98	576.25	20.00	576.23	19.99	576.46	20.05	576.40	19.10	577.13	19.11	577.12	15.70	580.53
East "C"	598.69	19.83	578.86	20.45	578.24	21.01	577.68	20.65	578.04	20.37	578.32	20.82	577.87	20.65	578.04	20.75	578.36	20.95	578.39	20.86	577.83	20.45	578.24	20.74	577.95
East "D"	593.20	14.99	578.21	15.21	577.99	15.8	577.40	15.65	577.55	15.75	577.45	15.92	577.28	15.71	577.49	15.88	577.69	15.96	577.51	15.9	577.30	15.73	577.47	15.44	577.76
WW A	-	0.67	-	0.50	-	0.67	-	1.00	-	0.83	-	0.67	-	0.58	-	0.58	-	0.83	-	0.67	-	0.83	-	0.83	-
WW B	-	0.33	-	0.42	-	0.50	-	0.50	-	0.50	-	0.42	-	0.50	-	0.50	-	0.50	-	0.50	-	0.50	-	0.42	-
WW C	-	0.33	-	0.33	-	1..67	-	1.00	-	0.67	-	0.75	-	0.83	-	0.83	-	0.92	-	0.83	-	0.83	-	0.75	-
WW D	-	0.83	-	0.58	-	0.58	-	0.58	-	0.50	-	0.50	-	0.50	-	0.50	-	0.83	-	0.58	-	0.50	-	0.42	-
NCR-3S	579.60	3.56	576.04	3.90	575.70	3.39	576.21	3.48	576.12	3.31	576.29	3.61	575.99	dry	-	dry	-	dry	-	5.37	574.23	3.76	575.84	3.20	576.40
NCR-4S	577.88	3.04	574.84	2.90	574.98	2.65	575.23	2.91	574.97	2.90	574.98	3.37	574.51	dry	-	dry	-	dry	-	dry	-	3.47	574.41	2.79	575.09
NCR-5S	579.34	7.68	571.66	7.33	572.01	5.95	573.39	6.23	573.11	6.21	573.13	7.16	572.18	dry	-	dry	-	dry	-	dry	-	dry	-	9.90	569.44
NCR-13S	577.15	4.60	572.55	4.77	572.38	4.40	572.75	4.51	572.64	4.52	572.63	5.20	571.95	dry	-	dry	-	dry	-	dry	-	5.67	571.48	4.23	572.92

Observation Point	Elevation Top of Casing (ft. msl)	1/5/2012 Depth to Water (ft)	1/5/2012 Elevation (ft. msl)	2/6/2012 Depth to Water (ft)	2/6/2012 Elevation (ft. msl)	3/1/2012 Depth to Water (ft)	3/1/2012 Elevation (ft. msl)	4/12/2012 Depth to Water (ft)	4/12/2012 Elevation (ft. msl)	5/1/2012 Depth to Water (ft)	5/1/2012 Elevation (ft. msl)	6/4/2012 Depth to Water (ft)	6/4/2012 Elevation (ft. msl)	7/13/2012 Depth to Water (ft)	7/13/2012 Elevation (ft. msl)	8/2/2012 Depth to Water (ft)	8/2/2012 Elevation (ft. msl)	9/4/2012 Depth to Water (ft)	9/4/2012 Elevation (ft. msl)	10/8/2012 Depth to Water (ft)	10/8/2012 Elevation (ft. msl)	11/12/2012 Depth to Water (ft)	11/12/2012 Elevation (ft. msl)	12/10/2012 Depth to Water (ft)	12/10/2012 Elevation (ft. msl)
East "A"	598.93	26.12	572.81	26.25	572.68	26.22	572.71	26.31	572.62	26.33	572.60	26.24	572.69	26.40	572.53	26.34	572.59	26.35	572.58	26.41	572.52	26.45	572.48	26.42	572.51
East "B"	596.23	15.56	580.67	15.80	580.43	15.82	580.41	16.01	580.22	15.99	580.24	18.53	577.70	19.90	576.33	16.54	579.69	19.99	576.24	20.11	576.12	19.12	577.11	16.03	580.20
East "C"	598.69	20.45	578.24	20.55	578.14	20.28	578.41	20.85	577.84	20.64	578.05	20.54	578.15	20.82	577.87	20.63	578.06	20.60	578.09	20.85	577.84	20.70	577.99	20.20	578.49
East "D"	593.20	15.51	577.69	16.61	576.59	15.4	577.80	15.71	577.49	17.77	575.43	15.73	577.47	16.15	577.05	15.97	577.23	16	577.20	15.9	577.30	15.94	577.26	15.46	577.74
WW A	-	0.50	-	0.75	-	0.67	-	0.75	-	1.25	-	0.67	-	0.58	-	0.50	-	0.67	-	0.92	-	0.50	-	1.25	-
WW B	-	0.42	-	0.42	-	0.42	-	0.42	-	0.42	-	0.50	-	0.42	-	0.83	-	0.83	-	0.42	-	0.42	-	0.50	-
WW C	-	0.83	-	0.83	-	0.67	-	0.75	-	0.83	-	1.00	-	0.75	-	0.83	-	0.83	-	0.50	-	0.50	-	0.67	-
WW D	-	0.42	-	0.58	-	0.50	-	0.50	-	0.58	-	0.58	-	0.50	-	0.42	-	0.58	-	0.50	-	0.50	-	0.42	-
NCR-3S	579.60	3.50	576.10	3.60	576.00	3.50	576.10	4.48	575.12	3.75	575.85	dry	-	dry	-	dry	-	dry	-	dry	-	4.27	575.33	2.56	577.04
NCR-4S	577.88	2.96	574.92	2.85	575.03	2.59	575.29	3.20	574.68	2.58	575.30	3.17	574.71	dry	-	dry	-	dry	-	dry	-	3.40	574.48	3.55	574.33
NCR-5S	579.34	6.51	572.83	6.44	572.90	6.41	572.93	7.41	571.93	6.80	572.54	9.45	569.89	dry	-	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-13S	577.15	4.63	572.52	4.62	572.53	4.63	572.52	5.11	572.04	4.60	572.55	7.42	569.73	dry	-	dry	-	dry	-	dry	-	6.32	570.83	4.36	572.79

Notes:

- = measurment not collected.

dry = no water in well.

Table 2.3
Niagara County Refuse Site
Water Level Measurements

Observation Point	Elevation Top of Casing (ft. msl)	1/14/2013		2/4/2013		3/5/2013		4/5/2013		5/7/2013		6/5/2013		7/5/2013		8/1/2013		9/3/2013		10/4/2013		11/15/2013		12/9/2013	
		Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)
East "A"	598.93	26.47	572.46	26.51	572.42	26.61	572.32	26.64	572.29	26.65	572.28	26.65	572.28	26.61	572.32	26.42	572.51	26.32	572.61	26.36	572.57	26.37	572.56	26.54	572.39
East "B"	596.23	16.05	580.18	20.05	578.88	15.83	583.10	15.82	583.11	16.06	582.87	18.09	580.84	15.85	583.08	15.85	583.08	18.99	579.94	15.93	583.00	15.88	583.05	16.10	582.83
East "C"	598.69	20.91	577.78	20.69	578.24	20.84	578.09	20.79	578.14	20.84	578.09	20.98	577.95	20.92	578.01	20.51	578.42	20.59	578.34	20.68	578.25	20.65	578.28	21.21	577.72
East "D"	593.20	15.50	577.70	15.66	583.27	15.61	583.32	15.85	583.08	16.09	582.84	16.11	582.82	16.19	582.74	16.10	582.83	15.90	583.03	16.01	582.92	15.98	582.95	16.11	582.82
WW A	-	0.58	-	0.50	-	0.83	-	1.00	-	0.50	-	0.83	-	1.00	-	1.08	-	1.00	-	0.75	-	1.00	-	0.92	-
WW B	-	0.50	-	0.42	-	0.42	-	0.50	-	0.42	-	0.33	-	0.42	-	0.42	-	0.33	-	0.50	-	0.50	-	0.50	-
WW C	-	0.33	-	0.67	-	0.75	-	0.67	-	0.42	-	0.50	-	0.42	-	0.58	-	0.33	-	0.42	-	0.50	-	0.67	-
WW D	-	0.83	-	0.42	-	0.58	-	0.50	-	0.42	-	0.33	-	0.5	-	0.4	-	0.33	-	0.42	-	1.00	-	0.50	-
NCR-3S	579.60	3.06	576.54	3.80	595.13	3.75	595.18	4.25	594.68	5.10	593.83	4.21	594.72	5.18	593.75	dry	-	dry	-	dry	-	3.69	595.24	3.80	595.13
NCR-4S	577.88	2.51	575.37	2.95	595.98	dry	-	3.16	595.77	3.75	595.18	3.14	595.79	3.40	595.53	3.31	595.62	4.20	594.73	dry	-	3.00	595.93	3.05	595.88
NCR-5S	579.34	5.56	573.78	6.65	592.28	6.58	592.35	7.25	591.68	7.65	591.28	7.63	591.30	8.58	590.35	9.42	589.51	10.37	588.56	dry	-	6.46	592.47	6.58	592.35
NCR-13S	577.15	4.01	573.14	4.94	593.99	5.06	593.87	5.81	593.12	6.78	592.15	5.33	593.60	7.34	591.59	7.20	591.73	dry	-	dry	-	4.76	594.17	4.81	594.12

Observation Point	Elevation Top of Casing (ft. msl)	1/7/2014		2/20/2014		3/11/2014		4/10/2014		5/6/2014		6/2/2014		7/2/2014		8/7/2014		9/8/2014		10/4/2014		11/13/2014		12/10/2014	
		Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)	Depth to Water (ft)	Elevation (ft. msl)
East "A"	598.93	26.12	572.81	26.60	572.33	26.20	572.73	26.48	572.45	26.60	572.33	26.66	572.27	26.56	572.37	26.54	572.39	26.52	572.41	26.55	572.38	26.71	572.22	26.77	572.16
East "B"	596.23	15.56	580.67	15.48	580.75	20.05	576.18	15.80	580.43	20.05	576.18	15.80	580.43	15.94	580.29	15.90	580.33	19.21	577.02	20.13	576.10	15.95	580.28	16.13	580.10
East "C"	598.69	20.69	578.00	20.80	577.89	20.40	578.29	20.64	578.05	20.90	577.79	20.81	577.88	20.72	577.97	20.98	577.71	21.05	577.64	20.42	578.27	20.93	577.76	20.87	577.82
East "D"	593.20	15.41	577.79	15.8	577.40	15.7	577.50	15.71	577.49	16.02	577.18	15.83	577.37	15.7	577.50	15.78	577.42	15.95	577.25	15.25	577.95	15.69	577.51	15.42	577.78
WW A	-	0.83	-	0.42	-	0.50	-	1.00	-	1.25	-	1.08	-	0.83	-	1.00	-	0.83	-	0.75	-	0.75	-	1.00	-
WW B	-	0.42	-	0.50	-	0.50	-	0.42	-	0.33	-	0.42	-	0.58	-	0.42	-	0.42	-	0.42	-	0.33	-	0.33	-
WW C	-	0.42	-	0.50	-	0.50	-	0.50	-	0.50	-	0.50	-	0.58	-	0.50	-	0.50	-	0.58	-	0.42	-	0.50	-
WW D	-	0.42	-	0.58	-	0.58	-	0.33	-	0.42	-	0.33	-	0.50	-	0.50	-	0.58	-	0.50	-	0.50	-	0.42	-
NCR-3S	579.60	3.55	576.05	4.40	575.20	3.50	576.10	3.55	576.05	4.14	575.46	4.91	574.69	dry	-	dry	-	dry	-	dry	-	dry	-	4.80	574.80
NCR-4S	577.88	2.96	574.92	2.90	574.98	3.10	574.78	2.82	575.06	3.25	574.63	3.30	574.58	3.80	574.08	dry	-	dry	-	dry	-	dry	-	4.70	573.18
NCR-5S	579.34	6.48	572.86	7.70	571.64	7.50	571.84	5.90	573.44	6.94	572.40	7.90	571.44	10.02	569.32	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-13S	577.15	4.10	573.05	6.30	570.85	4.20	572.95	4.22	572.93	5.34	571.81	6.78	570.37	7.46	569.69	dry	-	dry	-	dry	-	dry	-	dry	-

Notes:

- = measurment not collected.

dry = no water in well.

Table 2.3
Niagara County Refuse Site
Water Level Measurements

Observation Point	Elevation Top of Casing (ft. msl)	1/3/2015 Depth to Water (ft)	1/3/2015 Elevation (ft. msl)	2/28/2015 Depth to Water (ft)	2/28/2015 Elevation (ft. msl)	3/22/2015 Depth to Water (ft)	3/22/2015 Elevation (ft. msl)	4/10/2015 Depth to Water (ft)	4/10/2015 Elevation (ft. msl)	5/13/2015 Depth to Water (ft)	5/13/2015 Elevation (ft. msl)	6/2/2015 Depth to Water (ft)	6/2/2015 Elevation (ft. msl)	7/3/2015 Depth to Water (ft)	7/3/2015 Elevation (ft. msl)	8/13/2015 Depth to Water (ft)	8/13/2015 Elevation (ft. msl)	9/8/2015 Depth to Water (ft)	9/8/2015 Elevation (ft. msl)	10/8/2015 Depth to Water (ft)	10/8/2015 Elevation (ft. msl)	11/14/2015 Depth to Water (ft)	11/14/2015 Elevation (ft. msl)	12/1/2015 Depth to Water (ft)	12/1/2015 Elevation (ft. msl)
East "A"	598.93	26.80	572.13	26.12	572.81	26.00	572.93	26.89	572.04	26.97	571.96	23.93	575.00	29.05	569.88	26.85	572.08	26.75	572.18	26.80	572.13	26.79	572.14	26.91	572.02
East "B"	596.23	16.01	580.22	15.56	580.67	20.05	576.18	15.80	580.43	20.05	576.18	Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed	
East "C"	598.69	21.06	577.63	20.45	578.24	20.50	578.19	20.45	578.24	21.27	577.42	21.16	577.53	21.02	577.67	21.13	577.56	20.98	577.71	21.00	577.69	21.05	577.64	20.81	577.88
East "D"	593.20	15.8	577.40	15.51	577.69	15.65	577.55	15.82	577.38	17.4	575.80	19.51	573.69	Oil-like noted		Oil-like noted		37.65	555.55	17.32	575.88	16.08	577.12	16.25	576.95
WW A	-	0.92	-	0.50	-	0.58	-	1.08	-	0.67	-	0.50	-	1.00	-	0.83	-	0.83	-	0.83	-	0.83	-	0.67	-
WW B	-	0.33	-	0.42	-	0.50	-	0.50	-	4.50	-	0.58	-	0.42	-	0.33	-	0.42	-	1.00	-	0.42	-	0.33	-
WW C	-	0.50	-	0.83	-	0.50	-	0.42	-	0.42	-	0.42	-	0.50	-	0.50	-	0.42	-	0.33	-	0.50	-	0.50	-
WW D	-	0.33	-	0.42	-	0.58	-	2.08	-	0.42	-	0.33	-	0.42	-	0.42	-	0.33	-	0.50	-	0.42	-	0.33	-
NCR-3S	579.60	4.10	575.50	3.50	576.10	3.90	575.70	2.91	576.69	4.71	574.89	dry	-	dry	-	dry	-	dry	-	dry	-	4.15	575.45	5.09	574.51
NCR-4S	577.88	3.80	574.08	2.96	574.92	2.10	575.78	1.60	576.28	3.40	574.48	3.10	574.78	dry	-	dry	-	dry	-	dry	-	3.48	574.40	3.72	574.16
NCR-5S	579.34	dry	-	6.51	572.83	7.40	571.94	5.46	573.88	8.43	570.91	9.51	569.83	9.52	569.82	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-13S	577.15	6.48	570.67	4.63	572.52	4.10	573.05	3.50	573.65	7.00	570.15	7.54	569.61	dry	-	dry	-	dry	-	dry	-	dry	-	dry	-

Observation Point	Elevation Top of Casing (ft. msl)	1/7/2016 Depth to Water (ft)	1/7/2016 Elevation (ft. msl)	2/2/2016 Depth to Water (ft)	2/2/2016 Elevation (ft. msl)	3/1/2016 Depth to Water (ft)	3/1/2016 Elevation (ft. msl)	4/5/2016 Depth to Water (ft)	4/5/2016 Elevation (ft. msl)	5/4/2016 Depth to Water (ft)	5/4/2016 Elevation (ft. msl)	6/6/2016 Depth to Water (ft)	6/6/2016 Elevation (ft. msl)	7/6/2016 Depth to Water (ft)	7/6/2016 Elevation (ft. msl)	8/9/2016 Depth to Water (ft)	8/9/2016 Elevation (ft. msl)	9/7/2016 Depth to Water (ft)	9/7/2016 Elevation (ft. msl)	10/4/2016 Depth to Water (ft)	10/4/2016 Elevation (ft. msl)	11/2/2016 Depth to Water (ft)	11/2/2016 Elevation (ft. msl)	12/7/2016 Depth to Water (ft)	12/7/2016 Elevation (ft. msl)
East "A"	598.93	26.84	572.09	26.71	572.22	26.50	572.43	26.81	572.12	26.40	572.53	26.79	572.14	26.89	572.04	26.92	572.01	26.91	572.02	26.91	572.02	26.77	572.16	27.02	571.91
East "B"	596.23	Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed	
East "C"	598.69	21.10	577.59	20.32	578.37	21.31	577.38	12.85	585.84	20.90	577.79	20.52	578.17	20.91	577.78	21.10	577.59	21.03	577.66	22.33	576.36	22.21	576.48	20.96	577.73
East "D"	593.20	16.21	576.99	15.41	577.79	21.22	571.98	16.64	576.56	16.3	576.90	17.22	575.98	15.86	577.34	15.93	577.27	15.96	577.24	16.15	577.05	16.08	577.12	15.61	577.59
WW A	-	3.50	-	2.50	-	3.50	-	2.42	-	2.67	-	2.58	-	3.58	-	3..08	-	2.67	-	2.75	-	2.92	-	2.58	-
WW B	-	1.67	-	1.40	-	1.50	-	1.42	-	2.17	-	1.67	-	dry	-	1.08	-	1.58	-	1.75	-	2.08	-	3.08	-
WW C	-	1.50	-	1.75	-	1.75	-	1.75	-	1.25	-	1.58	-	1.67	-	2.08	-	2.08	-	2.17	-	2.33	-	2.25	-
WW D	-	1.17	-	1.17	-	1.17	-	1.17	-	1.17	-	1.50	-	1.25	-	1.67	-	2.08	-	1.92	-	2.17	-	2.50	-
NCR-3S	579.60	5.93	573.67	4.51	575.09	4.45	575.15	4.85	574.75	3.61	575.99	5.92	573.68	dry	-	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-4S	577.88	3.45	574.43	3.82	574.06	3.65	574.23	4.10	573.78	2.80	575.08	4.21	573.67	dry	-	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-5S	579.34	dry	-	7.21	572.13	6.33	573.01	4.40	574.94	6.35	572.99	10.14	569.20	dry	-	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-13S	577.15	dry	-	5.21	571.94	4.60	572.55	5.60	571.55	5.40	571.75	7.42	569.73	dry	-	dry	-	dry	-	dry	-	dry	-	dry	-

Notes:

- = measurment not collected.

dry = no water in well.

Table 2.3
Niagara County Refuse Site
Water Level Measurements

Observation Point	Elevation Top of Casing (ft. msl)	1/4/2017 Depth to Water (ft)	1/4/2017 Elevation (ft. msl)	2/6/2017 Depth to Water (ft)	2/6/2017 Elevation (ft. msl)	3/6/2017 Depth to Water (ft)	3/6/2017 Elevation (ft. msl)	4/5/2017 Depth to Water (ft)	4/5/2017 Elevation (ft. msl)	5/8/2017 Depth to Water (ft)	5/8/2017 Elevation (ft. msl)	6/7/2017 Depth to Water (ft)	6/7/2017 Elevation (ft. msl)	7/10/2017 Depth to Water (ft)	7/10/2017 Elevation (ft. msl)	8/15/2017 Depth to Water (ft)	8/15/2017 Elevation (ft. msl)	9/6/2017 Depth to Water (ft)	9/6/2017 Elevation (ft. msl)	10/4/2017 Depth to Water (ft)	10/4/2017 Elevation (ft. msl)	11/8/2017 Depth to Water (ft)	11/8/2017 Elevation (ft. msl)	12/13/2017 Depth to Water (ft)	12/13/2017 Elevation (ft. msl)
East "A"	598.93	27.01	571.92	26.31	572.62	26.49	572.44	27.14	571.79	27.08	571.85	27.11	571.82	27.08	571.85	27.94	570.99	26.91	572.02	27.01	571.92	26.98	571.95	26.92	572.01
East "B"	596.23	Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed	
East "C"	598.69	20.57	578.12	17.55	581.14	17.80	580.89	21.31	577.38	21.41	577.28	21.38	577.31	18.51	580.18	18.36	580.33	21.33	577.36	21.62	577.07	21.49	577.20	21.38	577.31
East "D"	593.20	15.24	577.96	15.78	577.42	16.11	577.09	15.82	577.38	15.98	577.22	16.05	577.15	16.09	577.11	15.98	577.22	15.81	577.39	15.89	577.31	16.11	577.09	15.64	577.56
WW A	-	3.33	-	2.25	-	2.67	-	3.33	-	3.17	-	2.17	-	2.83	-	3.33	-	3.58	-	2.92	-	3.17	-	2.92	-
WW B	-	3.17	-	2.08	-	1.33	-	2.92	-	3.08	-	3.25	-	2.92	-	3.25	-	3.25	-	2.08	-	2.92	-	2.75	-
WW C	-	2.08	-	2.67	-	2.92	-	3.25	-	2.92	-	2.92	-	2.75	-	2.75	-	3.00	-	2.75	-	3.33	-	3.33	-
WW D	-	2.92	-	2.08	-	3.42	-	8.17	-	7.08	-	3.08	-	3.17	-	2.92	-	2.75	-	3.33	-	3.42	-	3.17	-
NCR-3S	579.60	3.93	575.67	4.24	575.36	4.43	575.17	3.98	575.62	4.10	575.50	6.62	572.98	4.86	574.74	5.36	574.24	5.84	573.76	dry	-	4.31	575.29	4.57	575.03
NCR-4S	577.88	3.50	574.38	3.32	574.56	3.43	574.45	3.40	574.48	3.45	574.43	3.47	574.41	3.89	573.99	3.88	574.00	3.79	574.09	4.84	573.04	3.23	574.65	3.43	574.45
NCR-5S	579.34	dry	-	dry	-	6.79	572.55	5.85	573.49	6.19	573.15	dry	-	dry	-	10.21	569.13	10.28	569.06	dry	-	6.15	573.19	6.98	572.36
NCR-13S	577.15	dry	-	5.23	571.92	4.89	572.26	4.16	572.99	4.22	572.93	6.85	570.30	7.95	569.20	dry	-	7.76	569.39	dry	-	4.34	572.81	4.90	572.25

Observation Point	Elevation Top of Casing (ft. msl)	1/10/2018 Depth to Water (ft)	1/10/2018 Elevation (ft. msl)	2/13/2018 Depth to Water (ft)	2/13/2018 Elevation (ft. msl)	3/6/2018 Depth to Water (ft)	3/6/2018 Elevation (ft. msl)	4/16/2018 Depth to Water (ft)	4/16/2018 Elevation (ft. msl)	5/14/2018 Depth to Water (ft)	5/14/2018 Elevation (ft. msl)	6/7/2018 Depth to Water (ft)	6/7/2018 Elevation (ft. msl)	7/17/2018 Depth to Water (ft)	7/17/2018 Elevation (ft. msl)	8/9/2018 Depth to Water (ft)	8/9/2018 Elevation (ft. msl)	9/12/2018 Depth to Water (ft)	9/12/2018 Elevation (ft. msl)	10/9/2018 Depth to Water (ft)	10/9/2018 Elevation (ft. msl)	11/14/2018 Depth to Water (ft)	11/14/2018 Elevation (ft. msl)	12/5/2018 Depth to Water (ft)	12/5/2018 Elevation (ft. msl)
East "A"	598.93	26.45	572.48	26.48	572.45	27.13	571.80	27.24	571.69	28.20	570.73	27.12	571.81	28.18	570.75	27.04	571.89	27.09	571.84	27.09	571.84	27.17	571.76	27.09	571.84
East "B"	596.23	Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed		Collapsed	
East "C"	598.69	21.02	577.67	19.87	578.82	21.24	577.45	20.99	577.70	22.26	576.43	21.54	577.15	22.25	576.44	21.14	577.55	21.68	577.01	21.60	577.09	21.90	576.79	21.16	577.53
East "D"	593.20	15.41	577.79	14.41	578.79	15.93	577.27	15.76	577.44	17.01	576.19	16.02	577.18	16.99	576.21	15.77	577.43	16.14	577.06	16.19	577.01	15.99	577.21	16.01	577.19
WW A	-	2.50	-	3.08	-	3.42	-	3.08	-	2.50	-	2.17	-	3.08	-	2.33	-	3.08	-	2.92	-	2.83	-	3.33	-
WW B	-	3.08	-	2.50	-	2.92	-	2.58	-	2.17	-	2.75	-	2.92	-	2.50	-	3.25	-	2.83	-	3.08	-	2.50	-
WW C	-	3.33	-	3.33	-	3.08	-	5.75	-	2.33	-	3.08	-	3.17	-	2.92	-	2.83	-	3.17	-	3.08	-	2.25	-
WW D	-	2.92	-	2.92	-	3.25	-	5.83	-	2.50	-	2.83	-	2.92	-	3.08	-	3.25	-	3.00	-	3.33	-	3.67	-
NCR-3S	579.60	4.69	574.91	4.43	575.17	4.42	575.18	3.06	576.54	4.65	574.95	dry	-	dry	-	dry	-	dry	-	dry	-	4.47	575.13	4.16	575.44
NCR-4S	577.88	3.52	574.36	3.19	574.69	3.13	574.75	3.75	574.13	4.29	573.59	3.70	574.18	dry	-	dry	-	dry	-	dry	-	dry	-	3.87	574.01	3.34	574.54
NCR-5S	579.34	7.11	572.23	7.18	572.16	6.76	572.58	4.97	574.37	7.49	571.85	9.35	569.99	dry	-	dry	-	dry	-	dry	-	dry	-	dry	-
NCR-13S	577.15	5.27	571.88	5.32	571.83	5.04	572.11	3.04	574.11	5.94	571.21	7.42	569.73	dry	-	dry	-	dry	-	dry	-	dry	-	5.22	571.93

Notes:

- = measurment not collected.

dry = no water in well.

Table 2.3
Niagara County Refuse Site
Water Level Measurements

Observation Point	Elevation Top of Casing (ft. msl)	1/10/2019 Depth to Water (ft)	1/10/2019 Elevation (ft. msl)	2/11/2019 Depth to Water (ft)	2/11/2019 Elevation (ft. msl)	3/7/2019 Depth to Water (ft)	3/7/2019 Elevation (ft. msl)	4/11/2019 Depth to Water (ft)	4/11/2019 Elevation (ft. msl)
East "A"	598.93	27.14	571.79	27.14	571.79	27.14	571.79	27.22	571.71
East "B"	596.23	Collapsed		Collapsed		Collapsed		Collapsed	
East "C"	598.69	21.56	577.13	21.38	577.31	21.70	576.99	21.74	576.95
East "D"	593.20	15.79	577.41	16.03	577.17	16.11	577.09	16.2	577.00
WW A	-	3.00	-	3.33	-	3.50	-	3.08	-
WW B	-	3.25	-	2.50	-	3.17	-	2.17	-
WW C	-	2.08	-	2.58	-	2.75	-	2.50	-
WW D	-	2.50	-	3.08	-	2.58	-	5.17	-
NCR-3S	579.60	4.13	575.47	3.90	575.70	4.83	574.77	3.82	575.78
NCR-4S	577.88	3.40	574.48	2.95	574.93	3.13	574.75	2.90	574.98
NCR-5S	579.34	6.16	573.18	6.38	572.96	7.06	572.28	6.40	572.94
NCR-13S	577.15	4.52	572.63	4.57	572.58	5.89	571.26	4.88	572.27

Notes:

- = measurment not collected.

dry = no water in well.

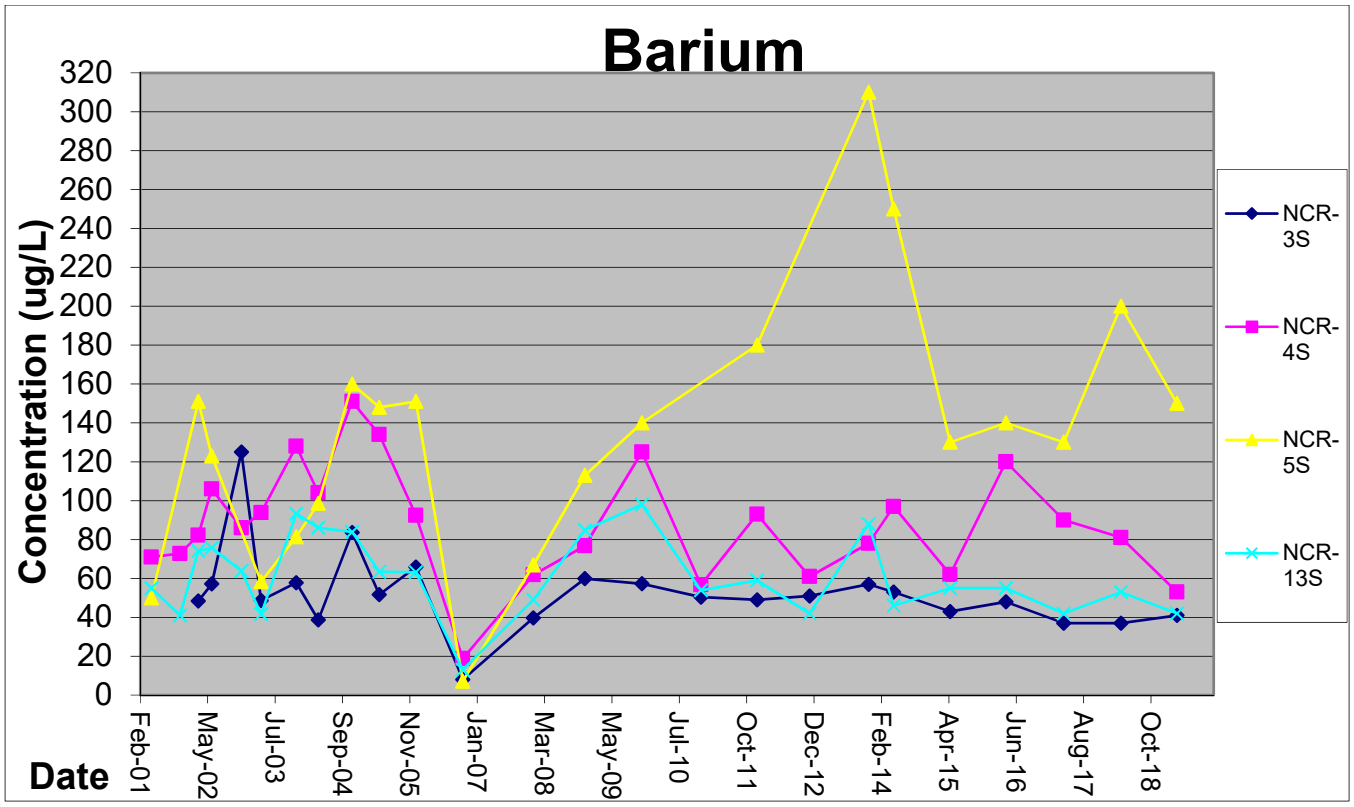


Figure 2.1A: Plot of Historical Total Barium Concentration

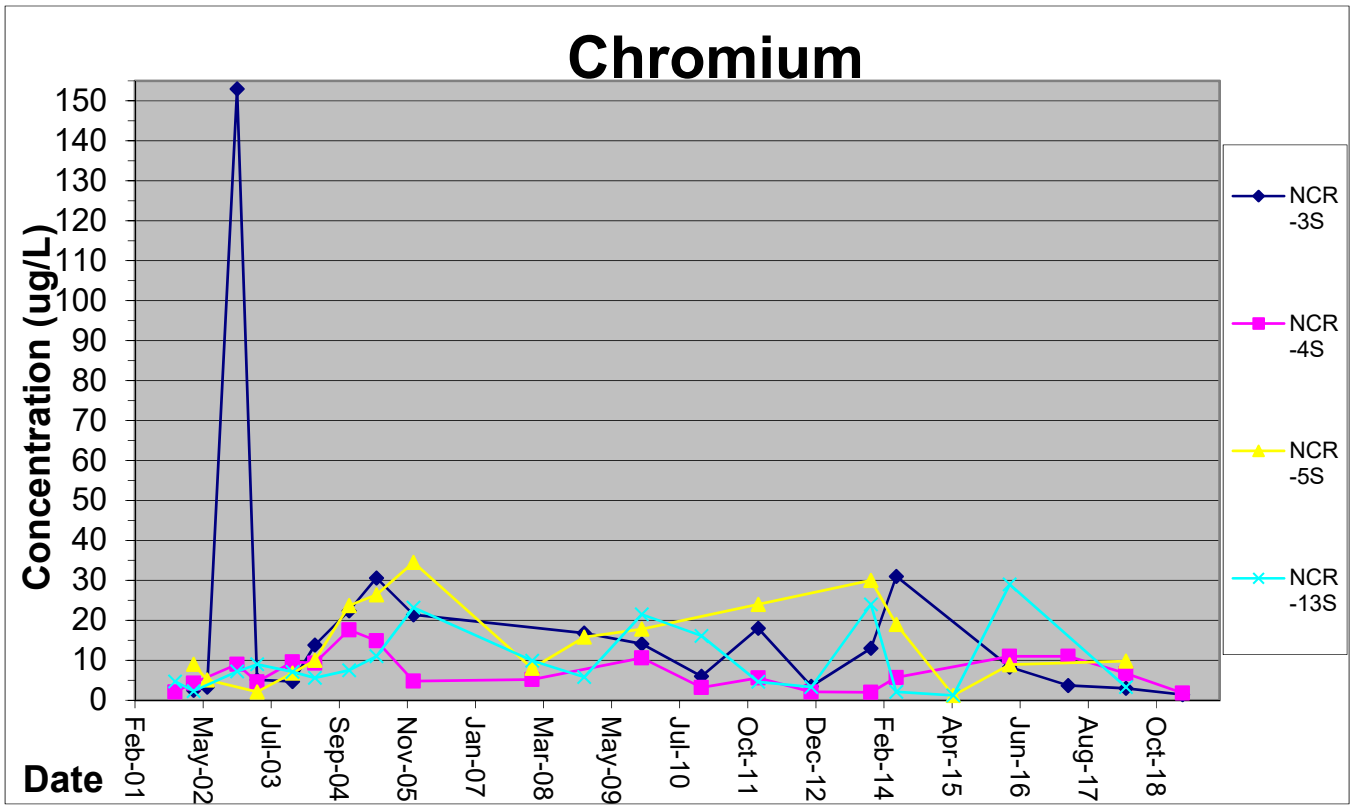


Figure 2.1B: Plot of Historical Total Chromium Concentration

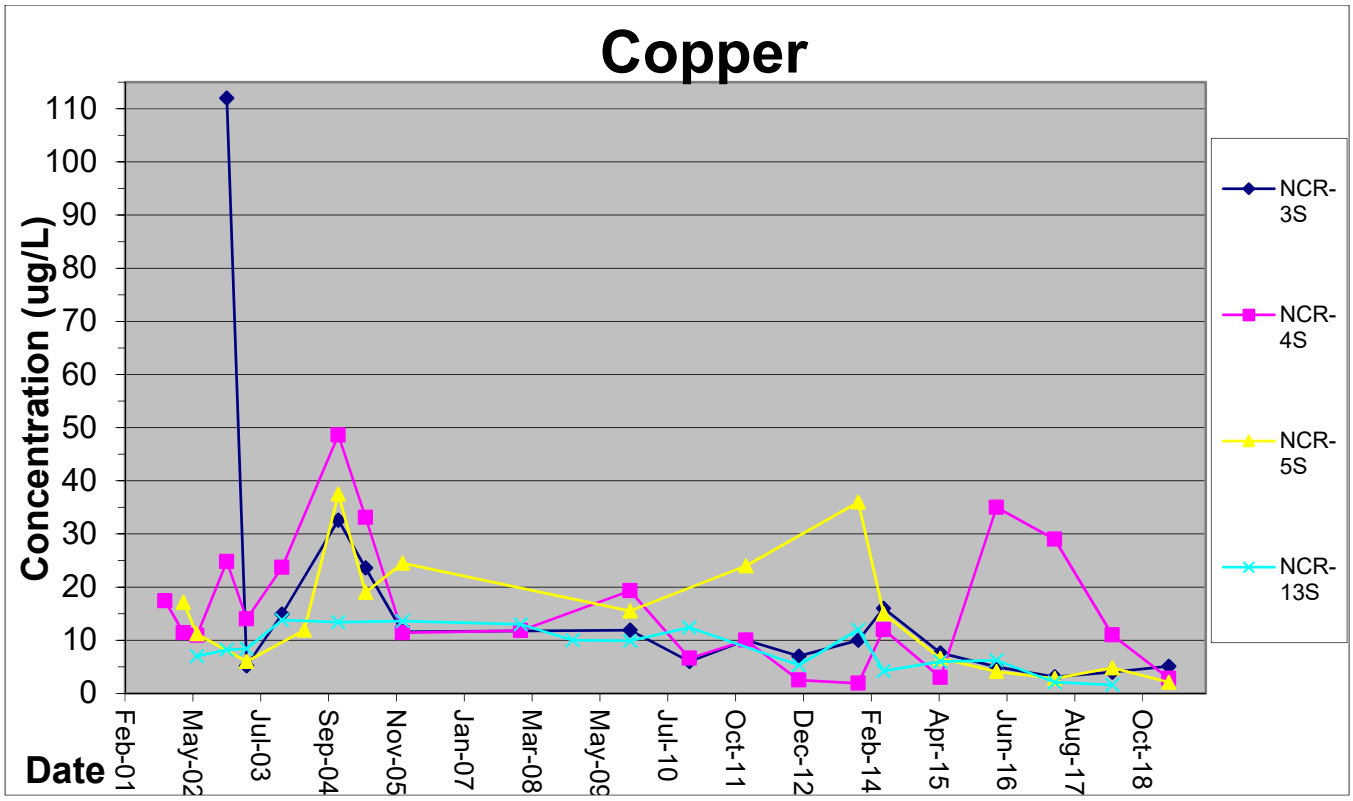


Figure 2.1C: Plot of Historical Total Copper Concentration

SECTION 3
SUMMARY AND CONCLUSIONS

The following summary and conclusions were developed based on the data collected during this reporting period (January through April 2019):

- Groundwater samples were collected for inorganic analysis in 2019. The analytical results were consistent with historical results. The annual groundwater samples scheduled for collection in April 2020 will continue to be analyzed for inorganics only.
- Fourteen metals were identified in one or more of the groundwater samples. Three of the detected metals exceeded either the NYSDEC AWQS, NYSDOH MCLs, or USEPA MCLs, which is consistent with previous sampling events. Two of these metals appear to be associated with background conditions. In general, detected values appeared to be consistent with ranges observed in previous sampling events.
- One effluent sample was collected during the reporting period. The analytical results were found to be compliant with the discharge permit. Compliance with the discharge permit was maintained during the reporting period.
- The landfill was inspected monthly and was appropriately maintained. Needed repairs were addressed in a timely manner. Cover vegetation continues to be in good condition.
- Post-construction monitoring of the wetland replacement was performed annually between 2001 and 2005. Monitoring results indicated that the wetland creation was successful. Although the formal annual inspections are no longer required, monthly visual inspection of the wetlands has continued, to document general conditions. During the reporting period, the wetlands were documented to be in good condition.
- Water levels were collected from the wet wells, monitoring wells, and the locations within the landfill on a monthly basis during the reporting period. Water levels generally varied between 0.5 and 1.4 feet over the course of the reporting period.
- The groundwater monitoring program is intended to provide data for demonstration of the effectiveness of the hydraulic containment, collection, and extraction of Site-related groundwater. The objectives of the groundwater monitoring program (to monitor the effectiveness of the perimeter collection system and the perimeter barrier system) were met during the reporting period.

SECTION 4
REFERENCES

USEPA, 1993, Record of Decision, Niagara County Refuse Site, Wheatfield, Niagara County, New York; United States Environmental Protection Agency, September 1993.

USA, 1995, Consent Decree, Docket 946-849; United States Environmental Protection Agency, February 3, 1995.

CRA, 2000, Operations, Maintenance and Monitoring Manual for Niagara County Refuse District Site Remedial Construction, Wheatfield, Niagara County, New York; Conestoga-Rovers & Associates, December 2000.

Parsons, 2018 Annual Monitoring Report, Niagara County Refuse District Site; Parsons, February 2019.

APPENDIX A

CITY OF NORTH TONAWANDA INDUSTRIAL WASTEWATER DISCHARGE PERMIT AND COMPLIANCE SAMPLING RESULTS

CITY OF NORTH TONAWANDA
INDUSTRIAL WASTEWATER DISCHARGE PERMIT

Permit Number: 2628010

In accordance with the provisions of the Clean Water Act as amended, all terms and conditions set forth in this permit, the City of North Tonawanda Local Sewer Use Ordinance and any applicable Federal, State or local laws or regulations, authorization is hereby granted to:

Niagara County Department of Public Works
Engineering Department
59 Park Avenue
Lockport, NY 14094

Site: **Niagara County Refuse Site**
Witmer Road
Town of Wheatfield, NY 14120

Classified by S.I.C. Number(s): N/A

for the discharge of ground water and other wastes generated during Remedial Action construction and implementation into the City of North Tonawanda Sewerage System.

This permit is granted in accordance with an application filed in the offices of the Water/Wastewater Superintendent located at 830 River Road, and in conformity with specifications and other required data submitted in support of the above named application, all of which are filed with and considered part of this permit. This permit is also granted in accordance with discharge limitations and requirements, monitoring and reporting requirements, and all other conditions set forth in Parts I and II hereof.

Effective the 31st day of March, 2019

To expire the 1st day of April, 2022

William M. Davignon

William M. Davignon, Water Works Superintendent

Signed this 1st day of April, 2019

PART I. SPECIFIC CONDITIONS

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning the effective date of this permit and lasting until the expiration date, discharge from the permitted facility outfall(s) shall be limited and monitored by the permittee as specified below (Refer to attached map for sampling and monitoring sites).

Sample Point	Parameter	Discharge Limitations mg/l except pH Daily Max.	Sampling Period	Sampling Type
001	Total Flow		1 Sampling Day Monthly	continuous
	pH	Monitor Only	1 Sampling Day Monthly	grab
	Aluminum	2.0	1 Sampling Day semi-annual	24 hr comp.
	Lead	4.6	1 Sampling Day semi-annual	24 hr comp.
	Iron	10	1 Sampling Day semi-annual	24 hr comp.
	Magnesium	Monitor Only	1 Sampling Day semi-annual	24 hr comp.
	Sodium	Monitor Only	1 Sampling Day semi-annual	24 hr comp.
	BOD	Monitor Only	1 Sampling Day semi-annual	24 hr comp.
	Total Suspended Solids	Monitor Only	1 Sampling Day semi-annual	24 hr comp.

PART I. SPECIFIC CONDITIONS

B. DISCHARGE MONITORING AND REPORTING REQUIREMENTS

During the period beginning the effective date of this permit and lasting until the expiration date, discharge monitoring results shall be summarized and reported by the permittee no later than the days specified below.

Sample Point	Parameter	Initial Monitoring Report	Subsequent Monitoring Reports
001	Total Flow	January 31, 2007	Semi-annual
	Lead	January 31, 2007	Semi-annual
	Iron	January 31, 2007	Semi-annual
	Magnesium	January 31, 2007	Semi-annual
	Sodium	January 31, 2007	Semi-annual
	pH	January 31, 2007	Semi-annual
	BOD	January 31, 2007	Semi-annual
	Total Suspended Solids	January 31, 2007	Semi-annual

PART I. SPECIFIC CONDITIONS

C. SPECIAL REQUIREMENTS

1) This permit is written for a duration of three (3) years. Upon renewal of this permit, all parameters will be re-evaluated to develop a parameter list based on chemical concentrations present in the extracted groundwater.

2) Frequency of monitoring is to be re-evaluated yearly.

3) All monitoring reports (initial and subsequent), are to be received by the Superintendent, no later than thirty (30) days after receipt of validated data.

4) It is required that the Permittee have a Site Operations Manual available at all times. All emergency phone numbers must be listed in an appropriate place for easy access by operations personnel. The Permittee shall not discharge into the City of North Tonawanda sewerage treatment works during WWTP overflow conditions. The Permittee is required to cease all pumping operations upon verbal request of the North Tonawanda Water/Wastewater Superintendent or his designee. Pumping operations shall not recommence until approval by the North Tonawanda Water/Wastewater Superintendent or his designee.

Analytical Results: NIAGARA COUNTY REFUSE SITE 2019

PARAMETER	RESULT mg/l	RESULT mg/l	COMPLIANCE
pH (COMP.)	7.42		YES
COD	< 50		YES
SUSPENDED SOLIDS	15		YES
BOD	8.01		YES
PO4	0.18		YES
METALS			
ALUMINUM	< 0.20		YES
LEAD	ND		YES
IRON	2.20		YES
MAGNESIUM	72.4		YES
MANGANESE	0.12		YES
SODIUM	31.6		YES
PURGEABLES			
Benzene	< 0.005		YES
Toluene	< 0.005		YES
Chlorobenzene	< 0.005		YES
Ethylbenzene	< 0.005		YES
Total Xylenes	< 0.015		YES
1,3 - Dichlorobenzene	< 0.005		YES
1,4-Dichlorobenzene	< 0.005		YES
1,2 - Dichlorobenzene	< 0.005		YES
Vinyl Chloride	< 0.005		YES
1,1-Dichloroethene	< 0.005		YES
Methylene chloride	< 0.005		YES
trans-1,2 Dichloroethene	< 0.005		YES
1,1-Dichloroethane	< 0.005		YES
Chloroform	< 0.005		YES
1,1,1-Trichloroethane	< 0.005		YES
Trichloroethene	< 0.005		YES
TOTAL FLOW (gallons)	**24,000**		
SAMPLE DATE	**4/10/19 & 4/11/19**		
Report prepared by: Michael W. Gibbons, Lab Director / Chemist			

APPENDIX B

CORRESPONDENCE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

NOV 21 2005

BY FEDEX

Mr. Eric Felter
Project Manager
Parsons
180 Lawrence Bell Drive, Suite 104
Williamsville, New York 14221

Re: Niagara County Refuse Site, Wheatfield, New York; Request for the Reduction of Analytical Parameters in Groundwater Samples

Dear Mr. Felter:

The U.S. Environmental Protection Agency (EPA) and New York State Department of Environmental Conservation (NYSDEC) have reviewed your letter dated October 3, 2005 prepared by Parsons on behalf of the Niagara County Refuse (NCR) Site PRP Group requesting a reduction in the analytical parameters in groundwater samples taken at the NCR site as part of the operation and maintenance program. The current analytical parameter list includes 2 volatiles, 4 semi-volatiles, and 16 metals which were determined to be constituents of interest at the site. Your proposal requests reducing the parameters to 5 metals, representing those constituents which have been measured above standards with some regularity in past sampling rounds. The sampling program, involving four monitoring wells, has been in effect since 2001 and your proposal reflects trends evident since the program was initiated. Sampling frequency is currently semi-annual (twice a year).

After discussing this matter with NYSDEC with input from the New York State Department of Health, our preference is that the sampling parameters remain the same for the time being. This is due to the significant residential growth around the site in recent years. After the current sampling round, samples are scheduled to be taken annually. EPA approves changing the current monitoring program only to the extent that the volatiles and semi-volatiles analysis can be conducted every two years while the metals analysis be conducted annually. EPA will, however, consider a further frequency reduction in the future as more data are collected.

Please call me at (212) 637-4278 if you have any questions on this matter.

Sincerely yours,

Michael J. Negrelli
Remedial Project Manager
New York Remediation Branch

cc: J. Konsella - NYSDEC/Region 9
B. Sadowski - NYSDEC/Region 9

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC 11 2018

Mr. Eric Felter
Project Coordinator
Parsons Engineering Science, Inc.
40 LaRiviere Drive, Suite 350
Buffalo, New York 14202

Re: Request for OM&M Plan Modifications; Niagara County Refuse Site, Wheatfield, New York.

Dear Mr. Felter:

This letter is in response to your letter dated August 20, 2018 to the U.S. Environmental Protection Agency (EPA) requesting modifications to the Operations, Maintenance, and Monitoring (OM& M) Plan, dated December 2000, for the Niagara County Refuse Superfund site in Wheatfield, New York. The request is made on behalf of the potentially responsible parties for the site, and seeks EPA approval for the following changes:

- Reduce the analytical suite associated with the OM&M responsibilities;
- Remove the data validation requirement; and
- Change monitoring report requirement from quarterly to annually.

Specifically, your letter presents documentation to support the elimination of sampling for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and mercury from groundwater sample analysis based on these compounds and element being consistently below New York State Department of Environmental Conservation (NYSDEC) ambient water quality standards and New York State Department of Health (NYSDOH) and EPA maximum contaminant levels, and generally below detection limits, since 2005. Additionally, your letter cites that data validation has been completed on groundwater analytical results since the initiation of OM&M sampling in 2001, initially performed quarterly, currently collected annually, and that the substantial volume of validated data collected supports the elimination of the data validation requirement. Finally, you note that reporting has been performed quarterly since the OM&M Plan became effective in 2001 and since groundwater monitoring is performed annually, it would be more economical to provide annual reports, which in addition to providing the groundwater analytical results, would summarize the monthly inspections as well and any other relevant information collected throughout the year.

EPA has consulted with NYSDEC and agrees with all these proposals save for the data validation requirement. Reporting should be done annually within two to three months of groundwater sampling in order to provide current results and VOCs, SVOCs, and mercury can be eliminated from

analysis. Following an evaluation by EPA's Division of Environmental Science and Assessment, Monitoring and Assessment Branch, it has been determined that continued validated groundwater monitoring data is required only for metals in order to support the data summaries in EPA's five-year reviews.

Additionally, based on comments provided by NYSDEC, EPA and NYSDEC provide the following observations on the OM&M reports:

- Concentration versus time graphs for the naturally occurring metals (i.e., aluminum, calcium, iron, magnesium, manganese, potassium, and sodium) can be omitted. Concentration versus time graphs should only be completed for consistently occurring toxic metals.
- Tables only showing water level elevations do not demonstrate the effectiveness of the perimeter collection system (PCS). Future reports should clarify how water level data can be utilized with other data to demonstrate the effectiveness of the PCS. Additionally, past reports have indicated that water level monitoring point East "B" has collapsed. If water level monitoring is to be continued to be used to demonstrate PCS effectiveness, this point should be repaired or replaced.
- The PCS is not shown on any of the figures in the OM&M reports. Figure 1.1 should be modified to include the PCS as well as the location of site access roads.
- There is no NYSDEC groundwater standard for aluminum. The standard of 100 ug/L included in the OM&M reports is for surface water and should be removed from the appropriate table.
- The NYSDEC groundwater standard for copper is 200 ug/L, not 5 ug/L as shown in the OM&M reports. The table should be corrected accordingly.
- There is no NYSDEC groundwater standard for vanadium. The standard of 14 ug/L included in the OM&M reports is for surface water and should be removed from the appropriate table.

If you have any questions regarding this matter, please contact me at (212) 637-4278 or email me at negrelli.mike@epa.gov.

Sincerely yours,

Michael Negrelli, Remedial Project Manager
New York Remediation Branch

cc: John Frankenthal – BP/Atlantic Richfield Company
B. Sadowski - NYSDEC
Michael Mintzer – EPA/ORC

APPENDIX C
ANALYTICAL DATA AND FIELD DATA FORMS

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

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

Laboratory Job ID: 480-151872-1
Client Project/Site: City of North Tonawanda - NCRS

For:
N Tonawanda Water Works
830 River Road
North Tonawanda, New York 14120

Attn: Michael W Gibbons

Judy Stone

Authorized for release by:
4/25/2019 11:47:34 AM

Judy Stone, Senior Project Manager
(484)685-0868
judy.stone@testamericainc.com

Table of Contents

Definitions/Glossary

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

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.
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Job ID: 480-151872-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-151872-1

Receipt
The samples were received on 4/11/2019 5:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6º C.

Receipt Exceptions
The following samples were canceled by the client for total and dissolved mercury on 4/15/19: WG-11109668-041119-DST-NCR3S (480-151872-1), WG-11109668-041119-DST-NCR4S (480-151872-2), WG-11109668-041119-DST-NCR5S (480-151872-3), WG-11109668-041119-DST-NCR5S (480-151872-3[MS]), WG-11109668-041119-DST-NCR5S (480-151872-3[MSD]), WG-11109668-041119-DST-NCR6S (480-151872-4) and WG-11109668-041119-DST-NCR13S (480-151872-5).

Metals
Method(s) 6010C: The recovery of Post Spike, (480-151872-B-1-A PDS), in batch 480-467983 exhibited results outside the quality control limits for Dissolved Calcium. However, the Serial Dilution of this sample was compliant. Therefore, no corrective action was necessary.

Method(s) 6010C: The Low Level Continuing Calibration Verification, (CCVL 480-468723/42) associated with batch 480-468723, contained Total Potassium above the upper quality control limit. The associated samples were either ND for the affected analyte or contained this analyte at a concentration greater than 10X the value found in the CCVL; therefore, re-analysis of samples WG-11109668-041119-DST-NCR5S (480-151872-3[MSD]) was not performed.

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

Detection Summary

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Client Sample ID: WG-11109668-041119-DST-NCR3S
Lab Sample ID: 480-151872-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	0.10	J	0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.041		0.0020	0.00070	mg/L	1		6010C	Total/NA
Calcium	97.0		0.50	0.10	mg/L	1		6010C	Total/NA
Chromium	0.0014	J	0.0040	0.0010	mg/L	1		6010C	Total/NA
Copper	0.0051	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	0.16		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	46.1		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.0038	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0045	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	1.7	B	0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	3.9		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.011		0.010	0.0015	mg/L	1		6010C	Total/NA
Barium	0.040		0.0020	0.00070	mg/L	1		6010C	Dissolved
Cadmium	0.00051	J	0.0020	0.00050	mg/L	1		6010C	Dissolved
Calcium	99.2		0.50	0.10	mg/L	1		6010C	Dissolved
Copper	0.0035	J	0.010	0.0016	mg/L	1		6010C	Dissolved
Iron	0.024	J	0.050	0.019	mg/L	1		6010C	Dissolved
Magnesium	46.4		0.20	0.043	mg/L	1		6010C	Dissolved
Manganese	0.0020	J B	0.0030	0.00040	mg/L	1		6010C	Dissolved
Nickel	0.0022	J	0.010	0.0013	mg/L	1		6010C	Dissolved
Potassium	1.6		0.50	0.10	mg/L	1		6010C	Dissolved
Sodium	4.1		1.0	0.32	mg/L	1		6010C	Dissolved
Zinc	0.010		0.010	0.0015	mg/L	1		6010C	Dissolved

Client Sample ID: WG-11109668-041119-DST-NCR4S
Lab Sample ID: 480-151872-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	1.5		0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.053		0.0020	0.00070	mg/L	1		6010C	Total/NA
Calcium	144		0.50	0.10	mg/L	1		6010C	Total/NA
Chromium	0.0018	J	0.0040	0.0010	mg/L	1		6010C	Total/NA
Cobalt	0.00065	J	0.0040	0.00063	mg/L	1		6010C	Total/NA
Copper	0.0028	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	4.2		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	48.2		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.23	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0021	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	9.9	B	0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	25.6		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.074		0.010	0.0015	mg/L	1		6010C	Total/NA
Aluminum	0.070	J	0.20	0.060	mg/L	1		6010C	Dissolved
Barium	0.049		0.0020	0.00070	mg/L	1		6010C	Dissolved
Cadmium	0.00052	J	0.0020	0.00050	mg/L	1		6010C	Dissolved
Calcium	148		0.50	0.10	mg/L	1		6010C	Dissolved
Iron	0.46		0.050	0.019	mg/L	1		6010C	Dissolved
Magnesium	48.4		0.20	0.043	mg/L	1		6010C	Dissolved
Manganese	0.22	B	0.0030	0.00040	mg/L	1		6010C	Dissolved
Nickel	0.0018	J	0.010	0.0013	mg/L	1		6010C	Dissolved
Potassium	10.1		0.50	0.10	mg/L	1		6010C	Dissolved
Sodium	27.0		1.0	0.32	mg/L	1		6010C	Dissolved
Zinc	0.015		0.010	0.0015	mg/L	1		6010C	Dissolved

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Client Sample ID: WG-11109668-041119-DST-NCR5S
Lab Sample ID: 480-151872-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	0.078	J	0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.15		0.0020	0.00070	mg/L	1		6010C	Total/NA
Calcium	85.5		0.50	0.10	mg/L	1		6010C	Total/NA
Copper	0.0021	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	0.067		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	45.7		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.0019	J B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0015	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	0.40	J B	0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	8.1	F1	1.0	0.32	mg/L	1		6010C	Total/NA
Aluminum	0.13	J	0.20	0.060	mg/L	1		6010C	Dissolved
Barium	0.14		0.0020	0.00070	mg/L	1		6010C	Dissolved
Cadmium	0.00050	J	0.0020	0.00050	mg/L	1		6010C	Dissolved
Calcium	85.9		0.50	0.10	mg/L	1		6010C	Dissolved
Chromium	0.0013	J B	0.0040	0.0010	mg/L	1		6010C	Dissolved
Copper	0.0028	J	0.010	0.0016	mg/L	1		6010C	Dissolved
Iron	0.070		0.050	0.019	mg/L	1		6010C	Dissolved
Magnesium	42.9		0.20	0.043	mg/L	1		6010C	Dissolved
Manganese	0.0019	J B	0.0030	0.00040	mg/L	1		6010C	Dissolved
Potassium	0.32	J	0.50	0.10	mg/L	1		6010C	Dissolved
Sodium	8.1		1.0	0.32	mg/L	1		6010C	Dissolved
Zinc	0.0029	J	0.010	0.0015	mg/L	1		6010C	Dissolved

Client Sample ID: WG-11109668-041119-DST-NCR6S
Lab Sample ID: 480-151872-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.044		0.0020	0.00070	mg/L	1		6010C	Total/NA
Calcium	130		0.50	0.10	mg/L	1		6010C	Total/NA
Copper	0.0019	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	0.054		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	46.9		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.061	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0015	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	0.86	B	0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	7.0		1.0	0.32	mg/L	1		6010C	Total/NA
Aluminum	0.073	J	0.20	0.060	mg/L	1		6010C	Dissolved
Barium	0.033		0.0020	0.00070	mg/L	1		6010C	Dissolved
Cadmium	0.00063	J	0.0020	0.00050	mg/L	1		6010C	Dissolved
Calcium	143		0.50	0.10	mg/L	1		6010C	Dissolved
Copper	0.0020	J	0.010	0.0016	mg/L	1		6010C	Dissolved
Iron	0.11		0.050	0.019	mg/L	1		6010C	Dissolved
Magnesium	73.5		0.20	0.043	mg/L	1		6010C	Dissolved
Manganese	0.077	B	0.0030	0.00040	mg/L	1		6010C	Dissolved
Nickel	0.0033	J	0.010	0.0013	mg/L	1		6010C	Dissolved
Potassium	0.63		0.50	0.10	mg/L	1		6010C	Dissolved
Sodium	28.2		1.0	0.32	mg/L	1		6010C	Dissolved
Zinc	0.0048	J	0.010	0.0015	mg/L	1		6010C	Dissolved

Client Sample ID: WG-11109668-041119-DST-NCR13S
Lab Sample ID: 480-151872-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	0.062	J	0.20	0.060	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Buffalo

Detection Summary

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Client Sample ID: WG-11109668-041119-DST-NCR13S (Continued)

Lab Sample ID: 480-151872-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.042		0.0020	0.00070	mg/L	1		6010C	Total/NA
Calcium	132		0.50	0.10	mg/L	1		6010C	Total/NA
Iron	0.066		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	49.4		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.072	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0020	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	0.74	B	0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	8.1		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.0017	J	0.010	0.0015	mg/L	1		6010C	Total/NA
Barium	0.036		0.0020	0.00070	mg/L	1		6010C	Dissolved
Cadmium	0.00050	J	0.0020	0.00050	mg/L	1		6010C	Dissolved
Calcium	134		0.50	0.10	mg/L	1		6010C	Dissolved
Copper	0.0017	J	0.010	0.0016	mg/L	1		6010C	Dissolved
Iron	0.042	J	0.050	0.019	mg/L	1		6010C	Dissolved
Magnesium	55.7		0.20	0.043	mg/L	1		6010C	Dissolved
Manganese	0.067	B	0.0030	0.00040	mg/L	1		6010C	Dissolved
Nickel	0.0026	J	0.010	0.0013	mg/L	1		6010C	Dissolved
Potassium	0.70		0.50	0.10	mg/L	1		6010C	Dissolved
Sodium	14.7		1.0	0.32	mg/L	1		6010C	Dissolved
Zinc	0.0028	J	0.010	0.0015	mg/L	1		6010C	Dissolved

This Detection Summary does not include radiochemical test results.

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Client Sample ID: WG-11109668-041119-DST-NCR3S
Lab Sample ID: 480-151872-1
Date Collected: 04/11/19 09:00
Matrix: Water
Date Received: 04/11/19 17:25

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.10	J	0.20	0.060	mg/L		04/16/19 07:55	04/18/19 11:23	1
Antimony	ND		0.020	0.0068	mg/L		04/16/19 07:55	04/18/19 11:23	1
Arsenic	ND		0.010	0.0056	mg/L		04/16/19 07:55	04/18/19 11:23	1
Barium	0.041		0.0020	0.00070	mg/L		04/16/19 07:55	04/18/19 11:23	1
Beryllium	ND		0.0020	0.00030	mg/L		04/16/19 07:55	04/18/19 11:23	1
Cadmium	ND		0.0010	0.00050	mg/L		04/16/19 07:55	04/18/19 11:23	1
Calcium	97.0		0.50	0.10	mg/L		04/16/19 07:55	04/18/19 11:23	1
Chromium	0.0014	J	0.0040	0.0010	mg/L		04/16/19 07:55	04/18/19 11:23	1
Cobalt	ND		0.0040	0.00063	mg/L		04/16/19 07:55	04/18/19 11:23	1
Copper	0.0051	J	0.010	0.0016	mg/L		04/16/19 07:55	04/18/19 11:23	1
Iron	0.16		0.050	0.019	mg/L		04/16/19 07:55	04/18/19 11:23	1
Lead	ND		0.0050	0.0030	mg/L		04/16/19 07:55	04/18/19 11:23	1
Magnesium	46.1		0.20	0.043	mg/L		04/16/19 07:55	04/18/19 11:23	1
Manganese	0.0038	B	0.0030	0.00040	mg/L		04/16/19 07:55	04/18/19 11:23	1
Nickel	0.0045	J	0.010	0.0013	mg/L		04/16/19 07:55	04/18/19 11:23	1
Potassium	1.7	B	0.50	0.10	mg/L		04/16/19 07:55	04/18/19 11:23	1
Selenium	ND		0.015	0.0087	mg/L		04/16/19 07:55	04/18/19 11:23	1
Silver	ND		0.0030	0.0017	mg/L		04/16/19 07:55	04/18/19 11:23	1
Sodium	3.9		1.0	0.32	mg/L		04/16/19 07:55	04/18/19 11:23	1
Thallium	ND		0.020	0.010	mg/L		04/16/19 07:55	04/18/19 11:23	1
Vanadium	ND		0.0050	0.0015	mg/L		04/16/19 07:55	04/18/19 11:23	1
Zinc	0.011		0.010	0.0015	mg/L		04/16/19 07:55	04/18/19 11:23	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		04/15/19 15:53	04/18/19 12:47	1
Antimony	ND		0.020	0.0068	mg/L		04/15/19 15:53	04/18/19 12:47	1
Arsenic	ND		0.015	0.0056	mg/L		04/15/19 15:53	04/18/19 12:47	1
Barium	0.040		0.0020	0.00070	mg/L		04/15/19 15:53	04/18/19 12:47	1
Beryllium	ND		0.0020	0.00030	mg/L		04/15/19 15:53	04/18/19 12:47	1
Cadmium	0.00051	J	0.0020	0.00050	mg/L		04/15/19 15:53	04/18/19 12:47	1
Calcium	99.2		0.50	0.10	mg/L		04/15/19 15:53	04/18/19 12:47	1
Chromium	ND		0.0040	0.0010	mg/L		04/15/19 15:53	04/18/19 12:47	1
Cobalt	ND		0.0040	0.00063	mg/L		04/15/19 15:53	04/18/19 12:47	1
Copper	0.0035	J	0.010	0.0016	mg/L		04/15/19 15:53	04/18/19 12:47	1
Iron	0.024	J	0.050	0.019	mg/L		04/15/19 15:53	04/18/19 12:47	1
Lead	ND		0.010	0.0030	mg/L		04/15/19 15:53	04/18/19 12:47	1
Magnesium	46.4		0.20	0.043	mg/L		04/15/19 15:53	04/18/19 12:47	1
Manganese	0.0020	J B	0.0030	0.00040	mg/L		04/15/19 15:53	04/18/19 12:47	1
Nickel	0.0022	J	0.010	0.0013	mg/L		04/15/19 15:53	04/18/19 12:47	1
Potassium	1.6		0.50	0.10	mg/L		04/15/19 15:53	04/18/19 12:47	1
Selenium	ND		0.025	0.0087	mg/L		04/15/19 15:53	04/18/19 12:47	1
Silver	ND		0.0060	0.0017	mg/L		04/15/19 15:53	04/18/19 12:47	1
Sodium	4.1		1.0	0.32	mg/L		04/15/19 15:53	04/18/19 12:47	1
Thallium	ND		0.020	0.010	mg/L		04/15/19 15:53	04/18/19 12:47	1
Vanadium	ND		0.0050	0.0015	mg/L		04/15/19 15:53	04/18/19 12:47	1
Zinc	0.010		0.010	0.0015	mg/L		04/15/19 15:53	04/18/19 12:47	1

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Client Sample ID: WG-11109668-041119-DST-NCR4S
Lab Sample ID: 480-151872-2
Date Collected: 04/11/19 09:10
Matrix: Water
Date Received: 04/11/19 17:25

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1.5		0.20	0.060	mg/L		04/16/19 07:55	04/18/19 11:27	1
Antimony	ND		0.020	0.0068	mg/L		04/16/19 07:55	04/18/19 11:27	1
Arsenic	ND		0.010	0.0056	mg/L		04/16/19 07:55	04/18/19 11:27	1
Barium	0.053		0.0020	0.00070	mg/L		04/16/19 07:55	04/18/19 11:27	1
Beryllium	ND		0.0020	0.00030	mg/L		04/16/19 07:55	04/18/19 11:27	1
Cadmium	ND		0.0010	0.00050	mg/L		04/16/19 07:55	04/18/19 11:27	1
Calcium	144		0.50	0.10	mg/L		04/16/19 07:55	04/18/19 11:27	1
Chromium	0.0018	J	0.0040	0.0010	mg/L		04/16/19 07:55	04/18/19 11:27	1
Cobalt	0.00065	J	0.0040	0.00063	mg/L		04/16/19 07:55	04/18/19 11:27	1
Copper	0.0028	J	0.010	0.0016	mg/L		04/16/19 07:55	04/18/19 11:27	1
Iron	4.2		0.050	0.019	mg/L		04/16/19 07:55	04/18/19 11:27	1
Lead	ND		0.0050	0.0030	mg/L		04/16/19 07:55	04/18/19 11:27	1
Magnesium	48.2		0.20	0.043	mg/L		04/16/19 07:55	04/18/19 11:27	1
Manganese	0.23	B	0.0030	0.00040	mg/L		04/16/19 07:55	04/18/19 11:27	1
Nickel	0.0021	J	0.010	0.0013	mg/L		04/16/19 07:55	04/18/19 11:27	1
Potassium	9.9	B	0.50	0.10	mg/L		04/16/19 07:55	04/18/19 11:27	1
Selenium	ND		0.015	0.0087	mg/L		04/16/19 07:55	04/18/19 11:27	1
Silver	ND		0.0030	0.0017	mg/L		04/16/19 07:55	04/18/19 11:27	1
Sodium	25.6		1.0	0.32	mg/L		04/16/19 07:55	04/18/19 11:27	1
Thallium	ND		0.020	0.010	mg/L		04/16/19 07:55	04/18/19 11:27	1
Vanadium	ND		0.0050	0.0015	mg/L		04/16/19 07:55	04/18/19 11:27	1
Zinc	0.074		0.010	0.0015	mg/L		04/16/19 07:55	04/18/19 11:27	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.070	J	0.20	0.060	mg/L		04/15/19 15:53	04/18/19 12:58	1
Antimony	ND		0.020	0.0068	mg/L		04/15/19 15:53	04/18/19 12:58	1
Arsenic	ND		0.015	0.0056	mg/L		04/15/19 15:53	04/18/19 12:58	1
Barium	0.049		0.0020	0.00070	mg/L		04/15/19 15:53	04/18/19 12:58	1
Beryllium	ND		0.0020	0.00030	mg/L		04/15/19 15:53	04/18/19 12:58	1
Cadmium	0.00052	J	0.0020	0.00050	mg/L		04/15/19 15:53	04/18/19 12:58	1
Calcium	148		0.50	0.10	mg/L		04/15/19 15:53	04/18/19 12:58	1
Chromium	ND		0.0040	0.0010	mg/L		04/15/19 15:53	04/18/19 12:58	1
Cobalt	ND		0.0040	0.00063	mg/L		04/15/19 15:53	04/18/19 12:58	1
Copper	ND		0.010	0.0016	mg/L		04/15/19 15:53	04/18/19 12:58	1
Iron	0.46		0.050	0.019	mg/L		04/15/19 15:53	04/18/19 12:58	1
Lead	ND		0.010	0.0030	mg/L		04/15/19 15:53	04/18/19 12:58	1
Magnesium	48.4		0.20	0.043	mg/L		04/15/19 15:53	04/18/19 12:58	1
Manganese	0.22	B	0.0030	0.00040	mg/L		04/15/19 15:53	04/18/19 12:58	1
Nickel	0.0018	J	0.010	0.0013	mg/L		04/15/19 15:53	04/18/19 12:58	1
Potassium	10.1		0.50	0.10	mg/L		04/15/19 15:53	04/18/19 12:58	1
Selenium	ND		0.025	0.0087	mg/L		04/15/19 15:53	04/18/19 12:58	1
Silver	ND		0.0060	0.0017	mg/L		04/15/19 15:53	04/18/19 12:58	1
Sodium	27.0		1.0	0.32	mg/L		04/15/19 15:53	04/18/19 12:58	1
Thallium	ND		0.020	0.010	mg/L		04/15/19 15:53	04/18/19 12:58	1
Vanadium	ND		0.0050	0.0015	mg/L		04/15/19 15:53	04/18/19 12:58	1
Zinc	0.015		0.010	0.0015	mg/L		04/15/19 15:53	04/18/19 12:58	1

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Client Sample ID: WG-11109668-041119-DST-NCR5S
Lab Sample ID: 480-151872-3
Date Collected: 04/11/19 08:40
Matrix: Water
Date Received: 04/11/19 17:25

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.078**	**J**	0.20	0.060	mg/L		04/16/19 07:55	04/18/19 11:31	1
Antimony	ND		0.020	0.0068	mg/L		04/16/19 07:55	04/18/19 11:31	1
Arsenic	ND		0.010	0.0056	mg/L		04/16/19 07:55	04/18/19 11:31	1
Barium	**0.15**		0.0020	0.00070	mg/L		04/16/19 07:55	04/18/19 11:31	1
Beryllium	ND		0.0020	0.00030	mg/L		04/16/19 07:55	04/18/19 11:31	1
Cadmium	ND		0.0010	0.00050	mg/L		04/16/19 07:55	04/18/19 11:31	1
Calcium	**85.5**		0.50	0.10	mg/L		04/16/19 07:55	04/18/19 11:31	1
Chromium	ND		0.0040	0.0010	mg/L		04/16/19 07:55	04/18/19 11:31	1
Cobalt	ND		0.0040	0.00063	mg/L		04/16/19 07:55	04/18/19 11:31	1
Copper	**0.0021**	**J**	0.010	0.0016	mg/L		04/16/19 07:55	04/18/19 11:31	1
Iron	**0.067**		0.050	0.019	mg/L		04/16/19 07:55	04/18/19 11:31	1
Lead	ND		0.0050	0.0030	mg/L		04/16/19 07:55	04/18/19 11:31	1
Magnesium	**45.7**		0.20	0.043	mg/L		04/16/19 07:55	04/18/19 11:31	1
Manganese	**0.0019**	**J B**	0.0030	0.00040	mg/L		04/16/19 07:55	04/18/19 11:31	1
Nickel	**0.0015**	**J**	0.010	0.0013	mg/L		04/16/19 07:55	04/18/19 11:31	1
Potassium	**0.40**	**J B**	0.50	0.10	mg/L		04/16/19 07:55	04/18/19 11:31	1
Selenium	ND		0.015	0.0087	mg/L		04/16/19 07:55	04/18/19 11:31	1
Silver	ND		0.0030	0.0017	mg/L		04/16/19 07:55	04/18/19 11:31	1
Sodium	**8.1**	**F1**	1.0	0.32	mg/L		04/16/19 07:55	04/18/19 11:31	1
Thallium	ND		0.020	0.010	mg/L		04/16/19 07:55	04/18/19 11:31	1
Vanadium	ND		0.0050	0.0015	mg/L		04/16/19 07:55	04/18/19 11:31	1
Zinc	ND		0.010	0.0015	mg/L		04/16/19 07:55	04/18/19 11:31	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.13**	**J**	0.20	0.060	mg/L		04/15/19 15:53	04/18/19 13:02	1
Antimony	ND		0.020	0.0068	mg/L		04/15/19 15:53	04/18/19 13:02	1
Arsenic	ND		0.015	0.0056	mg/L		04/15/19 15:53	04/18/19 13:02	1
Barium	**0.14**		0.0020	0.00070	mg/L		04/15/19 15:53	04/18/19 13:02	1
Beryllium	ND		0.0020	0.00030	mg/L		04/15/19 15:53	04/18/19 13:02	1
Cadmium	**0.00050**	**J**	0.0020	0.00050	mg/L		04/15/19 15:53	04/18/19 13:02	1
Calcium	**85.9**		0.50	0.10	mg/L		04/15/19 15:53	04/18/19 13:02	1
Chromium	**0.0013**	**J B**	0.0040	0.0010	mg/L		04/15/19 15:53	04/18/19 13:02	1
Cobalt	ND		0.0040	0.00063	mg/L		04/15/19 15:53	04/18/19 13:02	1
Copper	**0.0028**	**J**	0.010	0.0016	mg/L		04/15/19 15:53	04/18/19 13:02	1
Iron	**0.070**		0.050	0.019	mg/L		04/15/19 15:53	04/18/19 13:02	1
Lead	ND		0.010	0.0030	mg/L		04/15/19 15:53	04/18/19 13:02	1
Magnesium	**42.9**		0.20	0.043	mg/L		04/15/19 15:53	04/18/19 13:02	1
Manganese	**0.0019**	**J B**	0.0030	0.00040	mg/L		04/15/19 15:53	04/18/19 13:02	1
Nickel	ND		0.010	0.0013	mg/L		04/15/19 15:53	04/18/19 13:02	1
Potassium	**0.32**	**J**	0.50	0.10	mg/L		04/15/19 15:53	04/18/19 13:02	1
Selenium	ND		0.025	0.0087	mg/L		04/15/19 15:53	04/18/19 13:02	1
Silver	ND		0.0060	0.0017	mg/L		04/15/19 15:53	04/18/19 13:02	1
Sodium	**8.1**		1.0	0.32	mg/L		04/15/19 15:53	04/18/19 13:02	1
Thallium	ND		0.020	0.010	mg/L		04/15/19 15:53	04/18/19 13:02	1
Vanadium	ND		0.0050	0.0015	mg/L		04/15/19 15:53	04/18/19 13:02	1
Zinc	**0.0029**	**J**	0.010	0.0015	mg/L		04/15/19 15:53	04/18/19 13:02	1

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Client Sample ID: WG-11109668-041119-DST-NCR6S
Lab Sample ID: 480-151872-4
Date Collected: 04/11/19 08:15
Matrix: Water
Date Received: 04/11/19 17:25

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		04/16/19 07:55	04/18/19 12:00	1
Antimony	ND		0.020	0.0068	mg/L		04/16/19 07:55	04/18/19 12:00	1
Arsenic	ND		0.010	0.0056	mg/L		04/16/19 07:55	04/18/19 12:00	1
Barium	**0.044**		0.0020	0.00070	mg/L		04/16/19 07:55	04/18/19 12:00	1
Beryllium	ND		0.0020	0.00030	mg/L		04/16/19 07:55	04/18/19 12:00	1
Cadmium	ND		0.0010	0.00050	mg/L		04/16/19 07:55	04/18/19 12:00	1
Calcium	**130**		0.50	0.10	mg/L		04/16/19 07:55	04/18/19 12:00	1
Chromium	ND		0.0040	0.0010	mg/L		04/16/19 07:55	04/18/19 12:00	1
Cobalt	ND		0.0040	0.00063	mg/L		04/16/19 07:55	04/18/19 12:00	1
Copper	**0.0019**	**J**	0.010	0.0016	mg/L		04/16/19 07:55	04/18/19 12:00	1
Iron	**0.054**		0.050	0.019	mg/L		04/16/19 07:55	04/18/19 12:00	1
Lead	ND		0.0050	0.0030	mg/L		04/16/19 07:55	04/18/19 12:00	1
Magnesium	**46.9**		0.20	0.043	mg/L		04/16/19 07:55	04/18/19 12:00	1
Manganese	**0.061**	**B**	0.0030	0.00040	mg/L		04/16/19 07:55	04/18/19 12:00	1
Nickel	**0.0015**	**J**	0.010	0.0013	mg/L		04/16/19 07:55	04/18/19 12:00	1
Potassium	**0.86**	**B**	0.50	0.10	mg/L		04/16/19 07:55	04/19/19 09:52	1
Selenium	ND		0.015	0.0087	mg/L		04/16/19 07:55	04/18/19 12:00	1
Silver	ND		0.0030	0.0017	mg/L		04/16/19 07:55	04/18/19 12:00	1
Sodium	**7.0**		1.0	0.32	mg/L		04/16/19 07:55	04/18/19 12:00	1
Thallium	ND		0.020	0.010	mg/L		04/16/19 07:55	04/18/19 12:00	1
Vanadium	ND		0.0050	0.0015	mg/L		04/16/19 07:55	04/18/19 12:00	1
Zinc	ND		0.010	0.0015	mg/L		04/16/19 07:55	04/18/19 12:00	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.073**	**J**	0.20	0.060	mg/L		04/15/19 15:53	04/18/19 13:23	1
Antimony	ND		0.020	0.0068	mg/L		04/15/19 15:53	04/18/19 13:23	1
Arsenic	ND		0.015	0.0056	mg/L		04/15/19 15:53	04/18/19 13:23	1
Barium	**0.033**		0.0020	0.00070	mg/L		04/15/19 15:53	04/18/19 13:23	1
Beryllium	ND		0.0020	0.00030	mg/L		04/15/19 15:53	04/18/19 13:23	1
Cadmium	**0.00063**	**J**	0.0020	0.00050	mg/L		04/15/19 15:53	04/18/19 13:23	1
Calcium	**143**		0.50	0.10	mg/L		04/15/19 15:53	04/18/19 13:23	1
Chromium	ND		0.0040	0.0010	mg/L		04/15/19 15:53	04/18/19 13:23	1
Cobalt	ND		0.0040	0.00063	mg/L		04/15/19 15:53	04/18/19 13:23	1
Copper	**0.0020**	**J**	0.010	0.0016	mg/L		04/15/19 15:53	04/18/19 13:23	1
Iron	**0.11**		0.050	0.019	mg/L		04/15/19 15:53	04/18/19 13:23	1
Lead	ND		0.010	0.0030	mg/L		04/15/19 15:53	04/18/19 13:23	1
Magnesium	**73.5**		0.20	0.043	mg/L		04/15/19 15:53	04/18/19 13:23	1
Manganese	**0.077**	**B**	0.0030	0.00040	mg/L		04/15/19 15:53	04/18/19 13:23	1
Nickel	**0.0033**	**J**	0.010	0.0013	mg/L		04/15/19 15:53	04/18/19 13:23	1
Potassium	**0.63**		0.50	0.10	mg/L		04/15/19 15:53	04/18/19 13:23	1
Selenium	ND		0.025	0.0087	mg/L		04/15/19 15:53	04/18/19 13:23	1
Silver	ND		0.0060	0.0017	mg/L		04/15/19 15:53	04/18/19 13:23	1
Sodium	**28.2**		1.0	0.32	mg/L		04/15/19 15:53	04/18/19 13:23	1
Thallium	ND		0.020	0.010	mg/L		04/15/19 15:53	04/18/19 13:23	1
Vanadium	ND		0.0050	0.0015	mg/L		04/15/19 15:53	04/18/19 13:23	1
Zinc	**0.0048**	**J**	0.010	0.0015	mg/L		04/15/19 15:53	04/18/19 13:23	1

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Client Sample ID: WG-11109668-041119-DST-NCR13S
Lab Sample ID: 480-151872-5
Date Collected: 04/11/19 08:15
Matrix: Water
Date Received: 04/11/19 17:25

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.062**	**J**	0.20	0.060	mg/L		04/16/19 07:55	04/18/19 12:04	1
Antimony	ND		0.020	0.0068	mg/L		04/16/19 07:55	04/18/19 12:04	1
Arsenic	ND		0.010	0.0056	mg/L		04/16/19 07:55	04/18/19 12:04	1
Barium	**0.042**		0.0020	0.00070	mg/L		04/16/19 07:55	04/18/19 12:04	1
Beryllium	ND		0.0020	0.00030	mg/L		04/16/19 07:55	04/18/19 12:04	1
Cadmium	ND		0.0010	0.00050	mg/L		04/16/19 07:55	04/18/19 12:04	1
Calcium	**132**		0.50	0.10	mg/L		04/16/19 07:55	04/18/19 12:04	1
Chromium	ND		0.0040	0.0010	mg/L		04/16/19 07:55	04/18/19 12:04	1
Cobalt	ND		0.0040	0.00063	mg/L		04/16/19 07:55	04/18/19 12:04	1
Copper	ND		0.010	0.0016	mg/L		04/16/19 07:55	04/18/19 12:04	1
Iron	**0.066**		0.050	0.019	mg/L		04/16/19 07:55	04/18/19 12:04	1
Lead	ND		0.0050	0.0030	mg/L		04/16/19 07:55	04/18/19 12:04	1
Magnesium	**49.4**		0.20	0.043	mg/L		04/16/19 07:55	04/18/19 12:04	1
Manganese	**0.072**	**B**	0.0030	0.00040	mg/L		04/16/19 07:55	04/18/19 12:04	1
Nickel	**0.0020**	**J**	0.010	0.0013	mg/L		04/16/19 07:55	04/18/19 12:04	1
Potassium	**0.74**	**B**	0.50	0.10	mg/L		04/16/19 07:55	04/19/19 09:56	1
Selenium	ND		0.015	0.0087	mg/L		04/16/19 07:55	04/18/19 12:04	1
Silver	ND		0.0030	0.0017	mg/L		04/16/19 07:55	04/18/19 12:04	1
Sodium	**8.1**		1.0	0.32	mg/L		04/16/19 07:55	04/18/19 12:04	1
Thallium	ND		0.020	0.010	mg/L		04/16/19 07:55	04/18/19 12:04	1
Vanadium	ND		0.0050	0.0015	mg/L		04/16/19 07:55	04/18/19 12:04	1
Zinc	**0.0017**	**J**	0.010	0.0015	mg/L		04/16/19 07:55	04/18/19 12:04	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		04/15/19 15:53	04/18/19 13:27	1
Antimony	ND		0.020	0.0068	mg/L		04/15/19 15:53	04/18/19 13:27	1
Arsenic	ND		0.015	0.0056	mg/L		04/15/19 15:53	04/18/19 13:27	1
Barium	**0.036**		0.0020	0.00070	mg/L		04/15/19 15:53	04/18/19 13:27	1
Beryllium	ND		0.0020	0.00030	mg/L		04/15/19 15:53	04/18/19 13:27	1
Cadmium	**0.00050**	**J**	0.0020	0.00050	mg/L		04/15/19 15:53	04/18/19 13:27	1
Calcium	**134**		0.50	0.10	mg/L		04/15/19 15:53	04/18/19 13:27	1
Chromium	ND		0.0040	0.0010	mg/L		04/15/19 15:53	04/18/19 13:27	1
Cobalt	ND		0.0040	0.00063	mg/L		04/15/19 15:53	04/18/19 13:27	1
Copper	**0.0017**	**J**	0.010	0.0016	mg/L		04/15/19 15:53	04/18/19 13:27	1
Iron	**0.042**	**J**	0.050	0.019	mg/L		04/15/19 15:53	04/18/19 13:27	1
Lead	ND		0.010	0.0030	mg/L		04/15/19 15:53	04/18/19 13:27	1
Magnesium	**55.7**		0.20	0.043	mg/L		04/15/19 15:53	04/18/19 13:27	1
Manganese	**0.067**	**B**	0.0030	0.00040	mg/L		04/15/19 15:53	04/18/19 13:27	1
Nickel	**0.0026**	**J**	0.010	0.0013	mg/L		04/15/19 15:53	04/18/19 13:27	1
Potassium	**0.70**		0.50	0.10	mg/L		04/15/19 15:53	04/18/19 13:27	1
Selenium	ND		0.025	0.0087	mg/L		04/15/19 15:53	04/18/19 13:27	1
Silver	ND		0.0060	0.0017	mg/L		04/15/19 15:53	04/18/19 13:27	1
Sodium	**14.7**		1.0	0.32	mg/L		04/15/19 15:53	04/18/19 13:27	1
Thallium	ND		0.020	0.010	mg/L		04/15/19 15:53	04/18/19 13:27	1
Vanadium	ND		0.0050	0.0015	mg/L		04/15/19 15:53	04/18/19 13:27	1
Zinc	**0.0028**	**J**	0.010	0.0015	mg/L		04/15/19 15:53	04/18/19 13:27	1

Method: 6010C - Metals (ICP)

Lab Sample ID: 480-151872-3 MS
Client Sample ID: WG-11109668-041119-DST-NCR5S
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 468723
Prep Batch: 468040

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	0.078	J	10.0	9.76		mg/L		97	75 - 125
Antimony	ND		0.200	0.198		mg/L		99	75 - 125
Arsenic	ND		0.200	0.199		mg/L		100	75 - 125
Barium	0.15		0.200	0.334		mg/L		91	75 - 125
Beryllium	ND		0.200	0.203		mg/L		102	75 - 125
Cadmium	ND		0.200	0.196		mg/L		98	75 - 125
Calcium	85.5		10.0	116.4	4	mg/L		309	75 - 125
Chromium	ND		0.200	0.191		mg/L		96	75 - 125
Cobalt	ND		0.200	0.189		mg/L		95	75 - 125
Copper	0.0021	J	0.200	0.198		mg/L		98	75 - 125
Iron	0.067		10.0	9.47		mg/L		94	75 - 125
Lead	ND		0.200	0.195		mg/L		97	75 - 125
Magnesium	45.7		10.0	68.35	4	mg/L		226	75 - 125
Manganese	0.0019	J B	0.200	0.185		mg/L		91	75 - 125
Nickel	0.0015	J	0.200	0.197		mg/L		98	75 - 125
Potassium	0.40	J B	10.0	10.78		mg/L		104	75 - 125
Selenium	ND		0.200	0.201		mg/L		100	75 - 125
Silver	ND		0.0500	0.0493		mg/L		99	75 - 125
Sodium	8.1	F1	10.0	31.49	F1	mg/L		233	75 - 125
Thallium	ND		0.200	0.198		mg/L		99	75 - 125
Vanadium	ND		0.200	0.194		mg/L		97	75 - 125
Zinc	ND		0.200	0.190		mg/L		95	75 - 125

Lab Sample ID: 480-151872-3 MSD
Client Sample ID: WG-11109668-041119-DST-NCR5S
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 468723
Prep Batch: 468040

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	0.078	J	10.0	9.72		mg/L		96	75 - 125	0	20
Antimony	ND		0.200	0.199		mg/L		100	75 - 125	1	20
Arsenic	ND		0.200	0.201		mg/L		100	75 - 125	1	20
Barium	0.15		0.200	0.336		mg/L		92	75 - 125	1	20
Beryllium	ND		0.200	0.204		mg/L		102	75 - 125	1	20
Cadmium	ND		0.200	0.198		mg/L		99	75 - 125	1	20
Calcium	85.5		10.0	118.3	4	mg/L		328	75 - 125	2	20
Chromium	ND		0.200	0.192		mg/L		96	75 - 125	0	20
Cobalt	ND		0.200	0.189		mg/L		95	75 - 125	0	20
Copper	0.0021	J	0.200	0.199		mg/L		98	75 - 125	1	20
Iron	0.067		10.0	9.44		mg/L		94	75 - 125	0	20
Lead	ND		0.200	0.196		mg/L		98	75 - 125	1	20
Magnesium	45.7		10.0	68.68	4	mg/L		230	75 - 125	0	20
Manganese	0.0019	J B	0.200	0.184		mg/L		91	75 - 125	0	20
Nickel	0.0015	J	0.200	0.198		mg/L		98	75 - 125	0	20
Potassium	0.40	J B	10.0	10.90	^	mg/L		105	75 - 125	1	20
Selenium	ND		0.200	0.201		mg/L		100	75 - 125	0	20
Silver	ND		0.0500	0.0493		mg/L		99	75 - 125	0	20
Sodium	8.1	F1	10.0	31.68	F1	mg/L		235	75 - 125	1	20
Thallium	ND		0.200	0.201		mg/L		100	75 - 125	1	20
Vanadium	ND		0.200	0.193		mg/L		97	75 - 125	0	20

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

Lab Sample ID: 480-151872-3 MSD
Client Sample ID: WG-11109668-041119-DST-NCR5S
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 468723
Prep Batch: 468040

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	ND		0.200	0.189		mg/L		95	75 - 125	0	20

Lab Sample ID: MB 480-467983/1-A
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total Recoverable
Analysis Batch: 468732
Prep Batch: 467983

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		04/15/19 15:53	04/18/19 12:40	1
Antimony	ND		0.020	0.0068	mg/L		04/15/19 15:53	04/18/19 12:40	1
Arsenic	ND		0.015	0.0056	mg/L		04/15/19 15:53	04/18/19 12:40	1
Barium	ND		0.0020	0.00070	mg/L		04/15/19 15:53	04/18/19 12:40	1
Beryllium	ND		0.0020	0.00030	mg/L		04/15/19 15:53	04/18/19 12:40	1
Cadmium	ND		0.0020	0.00050	mg/L		04/15/19 15:53	04/18/19 12:40	1
Calcium	ND		0.50	0.10	mg/L		04/15/19 15:53	04/18/19 12:40	1
Chromium	0.00221	J	0.0040	0.0010	mg/L		04/15/19 15:53	04/18/19 12:40	1
Cobalt	ND		0.0040	0.00063	mg/L		04/15/19 15:53	04/18/19 12:40	1
Copper	ND		0.010	0.0016	mg/L		04/15/19 15:53	04/18/19 12:40	1
Iron	ND		0.050	0.019	mg/L		04/15/19 15:53	04/18/19 12:40	1
Lead	ND		0.010	0.0030	mg/L		04/15/19 15:53	04/18/19 12:40	1
Magnesium	ND		0.20	0.043	mg/L		04/15/19 15:53	04/18/19 12:40	1
Manganese	0.000600	J	0.0030	0.00040	mg/L		04/15/19 15:53	04/18/19 12:40	1
Nickel	ND		0.010	0.0013	mg/L		04/15/19 15:53	04/18/19 12:40	1
Potassium	ND		0.50	0.10	mg/L		04/15/19 15:53	04/18/19 12:40	1
Selenium	ND		0.025	0.0087	mg/L		04/15/19 15:53	04/18/19 12:40	1
Silver	ND		0.0060	0.0017	mg/L		04/15/19 15:53	04/18/19 12:40	1
Sodium	ND		1.0	0.32	mg/L		04/15/19 15:53	04/18/19 12:40	1
Thallium	ND		0.020	0.010	mg/L		04/15/19 15:53	04/18/19 12:40	1
Vanadium	ND		0.0050	0.0015	mg/L		04/15/19 15:53	04/18/19 12:40	1
Zinc	ND		0.010	0.0015	mg/L		04/15/19 15:53	04/18/19 12:40	1

Lab Sample ID: LCS 480-467983/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total Recoverable
Analysis Batch: 468732
Prep Batch: 467983

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	10.0	9.95		mg/L		99	80 - 120
Antimony	0.200	0.198		mg/L		99	80 - 120
Arsenic	0.200	0.196		mg/L		98	80 - 120
Barium	0.200	0.200		mg/L		100	80 - 120
Beryllium	0.200	0.214		mg/L		107	80 - 120
Cadmium	0.200	0.194		mg/L		97	80 - 120
Calcium	10.0	10.02		mg/L		100	80 - 120
Chromium	0.200	0.203		mg/L		101	80 - 120
Cobalt	0.200	0.187		mg/L		93	80 - 120
Copper	0.200	0.196		mg/L		98	80 - 120
Iron	10.0	9.90		mg/L		99	80 - 120
Lead	0.200	0.191		mg/L		95	80 - 120
Magnesium	10.0	9.65		mg/L		96	80 - 120
Manganese	0.200	0.190		mg/L		95	80 - 120

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

Lab Sample ID: LCS 480-467983/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total Recoverable
Analysis Batch: 468732
Prep Batch: 467983

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	0.200	0.193		mg/L		97	80 - 120
Potassium	10.0	9.78		mg/L		98	80 - 120
Selenium	0.200	0.204		mg/L		102	80 - 120
Silver	0.0500	0.0493		mg/L		99	80 - 120
Sodium	10.0	9.83		mg/L		98	80 - 120
Thallium	0.200	0.200		mg/L		100	80 - 120
Vanadium	0.200	0.199		mg/L		100	80 - 120
Zinc	0.200	0.201		mg/L		101	80 - 120

Lab Sample ID: 480-151872-3 MS
Client Sample ID: WG-11109668-041119-DST-NCR5S
Matrix: Water
Prep Type: Dissolved
Analysis Batch: 468732
Prep Batch: 467983

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	0.13	J	10.0	9.72		mg/L		96	75 - 125
Antimony	ND		0.200	0.194		mg/L		97	75 - 125
Arsenic	ND		0.200	0.192		mg/L		96	75 - 125
Barium	0.14		0.200	0.333		mg/L		95	75 - 125
Beryllium	ND		0.200	0.209		mg/L		104	75 - 125
Cadmium	0.00050	J	0.200	0.190		mg/L		95	75 - 125
Calcium	85.9		10.0	94.11	4	mg/L		83	75 - 125
Chromium	0.0013	J B	0.200	0.195		mg/L		97	75 - 125
Cobalt	ND		0.200	0.183		mg/L		92	75 - 125
Copper	0.0028	J	0.200	0.194		mg/L		95	75 - 125
Iron	0.070		10.0	9.44		mg/L		94	75 - 125
Lead	ND		0.200	0.188		mg/L		94	75 - 125
Magnesium	42.9		10.0	53.85	4	mg/L		110	75 - 125
Manganese	0.0019	J B	0.200	0.182		mg/L		90	75 - 125
Nickel	ND		0.200	0.189		mg/L		95	75 - 125
Potassium	0.32	J	10.0	10.08		mg/L		98	75 - 125
Selenium	ND		0.200	0.201		mg/L		101	75 - 125
Silver	ND		0.0500	0.0466		mg/L		93	75 - 125
Sodium	8.1		10.0	18.60		mg/L		105	75 - 125
Thallium	ND		0.200	0.195		mg/L		98	75 - 125
Vanadium	ND		0.200	0.192		mg/L		96	75 - 125
Zinc	0.0029	J	0.200	0.193		mg/L		95	75 - 125

Lab Sample ID: 480-151872-3 MSD
Client Sample ID: WG-11109668-041119-DST-NCR5S
Matrix: Water
Prep Type: Dissolved
Analysis Batch: 468732
Prep Batch: 467983

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	0.13	J	10.0	10.52		mg/L		104	75 - 125	8	20
Antimony	ND		0.200	0.206		mg/L		103	75 - 125	6	20
Arsenic	ND		0.200	0.207		mg/L		103	75 - 125	7	20
Barium	0.14		0.200	0.358		mg/L		107	75 - 125	7	20
Beryllium	ND		0.200	0.222		mg/L		111	75 - 125	6	20
Cadmium	0.00050	J	0.200	0.202		mg/L		101	75 - 125	6	20
Calcium	85.9		10.0	101.5	4	mg/L		156	75 - 125	8	20

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

Lab Sample ID: 480-151872-3 MSD
Client Sample ID: WG-11109668-041119-DST-NCR5S
Matrix: Water
Prep Type: Dissolved
Analysis Batch: 468732
Prep Batch: 467983

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	0.0013	J B	0.200	0.208		mg/L		103	75 - 125	6	20
Cobalt	ND		0.200	0.195		mg/L		98	75 - 125	6	20
Copper	0.0028	J	0.200	0.206		mg/L		102	75 - 125	6	20
Iron	0.070		10.0	10.14		mg/L		101	75 - 125	7	20
Lead	ND		0.200	0.202		mg/L		101	75 - 125	7	20
Magnesium	42.9		10.0	56.62	4	mg/L		138	75 - 125	5	20
Manganese	0.0019	J B	0.200	0.194		mg/L		96	75 - 125	7	20
Nickel	ND		0.200	0.202		mg/L		101	75 - 125	7	20
Potassium	0.32	J	10.0	10.74		mg/L		104	75 - 125	6	20
Selenium	ND		0.200	0.215		mg/L		108	75 - 125	7	20
Silver	ND		0.0500	0.0526		mg/L		105	75 - 125	12	20
Sodium	8.1		10.0	19.29		mg/L		112	75 - 125	4	20
Thallium	ND		0.200	0.208		mg/L		104	75 - 125	6	20
Vanadium	ND		0.200	0.206		mg/L		103	75 - 125	7	20
Zinc	0.0029	J	0.200	0.205		mg/L		101	75 - 125	6	20

Metals

Prep Batch: 467983

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151872-1	WG-11109668-041119-DST-NCR3S	Dissolved	Water	3005A	
480-151872-2	WG-11109668-041119-DST-NCR4S	Dissolved	Water	3005A	
480-151872-3	WG-11109668-041119-DST-NCR5S	Dissolved	Water	3005A	
480-151872-4	WG-11109668-041119-DST-NCR6S	Dissolved	Water	3005A	
480-151872-5	WG-11109668-041119-DST-NCR13S	Dissolved	Water	3005A	
MB 480-467983/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 480-467983/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
480-151872-3 MS	WG-11109668-041119-DST-NCR5S	Dissolved	Water	3005A	
480-151872-3 MSD	WG-11109668-041119-DST-NCR5S	Dissolved	Water	3005A	

Prep Batch: 468040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151872-1	WG-11109668-041119-DST-NCR3S	Total/NA	Water	3005A	
480-151872-2	WG-11109668-041119-DST-NCR4S	Total/NA	Water	3005A	
480-151872-3	WG-11109668-041119-DST-NCR5S	Total/NA	Water	3005A	
480-151872-4	WG-11109668-041119-DST-NCR6S	Total/NA	Water	3005A	
480-151872-5	WG-11109668-041119-DST-NCR13S	Total/NA	Water	3005A	
480-151872-3 MS	WG-11109668-041119-DST-NCR5S	Total/NA	Water	3005A	
480-151872-3 MSD	WG-11109668-041119-DST-NCR5S	Total/NA	Water	3005A	

Analysis Batch: 468723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151872-1	WG-11109668-041119-DST-NCR3S	Total/NA	Water	6010C	468040
480-151872-2	WG-11109668-041119-DST-NCR4S	Total/NA	Water	6010C	468040
480-151872-3	WG-11109668-041119-DST-NCR5S	Total/NA	Water	6010C	468040
480-151872-4	WG-11109668-041119-DST-NCR6S	Total/NA	Water	6010C	468040
480-151872-5	WG-11109668-041119-DST-NCR13S	Total/NA	Water	6010C	468040
480-151872-3 MS	WG-11109668-041119-DST-NCR5S	Total/NA	Water	6010C	468040
480-151872-3 MSD	WG-11109668-041119-DST-NCR5S	Total/NA	Water	6010C	468040

Analysis Batch: 468732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151872-1	WG-11109668-041119-DST-NCR3S	Dissolved	Water	6010C	467983
480-151872-2	WG-11109668-041119-DST-NCR4S	Dissolved	Water	6010C	467983
480-151872-3	WG-11109668-041119-DST-NCR5S	Dissolved	Water	6010C	467983
480-151872-4	WG-11109668-041119-DST-NCR6S	Dissolved	Water	6010C	467983
480-151872-5	WG-11109668-041119-DST-NCR13S	Dissolved	Water	6010C	467983
MB 480-467983/1-A	Method Blank	Total Recoverable	Water	6010C	467983
LCS 480-467983/2-A	Lab Control Sample	Total Recoverable	Water	6010C	467983
480-151872-3 MS	WG-11109668-041119-DST-NCR5S	Dissolved	Water	6010C	467983
480-151872-3 MSD	WG-11109668-041119-DST-NCR5S	Dissolved	Water	6010C	467983

Analysis Batch: 469066

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-151872-4	WG-11109668-041119-DST-NCR6S	Total/NA	Water	6010C	468040
480-151872-5	WG-11109668-041119-DST-NCR13S	Total/NA	Water	6010C	468040

Lab Chronicle

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Client Sample ID: WG-11109668-041119-DST-NCR3S
Lab Sample ID: 480-151872-1
Date Collected: 04/11/19 09:00
Matrix: Water
Date Received: 04/11/19 17:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			467983	04/15/19 15:53	EMB	TAL BUF
Dissolved	Analysis	6010C		1	468732	04/18/19 12:47	EMB	TAL BUF
Total/NA	Prep	3005A			468040	04/16/19 07:55	EMB	TAL BUF
Total/NA	Analysis	6010C		1	468723	04/18/19 11:23	EMB	TAL BUF

Client Sample ID: WG-11109668-041119-DST-NCR4S
Lab Sample ID: 480-151872-2
Date Collected: 04/11/19 09:10
Matrix: Water
Date Received: 04/11/19 17:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			467983	04/15/19 15:53	EMB	TAL BUF
Dissolved	Analysis	6010C		1	468732	04/18/19 12:58	EMB	TAL BUF
Total/NA	Prep	3005A			468040	04/16/19 07:55	EMB	TAL BUF
Total/NA	Analysis	6010C		1	468723	04/18/19 11:27	EMB	TAL BUF

Client Sample ID: WG-11109668-041119-DST-NCR5S
Lab Sample ID: 480-151872-3
Date Collected: 04/11/19 08:40
Matrix: Water
Date Received: 04/11/19 17:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			467983	04/15/19 15:53	EMB	TAL BUF
Dissolved	Analysis	6010C		1	468732	04/18/19 13:02	EMB	TAL BUF
Total/NA	Prep	3005A			468040	04/16/19 07:55	EMB	TAL BUF
Total/NA	Analysis	6010C		1	468723	04/18/19 11:31	EMB	TAL BUF

Client Sample ID: WG-11109668-041119-DST-NCR6S
Lab Sample ID: 480-151872-4
Date Collected: 04/11/19 08:15
Matrix: Water
Date Received: 04/11/19 17:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			467983	04/15/19 15:53	EMB	TAL BUF
Dissolved	Analysis	6010C		1	468732	04/18/19 13:23	EMB	TAL BUF
Total/NA	Prep	3005A			468040	04/16/19 07:55	EMB	TAL BUF
Total/NA	Analysis	6010C		1	468723	04/18/19 12:00	EMB	TAL BUF
Total/NA	Prep	3005A			468040	04/16/19 07:55	EMB	TAL BUF
Total/NA	Analysis	6010C		1	469066	04/19/19 09:52	EMB	TAL BUF

Client Sample ID: WG-11109668-041119-DST-NCR13S
Lab Sample ID: 480-151872-5
Date Collected: 04/11/19 08:15
Matrix: Water
Date Received: 04/11/19 17:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			467983	04/15/19 15:53	EMB	TAL BUF
Dissolved	Analysis	6010C		1	468732	04/18/19 13:27	EMB	TAL BUF
Total/NA	Prep	3005A			468040	04/16/19 07:55	EMB	TAL BUF
Total/NA	Analysis	6010C		1	468723	04/18/19 12:04	EMB	TAL BUF

Lab Chronicle

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Client Sample ID: WG-11109668-041119-DST-NCR13S
Lab Sample ID: 480-151872-5
Date Collected: 04/11/19 08:15
Matrix: Water
Date Received: 04/11/19 17:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			468040	04/16/19 07:55	EMB	TAL BUF
Total/NA	Analysis	6010C		1	469066	04/19/19 09:56	EMB	TAL BUF

Laboratory References:

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

Accreditation/Certification Summary

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Laboratory: Eurofins TestAmerica, Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-20

Method Summary

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL BUF
3005A	Preparation, Total Metals	SW846	TAL BUF
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL BUF

Protocol References:

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: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-151872-1	WG-11109668-041119-DST-NCR3S	Water	04/11/19 09:00	04/11/19 17:25
480-151872-2	WG-11109668-041119-DST-NCR4S	Water	04/11/19 09:10	04/11/19 17:25
480-151872-3	WG-11109668-041119-DST-NCR5S	Water	04/11/19 08:40	04/11/19 17:25
480-151872-4	WG-11109668-041119-DST-NCR6S	Water	04/11/19 08:15	04/11/19 17:25
480-151872-5	WG-11109668-041119-DST-NCR13S	Water	04/11/19 08:15	04/11/19 17:25

Quantitation Limit Exceptions Summary

Client: N Tonawanda Water Works
Job ID: 480-151872-1
Project/Site: City of North Tonawanda - NCRS

The requested project specific reporting limits listed below were less than laboratory standard quantitation limits (PQL) but greater than or equal to the laboratory method detection limits (MDL). It must be noted that results reported below lab standard quantitation limits may result in false positive/false negative values and less accurate quantitation. Routine laboratory procedures do not indicate corrective action for detections below the laboratory's PQL.

Method	Analyte	Matrix	Prep Type	Unit	Client RL	Lab PQL
6010C	Arsenic	Water	Total/NA	mg/L	0.010	0.015
6010C	Cadmium	Water	Total/NA	mg/L	0.0010	0.002
6010C	Lead	Water	Total/NA	mg/L	0.0050	0.01
6010C	Selenium	Water	Total/NA	mg/L	0.015	0.025
6010C	Silver	Water	Total/NA	mg/L	0.0030	0.006

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: S. McEvoy D. Tyran	Lab PM: Stone, Judy L	Carrier Tracking No(s):	COC No: 480-125980-26079.1
Client Contact: Michael Gibbons	Phone: 716-297-6150	E-Mail: judy.stone@testamericainc.com		Page: Page 1 of 1
Company: N Tonawanda Water Works				Job #: 11109668
Address: 830 River Road	Due Date Requested:			
City: North Tonawanda	TAT Requested (days): 14			
State, Zip: NY, 14120	PO #: Purchase Order not required			
Phone: 716-695-8560(Tel)	WO #:			
Email: mwg208@live.com				
Project Name: City of North Tonawanda - NCRS	Project #: 48002901			
Site: NCR	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3

480-151872 Chain of Custody

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)	6010C - TAL Metals	6010C - Dissolved TAL Metals	Total Number	Special Instructions/Note:
			Preservation Code:				D	D		
WG-11109668-041119-DST-NCR3S	4-11-19	0900	G	Water	Y		X	X	2	
WG-11109668-041119-DST-NCR4S	4-11-19	0910	G	Water	Y		X	X	2	
WG-11109668-041119-DST-NCR5S	4-11-19	0840	G	Water	Y	Y	X	X	6	
WG-11109668-041119-DST-NCR6S	4-11-19	0815	G	Water	Y		X	X	2	
WG-11109668-041119-DST-NCR13S	4-11-19	0815	G	Water	Y		X	X	2	DST
				Water						
				Water						
				Water						

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:	Date/Time:	Company	Received by:	Date/Time:	Company
Dave Tyran	4-11-19 1115	GHD	Unknown Cindy	04/11/19 1725	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.6 #1

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: N Tonawanda Water Works

Job Number: 480-151872-1

Login Number: 151872

List Source: Eurofins TestAmerica, Buffalo

List Number: 1

Creator: Kolb, Chris M

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	
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	GHD
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

NCR
1109668

DAILY LOG

4/10/19 Calibrate Horiba W-22 with auto cal solution Lot# 18262406 exp 9/24/2019

	Before	After
pH (4.00)	4.10	3.98
Cond (4.49)	4.57	4.48

0655 on site overcast 38-42°F winds NW 8-12 mph
Purge NCR-13S dry
purge NCR-5S dry
purge NCR-3S dry
purge NCR-4S dry
Dump water
0810 off-site

DTT

11109668

WELL PURGING INFORMATION

SITE/PROJECT NAME: Niagara County Refuge Site

DATE: 0 4 1 0 1 9 (MM DD YY)

CREW MEMBERS: D. Tyran

PURGING METHOD: Dedicated Bailer

WELL NUMBER: NCR-39

Sounded Depth 6.03

ONE WELL VOLUME: 0.4 gallons

w/L 3.82

FIVE WELL VOLUMES: 2.0 gallons

(See Sction 4.2.4.1 of the OM&M Manual and Table FP-4.1 to calculate well volumes based on current water levels).

Well dry @ 0.4 gallons

	1	2	3	4	5	TOT/AVG
WELL VOLUME						
VOLUME PURGED (total)	0.4					0.4
pH	6.38					6.38
TEMPERATURE	5.12					5.12
CONDUCTIVITY	0.714					0.714
TURBIDITY	122					122
COLOR	Lt. Brown					Lt. Brown
ODOR	None					None
COMMENTS						

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE PROTOCOLS

4/10/19 — DATE

David J Tyran — PRINT NAME

David J Tyran — SIGNATURE

FP-4C 6.03 - 3.82 = 2.21 x .16 = 0.4

1109668

WELL PURGING INFORMATION

SITE/PROJECT NAME: Niagara County Refuge Site

DATE: 0 4 1 0 1 9 (MM DD YY)

CREW MEMBERS: D. Tyran

PURGING METHOD: Dedicated Bailer

WELL NUMBER: NCR-45

ONE WELL VOLUME: 0.4 gallons

FIVE WELL VOLUMES: 2.0 gallons

Sounded Depth 5.18
w/L 2.90

(See Sction 4.2.4.1 of the OM&M Manual and Table FP-4.1 to calculate well volumes based on current water levels).

Well dry @ 0.4 gallons

	1	2	3	4	5	TOT/AVG
WELL VOLUME						
VOLUME PURGED (total)	0.4					0.4
pH	6.27					6.27
TEMPERATURE	8.72					8.72
CONDUCTIVITY	0.946					0.946
TURBIDITY	40.5					40.5
COLOR	Lt gray					Lt. Gray
ODOR	None					None
COMMENTS						

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE PROTOCOLS

4/10/19 — DATE

David J Tyran — PRINT NAME

David J Tyran — SIGNATURE

FP-4C 5.18 - 2.9 = 2.28 x .16 = 0.4

11109668

WELL PURGING INFORMATION

SITE/PROJECT NAME: Niagara County Refuge Site

DATE: 04/10/19 (MM DD YY)

CREW MEMBERS: D. Tyran

PURGING METHOD: Dedicated Bailer

WELL NUMBER: NCR-55

ONE WELL VOLUME: 0.8 gallons

FIVE WELL VOLUMES: 4.0 gallons

Sounded Depth 11.28
w/l 6.40

(See Sction 4.2.4.1 of the OM&M Manual and Table FP-4.1 to calculate well volumes based on current water levels).

Well dry @ 1.0 gallon

	1	2	3	4	5	TOT/AVG
WELL VOLUME						
VOLUME PURGED (total)	0.8					0.8
pH	6.31					6.31
TEMPERATURE	5.22					5.22
CONDUCTIVITY	0.768					0.768
TURBIDITY	566					566
COLOR	Brown					Brown
ODOR	None					None
COMMENTS						

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE PROTOCOLS

4/10/19 — DATE

David J Tyran — PRINT NAME

David J Tyran — SIGNATURE

FP-4C 11.28 - 6.4 = 4.88 x 16 = 0.8

1109668

WELL PURGING INFORMATION

SITE/PROJECT NAME: Niagara County Refuge Site

DATE: 6/10/19 (MM DD YY)

CREW MEMBERS: D. Tyran

PURGING METHOD: Dedicated Bailer

WELL NUMBER: NCR-135

ONE WELL VOLUME: 0.5 gallons

FIVE WELL VOLUMES: 2.5 gallons

Sounded Depth 7.93
w/L 4.88

(See Sction 4.2.4.1 of the OM&M Manual and Table FP-4.1 to calculate well volumes based on current water levels).

Well dry @ 0.8 gallons

	1	2	3	4	5	TOT/AVG
WELL VOLUME						
VOLUME PURGED (total)	0.5					0.5
pH	5.55					5.55
TEMPERATURE	6.80					6.80
CONDUCTIVITY	1.43					1.43
TURBIDITY	31.2					31.2
COLOR	Lt. gray					Lt Gray
ODOR	None					None
COMMENTS						

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE PROTOCOLS

4.10.19 — DATE

David J Tyran — PRINT NAME

David J Tyran — SIGNATURE

FP-4C 7.93 - 4.88 = 3.05 x .16 = 0.5

NCR Annual

1110968

DAILY LOG

4/11/19 0810 SM. DJT on-site to sample wells purged dry yesterday
Overcast 36-40°F Winds E 8-12 mph
0815 Sample NCR13S + Dup
0832 Sample NCR5S + MS/MSD T. Manns on-site
0856 Sample NCR3S
0907 Sample NCR4S
0925 off-site

DJT

Daniel J Tyson

1110968

GROUNDWATER SAMPLING • SAMPLE COLLECTION DATA SHEET

PROJECT NAME: *NIAGARA COUNTY REFUSE SITE*

SAMPLING CREW MEMBERS: D. Tyran S McEvoy

DATE OF SAMPLE COLLECTION: 04 11 19 (M M D D Y Y)

Sample I.D. Number	Well Number	Well Volume (Gallons)	Volume Purged (Gallons)	Sample Time	Sample Description	Analysis Required	Chain-of-Custody Number	Shipping Manifest Number
*	NCR 3S	0.4	0.4	0900	Clear Colorless	Tot. Diss Metals	58958	
*	NCR 4S	0.4	0.4	0910	Sl. Cloudy Lt Brown	Tot. Diss Metals	58958	
*	NCR 5S	0.8	1.0	0840	Clear Colorless	Tot/Diss Metal	58958	
*	NCR 13S	0.5	0.8	0815	Clear Colorless	Tot/Diss Metals	58958	
*	(MS/MSD) * NCR-5S	0.8	1.0	0840	Clear Colorless	Tot/Diss Metals	58958	
*	(Duplicate) * NCR-13S	0.5	0.8	0815	Clear Colorless	Tot/Diss Metals	58958	
	(Rinse Blank) *							

Note: * QA/QC sample (see QAPP for explanation of how to collect and label these samples). Collect MS/MSD and duplicate from one of the four monitoring wells listed above. Create a unique sample ID for the blind duplicate using NCR 6S for the well number. Write the name of the well where the MS/MSD and duplicate were actually collected in the well number boxes under "MS/MSD" and "Duplicate" above.

Additional Comments: * WG-1110968-041119-DJT- Well number
NCR 13S Blind Duplicate WG-1110968-041119-DJT-NCR6S
Time 0815

FP-5A

Dan Tyran

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: S. McEvoy D. Tyron	Lab PM: Stone, Judy L	Carrier Tracking No(s):	COC No: 480-125980-26079.1
Client Contact: Michael Gibbons	Phone: 716-297-6150	E-Mail: judy.stone@testamericainc.com		Page: Page 1 of 1
Company: N Tonawanda Water Works				Job #: 1110966
Address: 830 River Road	Due Date Requested:			
City: North Tonawanda	TAT Requested (days): 14			
State, Zip: NY, 14120	PO #: Purchase Order not required			
Phone: 716-695-8560(Tel)	WO #:			
Email: mwg208@live.com	Project #: 48002901			
Project Name: City of North Tonawanda - NCRS	SSOW#:			
Site: NCR				

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - Di Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	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)	6010C - TAL Metals	6010C - Dissolved TAL Metals	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D		
WG-1110966B-041119-DST-NCR3S	4-11-19	0900	G	Water	Y		X	X	2	
WG-1110966B-041119-DST-NCR4S	4-11-19	0910	G	Water	Y		X	X	2	
WG-1110966B-041119-DST-NCR5S	4-11-19	0840	G	Water	Y	Y	X	X	6	
WG-1110966B-041119-DST-NCR6S	4-11-19	0815	G	Water	Y		X	X	2	
WG-1110966B-041119-DST-NCR13S	4-11-19	0815	G	Water	Y		X	X	2	DST
				Water						
				Water						
				Water						

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:	Date/Time:	Company	Received by:	Date/Time:	Company
1	D. Tyron	4-11-19 1115	GHD			
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Tailgate Safety Meeting Form
Small Group Format - Multiple Days

Date:	4/10/19	Time:	0609	Project No.:	11109668-01
Presenter:	D. Tyran			Project Name:	NCR Annual

Safety topics/items discussed:

Uneven ground; lots of grape vines will present a tripping hazards watch your footing

Emergency preparedness:

First Aid Provider(s):	D. Tyran	Muster Point:	Front Gate
		Method of Communication:	Cell Phone
AED Responder:	911	Fire Extinguisher Location:	GHD Truck
First Aid Kit Location:	GHD Truck	Eye Wash Location:	GHD Truck

Print Name	Signature	Company
David Tyran	David Tyran	GHD

Date:	4/11/19	Time:	0721	Project No.:	11109668-01
Presenter:	D. Tyran			Project Name:	NCR Annual

Safety topics/items discussed:

Always wear safety glasses on-site. Overnight rain will make ground slippery

Practice STAR

Emergency preparedness:

First Aid Provider(s):	D. Tyran	Muster Point:	Front Gate
		Emergency Communication:	Cell Phone
AED Responder:	911	Fire Extinguisher Location:	GHD Truck
First Aid Kit Location:	GHD Truck	Eye Wash Location:	GHD Truck

Print Name	Signature	Company
David Tyran	David Tyran	GHD
Shaun Mowry		GHD

APPENDIX D
DATA VALIDATION REPORT

DATA USABILITY SUMMARY REPORT
FOR
NIAGARA COUNTY REFUSE SITE

Prepared By:

PARSONS

301 Plainfield Road, Suite 350
Syracuse, NY 13212
Phone: (315) 451-9560
Fax: (315) 451-9570

MAY 2019

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LIST OF ATTACHMENTS

SECTION 1

DATA USABILITY SUMMARY

Groundwater samples were collected from the Niagara County Refuse site in North Tonawanda, New York on April 11, 2019. Analytical results from these samples were validated and reviewed by Parsons for usability with respect to the following requirements:

- Work Plan,
- USEPA SW-846 analytical methodologies,
- USEPA Region II Standard Operating Procedures (SOPs) for inorganic data review.

The analytical laboratory for this project was Test America Laboratory (TAL) in Buffalo, New York. This laboratory is certified to conduct project analyses through the National Environmental Laboratory Accreditation Program (NELAP).

1.1 LABORATORY DATA PACKAGES

The laboratory data package turnaround time, defined as the time from sample receipt by the laboratory to receipt of the analytical data packages by Parsons, was 14 days for the groundwater samples.

The data packages received from TAL were paginated, complete, and overall were of good quality. Comments on specific quality control (QC) and other requirements are discussed in detail in the attached data validation report in Section 2.

1.2 SAMPLING AND CHAIN-OF-CUSTODY

Groundwater samples were collected, properly preserved, shipped under a COC record, and received at TAL within one day of sampling. All samples were received intact and in good condition at TAL.

1.3 LABORATORY ANALYTICAL METHODS

Groundwater samples were collected from the site and analyzed for total and dissolved metals. Summaries of issues concerning this laboratory analysis are presented in Subsection 1.3.1. The data qualifications resulting from the data validation review and statements on the laboratory analytical precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) are discussed in Section 2. The laboratory data were reviewed and may be qualified with the following validation flags:

"U" - not detected at the value given,

"UJ" - estimated and not detected at the value given,

"J" - estimated at the value given,

"J+" - estimated biased high at the value given,

"J-" - estimated biased low at the value given,

"N" - presumptive evidence at the value given, and

"R" - unusable value.

The validated laboratory data were tabulated and are presented in Attachment A.

1.3.1 Metals Analysis

Groundwater samples collected from the site were analyzed for total and dissolved metals using the USEPA SW-846 6010C analytical method. Certain metals results were qualified as estimated based upon matrix spike recoveries, field duplicate precision, and significantly higher dissolved metals results in comparison with total metals; and qualified as not detected based upon blank contamination. All of the metals data were considered usable and 100% complete for the groundwater data presented by TAL. PARCCS requirements were met.

SECTION 2

DATA VALIDATION REPORT

2.1 GROUNDWATER DATA

Data review has been completed for data packages generated by TAL containing groundwater samples collected from the Niagara County Refuse site. All of these samples were properly preserved, shipped under a COC record, and received intact by the analytical laboratory. The samples were contained within sample delivery group (SDG) 480-151872-1. The validated laboratory data are presented in Attachment A.

Data validation was performed for all samples in accordance with the most current editions of the USEPA Region II SOPs for inorganic data review. This data validation and usability report is presented by analysis type.

2.1.1 Total and Dissolved Metals

The following items were reviewed for compliancy in the metals analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration blank, and laboratory preparation blank contamination
- Inductively coupled plasma (ICP) interference check sample (ICS)
- MS/MSD recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- ICP serial dilution
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of blank contamination, matrix spike recoveries, and field duplicate precision as discussed below.

Blank Contamination

The laboratory preparation blank associated with the project samples contained total chromium and total manganese below the reporting limits at concentrations of 0.00221 and 0.0006 mg/L, respectively. Therefore, results for these analytes less than validation action concentrations were considered not detected and qualified "U" for the affected samples.

Matrix Spike Recoveries

All MS/MSD recoveries were considered acceptable and within the 75-125%R QC limit with the exception of the MS/MSD recoveries for total sodium (233%R, 235%R) associated with sample NCR-5S. Therefore, the positive total sodium result was considered estimated and qualified "J" for the affected sample.

Field Duplicate Precision

All field duplicate precision results were considered acceptable with the exception of the precision for dissolved iron (89%RPD) and dissolved sodium (63%RPD) associated with sample NCR-13S and its field duplicate sample NCR-6S. Therefore, results for these analytes were considered estimated and qualified "J" for the affected parent sample and field duplicate.

Usability

All metals sample results were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The metals data presented by TAL were 100% complete with all metals data considered valid and usable. The validated metals laboratory data are tabulated and presented in Attachment A.

It was noted that dissolved results were significantly higher than total results for iron and sodium in samples NCR-6S. Therefore, results for total and dissolved iron and sodium were considered estimated and qualified "J" for the affected samples.

ATTACHMENT A

VALIDATED LABORATORY DATA

							Duplicate of WG-11109668-041119-DST-NCR13S
City of North Tonawanda NY1A8791 216 Payne Ave North Tonawanda, NY Validated Groundwater Sampling Event April 2019		Location ID: Sample ID: Lab Sample Id: Source: SDG: Matrix: Sampled: Validated:	NCR3S WG-11109668-041119-DST-NCR3S 480-151872-1 TALBUFF 4801518721 WATER 4/11/2019 9:00 5/13/2019	NCR4S WG-11109668-041119-DST-NCR4S 480-151872-2 TALBUFF 4801518721 WATER 4/11/2019 9:10 5/13/2019	NCR5S WG-11109668-041119-DST-NCR5S 480-151872-3 TALBUFF 4801518721 WATER 4/11/2019 8:40 5/13/2019	NCR13S WG-11109668-041119-DST-NCR13S 480-151872-5 TALBUFF 4801518721 WATER 4/11/2019 8:15 5/13/2019	NCR13S WG-11109668-041119-DST-NCR6S 480-151872-4 TALBUFF 4801518721 WATER 4/11/2019 8:15 5/13/2019
CAS NO.	COMPOUND	UNITS:					
	METALS						
7429-90-5	ALUMINUM	mg/l	0.1 J	1.5	0.078 J	0.062 J	0.2 U
7440-36-0	ANTIMONY	mg/l	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
7440-38-2	ARSENIC	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
7440-39-3	BARIUM	mg/l	0.041	0.053	0.15	0.042	0.044
7440-41-7	BERYLLIUM	mg/l	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
7440-43-9	CADMIUM	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
7440-70-2	CALCIUM	mg/l	97	144	85.5	132	130
7440-47-3	CHROMIUM, TOTAL	mg/l	0.0014 J	0.0018 J	0.004 U	0.004 U	0.004 U
7440-48-4	COBALT	mg/l	0.004 U	0.00065 J	0.004 U	0.004 U	0.004 U
7440-50-8	COPPER	mg/l	0.0051 J	0.0028 J	0.0021 J	0.01 U	0.0019 J
7439-89-6	IRON	mg/l	0.16	4.2	0.067	0.066	0.054 J
7439-92-1	LEAD	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
7439-95-4	MAGNESIUM	mg/l	46.1	48.2	45.7	49.4	46.9
7439-96-5	MANGANESE	mg/l	0.0038	0.23	0.0019 J	0.072	0.061
7440-02-0	NICKEL	mg/l	0.0045 J	0.0021 J	0.0015 J	0.002 J	0.0015 J
7440-09-7	POTASSIUM	mg/l	1.7	9.9	0.4 J	0.74	0.86
7782-49-2	SELENIUM	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
7440-22-4	SILVER	mg/l	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
7440-23-5	SODIUM	mg/l	3.9	25.6	8.1 J	8.1	7 J
7440-28-0	THALLIUM	mg/l	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
7440-62-2	VANADIUM	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
7440-66-6	ZINC	mg/l	0.011	0.074	0.01 U	0.0017 J	0.01 U
	DISSOLVED METALS						
7429-90-5	ALUMINUM	mg/l	0.2 U	0.07 J	0.13 J	0.2 U	0.073 J
7440-36-0	ANTIMONY	mg/l	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
7440-38-2	ARSENIC	mg/l	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
7440-39-3	BARIUM	mg/l	0.04	0.049	0.14	0.036	0.033
7440-41-7	BERYLLIUM	mg/l	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
7440-43-9	CADMIUM	mg/l	0.00051 J	0.00052 J	0.0005 J	0.0005 J	0.00063 J
7440-70-2	CALCIUM	mg/l	99.2	148	85.9	134	143
7440-47-3	CHROMIUM, TOTAL	mg/l	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
7440-48-4	COBALT	mg/l	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
7440-50-8	COPPER	mg/l	0.0035 J	0.01 U	0.0028 J	0.0017 J	0.002 J
7439-89-6	IRON	mg/l	0.024 J	0.46	0.07	0.042 J	0.11 J
7439-92-1	LEAD	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
7439-95-4	MAGNESIUM	mg/l	46.4	48.4	42.9	55.7	73.5
7439-96-5	MANGANESE	mg/l	0.002 J	0.22	0.0019 J	0.067	0.077
7440-02-0	NICKEL	mg/l	0.0022 J	0.0018 J	0.01 U	0.0026 J	0.0033 J
7440-09-7	POTASSIUM	mg/l	1.6	10.1	0.32 J	0.7	0.63
7782-49-2	SELENIUM	mg/l	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
7440-22-4	SILVER	mg/l	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
7440-23-5	SODIUM	mg/l	4.1	27	8.1	14.7 J	28.2 J
7440-28-0	THALLIUM	mg/l	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
7440-62-2	VANADIUM	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
7440-66-6	ZINC	mg/l	0.01	0.015	0.0029 J	0.0028 J	0.0048 J

APPENDIX E
MONTHLY INSPECTION LOGS

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 01/17/19 (MM DD YY)

INSPECTOR(S): Tony Manns

Item	*Inspect For*	*Action Required*	*Comments*
1 Perimeter collection System/Off-Site Forcemain			
☑ Manholes	- cover on securely	None	None
☑	- condition of cover	None	None
☑	- condition of inside of manhole	None	None
☑	- flow conditions	None	None
☑ Wet Wells	- cover on securely	None	None
☑	- condition of cover	None	None
☑	- condition of inside of wet well	None	None
2 Landfill Cap			
☑ Vegetated Soil Cover	- erosion	None	None
☑	- bare areas	None	None
☑	- washouts	None	none
☑	- leachate seeps	None	None
☑	- length of vegetation	None	None
☑	- dead/dying vegetation	None	None

FORM 1

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 01/17/19 (MM DD YY)

INSPECTOR(S): Tony Manns

Item	*Inspect For*	*Action Required*	*Comments*
2 Landfill Cap (continued)			
☑ Access Roads	- bare areas, dead/dying veg.	None	None
☑	- erosion	None	None
☑	- potholes or puddles	None	None
☑	- obstruction	None	None
3 Wetlands (Area "F")			
☑	- dead/dying vegetation	None	None
☑	- change in water budget	None	None
☑	- general conditions of wetlands	None	None
4 Other Site Systems			
☑ Perimeter Fence	- integrity of fence	None	None
☑	- integrity of gates	None	None
☑	- integrity of locks	None	None
☑	- placement and condition of signs	None	None

FORM 1

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 01/17/19 (MM DD YY)

INSPECTOR(S): Tony Manns

Item	*Inspect For*	*Action Required*	*Comments*
4 Other Site Systems (continued)			
☑ Drainage Ditches/	- sediment buildup	None	None
☑ Swale Outlets	- erosion	None	None
☑	- condition of erosion protection	None	None
☑	- flow obstructions	None	None
☑	- dead/dying vegetation	None	None
☑	- cable concrete/gabion mats and riprap	None	None
☑ Culverts	- sediment build-up	None	None
☑	- erosion	None	None
☑	- condition of erosion protection	None	None
☑	- flow obstructions	None	None
☑ Gas Vents	- intact/damage	None	None
☑ Wells	- locks secure	None	None

FORM 1

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 02/11/19 (MM DD YY)

INSPECTOR(S): Tony Manns

Item	*Inspect For*	*Action Required*	*Comments*
1 Perimeter collection System/Off-Site Forcemain			
☑ Manholes	- cover on securely	None	None
☑	- condition of cover	None	None
☑	- condition of inside of manhole	None	None
☑	- flow conditions	None	None
☑ Wet Wells	- cover on securely	None	None
☑	- condition of cover	None	None
☑	- condition of inside of wet well	None	None
2 Landfill Cap			
☑ Vegetated Soil Cover	- erosion	None	None
☑	- bare areas	None	None
☑	- washouts	None	none
☑	- leachate seeps	None	None
☑	- length of vegetation	None	None
☑	- dead/dying vegetation	None	None

FORM 1

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 02/11/19 (MM DD YY)

INSPECTOR(S): Tony Manns

Item	*Inspect For*	*Action Required*	*Comments*
2 Landfill Cap (continued)			
☑ Access Roads	- bare areas, dead/dying veg.	None	None
☑	- erosion	None	None
☑	- potholes or puddles	None	None
☑	- obstruction	None	None
3 Wetlands (Area "F")			
☑	- dead/dying vegetation	None	None
☑	- change in water budget	None	None
☑	- general conditions of wetlands	None	None
4 Other Site Systems			
☑ Perimeter Fence	- integrity of fence	None	None
☑	- integrity of gates	None	None
☑	- integrity of locks	None	None
☑	- placement and condition of signs	None	None

FORM 1

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 02/11/19 (MM DD YY)

INSPECTOR(S): Tony Manns

Item	*Inspect For*	*Action Required*	*Comments*
4 Other Site Systems (continued)			
☑ Drainage Ditches/	- sediment buildup	None	None
☑ Swale Outlets	- erosion	None	None
☑	- condition of erosion protection	None	None
☑	- flow obstructions	None	None
☑	- dead/dying vegetation	None	None
☑	- cable concrete/gabion mats and riprap	None	None
☑ Culverts	- sediment build-up	None	None
☑	- erosion	None	None
☑	- condition of erosion protection	None	None
☑	- flow obstructions	None	None
☑ Gas Vents	- intact/damage	None	None
☑ Wells	- locks secure	None	None

FORM 1

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 03/19/19 (MM DD YY)

INSPECTOR(S): Tony Manns

Item	*Inspect For*	*Action Required*	*Comments*
1 Perimeter collection System/Off-Site Forcemain			
☑ Manholes	- cover on securely	None	None
☑	- condition of cover	None	None
☑	- condition of inside of manhole	None	None
☑	- flow conditions	None	None
☑ Wet Wells	- cover on securely	None	None
☑	- condition of cover	None	None
☑	- condition of inside of wet well	None	None
2 Landfill Cap			
☑ Vegetated Soil Cover	- erosion	None	None
☑	- bare areas	None	None
☑	- washouts	None	none
☑	- leachate seeps	None	None
☑	- length of vegetation	None	None
☑	- dead/dying vegetation	None	None

FORM 1

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 03/19/19 (MM DD YY)

INSPECTOR(S): Tony Manns

Item	Inspect For	Action Required	Comments
2 Landfill Cap (continued)			
☑ Access Roads	- bare areas, dead/dying veg.	None	None
☑	- erosion	None	None
☑	- potholes or puddles	None	None
☑	- obstruction	None	None
3 Wetlands (Area "F")			
☑	- dead/dying vegetation	None	None
☑	- change in water budget	None	None
☑	- general conditions of wetlands	None	None
4 Other Site Systems			
☑ Perimeter Fence	- integrity of fence	None	None
☑	- integrity of gates	None	None
☑	- integrity of locks	None	None
☑	- placement and condition of signs	None	None

FORM 1

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 03/19/19 (MM DD YY)

INSPECTOR(S): Tony Manns

Item	*Inspect For*	*Action Required*	*Comments*
4 Other Site Systems (continued)			
☑ Drainage Ditches/	- sediment buildup	None	None
☑ Swale Outlets	- erosion	None	None
☑	- condition of erosion protection	None	None
☑	- flow obstructions	None	None
☑	- dead/dying vegetation	None	None
☑	- cable concrete/gabion mats and riprap	None	None
☑ Culverts	- sediment build-up	None	None
☑	- erosion	None	None
☑	- condition of erosion protection	None	None
☑	- flow obstructions	None	None
☑ Gas Vents	- intact/damage	None	None
☑ Wells	- locks secure	None	None

FORM 1

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 04/11/19 (MM DD YY)

INSPECTOR(S): Tony Manns

Item	*Inspect For*	*Action Required*	*Comments*
1 Perimeter collection System/Off-Site Forcemain			
☑ Manholes	- cover on securely	None	None
☑	- condition of cover	None	None
☑	- condition of inside of manhole	None	None
☑	- flow conditions	None	None
☑ Wet Wells	- cover on securely	None	None
☑	- condition of cover	None	None
☑	- condition of inside of wet well	None	None
2 Landfill Cap			
☑ Vegetated Soil Cover	- erosion	None	None
☑	- bare areas	None	None
☑	- washouts	None	none
☑	- leachate seeps	None	None
☑	- length of vegetation	None	None
☑	- dead/dying vegetation	None	None

FORM 1

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 04/11/19 (MM DD YY)

INSPECTOR(S): Tony Manns

Item	*Inspect For*	*Action Required*	*Comments*
2 Landfill Cap (continued)			
☑ Access Roads	- bare areas, dead/dying veg.	None	None
☑	- erosion	None	None
☑	- potholes or puddles	None	None
☑	- obstruction	None	None
3 Wetlands (Area "F")			
☑	- dead/dying vegetation	None	None
☑	- change in water budget	None	None
☑	- general conditions of wetlands	None	None
4 Other Site Systems			
☑ Perimeter Fence	- integrity of fence	None	None
☑	- integrity of gates	None	None
☑	- integrity of locks	None	None
☑	- placement and condition of signs	None	None

FORM 1

MONTHLY INSPECTION LOG

PROJECT NAME: Niagara County Refuse Site

LOCATION: Wheatfield, NY

DATE: 04/11/19
(MM DD YY)

INSPECTOR(S): Tony Manns

Item	*Inspect For*	*Action Required*	*Comments*
4 Other Site Systems (continued)			
☑ Drainage Ditches/	- sediment buildup	None	None
☑ Swale Outlets	- erosion	None	None
☑	- condition of erosion protection	None	None
☑	- flow obstructions	None	None
☑	- dead/dying vegetation	None	None
☑	- cable concrete/gabion mats and riprap	None	None
☑ Culverts	- sediment build-up	None	None
☑	- erosion	None	None
☑	- condition of erosion protection	None	None
☑	- flow obstructions	None	None
☑ Gas Vents	- intact/damage	None	None
☑ Wells	- locks secure	None	None

FORM 1

APPENDIX F
MAINTENANCE RECORD LOGS

MAINTENANCE RECORD LOG

PROJECT NAME: *Niagara County Refuse Site* LOCATION: Wheatfield, New York

CREW MEMBERS: Britt Gebhardt

1. Date 2/26/2019
   Time 11:05 AM
   Scheduled/Unscheduled:
   Type of Maintenance Performed: Clearing fallen branches.
2. Company Performing Maintenance
   Name: GHD
   Address: 2055 Niagara Falls Blvd.
   Niagara Falls, NY 14304
   Contact Name: Britt Gebhardt
3. Methods Used:
   Manually picking up branches and clearing them off the side of the road.

Description of Material Removed:

Medium size branches that had fallen due to recent windstorm.
There were no branches too big to clear by oneself.

Problems/Comments:

No problems.

2/26/2019	Britt Gebhardt	Britt Gebhardt
DATE	INSPECTOR	INSPECTOR'S SIGNATURE

FORM 2

MAINTENANCE RECORD LOG

PROJECT NAME: *Niagara County Refuse Site* LOCATION: Wheatfield, New York

CREW MEMBERS: Tony Manns

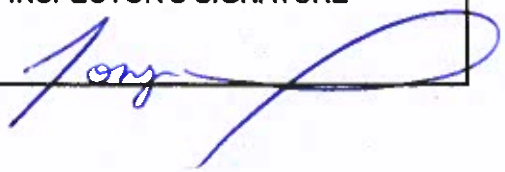
1. Date 3/7/2019
   Time 1000
   Scheduled/Unscheduled: Unscheduled
   Type of Maintenance Performed: Repair flow totalizer on WWA
2. Company Performing Maintenance GHD
   Name: Tony Manns
   Address: 2055 Niagara Falls blvd
   Niagara Falls, NY 14304
   Contact Name: (716) 818-6241
3. Methods Used: Removed existing totalizer and replaced with used spare unit.

Description of Material Removed: I removed the existinf totalizer.

Problems/Comments: Flow totalizer was not working properly. Unit was still reading the same amount as last month.

DATE 03/07/2019 INSPECTOR INSPECTOR'S SIGNATURE

FORM 2 Tony Manns



MAINTENANCE RECORD LOG

PROJECT NAME: *Niagara County Refuse Site* LOCATION: Wheatfield, New York

CREW MEMBERS: Britt Gebhardt

1. Date 4/26/2019
   Time 8:30 AM
   Scheduled/Unscheduled: Unscheduled
   Type of Maintenance Performed: Investigate high water alarm
2. Company Performing Maintenance
   Name: GHD
   Address: 2055 Niagara Falls Blvd.
   Niagara Falls, NY 14304
   Contact Name: Britt Gebhardt
3. Methods Used:

Visual check and measuring of water level.

Description of Material Removed:

Problems/Comments:

There was a power outage last night and I received a phone call from the autodialer stating there is a high water level warning. Upon arriving, I saw wet well D was high but it was not pumping. I measured the water level and it is staying where it had been. I pushed reset and the pump turned on I will stop by later today to make sure the level is not rising and the pump is still pumping.

4/26/2019	Britt Gebhardt	
DATE	INSPECTOR	INSPECTOR'S SIGNATURE

FORM 2

MAINTENANCE RECORD LOG

PROJECT NAME: *Niagara County Refuse Site* LOCATION: Wheatfield, New York

CREW MEMBERS: Tony Manns

1. Date 4/29/2019

   Time 0830

   Scheduled/Unscheduled: Unscheduled

   Type of Maintenance Performed: Repair pump in WWD.

2. Company Performing Maintenance GHD

   Name: Tony Manns

   Address: 2055 Niagara Falls blvd

   Niagara Falls, NY 14304

   Contact Name: (716) 818-6241

3. Methods Used: Removed corroded 4" nipple from pump head and replace with new 4" nipple.

Description of Material Removed: One 4" corroded nipple.

Problems/Comments: 4" nipple sprung a leak. I replaced it with a new one. WWD is back up and running.

DATE 04/29/2019 INSPECTOR INSPECTOR'S SIGNATURE

FORM 2 Tony Manns

APPENDIX G

WATER LEVEL RECORDS

WATER LEVEL RECORD

PROJECT NAME: *NIAGARA COUNTY REFUSE SITE*

LOCATION: Wheatfield, New York

DATE: 01/10/19 (MM DD YY)

CREW MEMBERS: Tony Manns

Observation Well	Time of Measurement	Top of Casing Elevation A	Depth to Water B	Water Level Elevation A-B
		feet		feet
EAST "A"	0959	598.93	27.14	571.79
EAST "B"	0955	596.23	Dry	596.23
EAST "C"	0933	598.69	21.56	577.13
EAST "D"	0929	593.20	15.79	577.41
NCR-3S	0920	579.60	4.13	575.44
NCR-4S	0945	577.88	3.40	574.54
NCR-5S	1018	579.34	6.16	579.34
NCR-13S	0908	577.15	4.52	571.93

WET WELLS

Wet Well	Time of Measurement	Total Flow	Depth of Water
WW A	0903		3' 0"
WW B	0948		3' 3"
WW C	0925		2' 1"
WW D	0911		2' 6"

Total System Flow	Time of Measurement
003492	0905

x 1000 Gallons

Water Level Meter: NF07567

FP-3D

WATER LEVEL RECORD

PROJECT NAME: *NIAGARA COUNTY REFUSE SITE*

LOCATION: Wheatfield, New York

DATE: 02/11/19 (MM DD YY)

CREW MEMBERS: Tony Manns

Observation Well	Time of Measurement	Top of Casing Elevation A	Depth to Water B	Water Level Elevation A-B
		feet		feet
EAST "A"	1028	598.93	27.14	571.79
EAST "B"	1021	596.23	Dry	596.23
EAST "C"	1003	598.69	21.38	577.31
EAST "D"	0959	593.20	16.03	577.17
NCR-3S	0952	579.60	3.90	575.70
NCR-4S	1010	577.88	2.95	574.93
NCR-5S	0927	579.34	6.38	572.96
NCR-13S	0941	577.15	4.57	572.58

WET WELLS

Wet Well	Time of Measurement	Total Flow	Depth of Water
WW A	0934		3' 4"
WW B	1015		2' 6"
WW C	0956		2' 7"
WW D	0946		3' 1"

Total System Flow	Time of Measurement
003497	0935

x 1000 Gallons

Water Level Meter: NF07181

FP-3D

WATER LEVEL RECORD

PROJECT NAME: *NIAGARA COUNTY REFUSE SITE*

LOCATION: Wheatfield, New York

DATE: 03/07/19 (MM DD YY)

CREW MEMBERS: Tony Manns

Observation Well	Time of Measurement	Top of Casing Elevation A	Depth to Water B	Water Level Elevation A-B
		feet		feet
EAST "A"	1009	598.93	27.14	571.79
EAST "B"	0940	596.23	Dry	596.23
EAST "C"	0925	598.69	21.70	576.99
EAST "D"	0921	593.20	16.11	577.09
NCR-3S	0914	579.60	4.83	574.77
NCR-4S	0933	577.88	3.13	574.75
NCR-5S	0900	579.34	7.06	572.28
NCR-13S	0949	577.15	5.89	571.26

WET WELLS

Wet Well	Time of Measurement	Total Flow	Depth of Water
WW A	0957		3' 6"
WW B	0936		3' 2"
WW C	0916		2' 9"
WW D	0944		2' 7"

Total System Flow	Time of Measurement
003497	1000

x 1000 Gallons

Water Level Meter: NF07181

FP-3D

WATER LEVEL RECORD

PROJECT NAME: *NIAGARA COUNTY REFUSE SITE*

LOCATION: Wheatfield, New York

DATE: 04/11/19 (MM DD YY)

CREW MEMBERS: Tony Manns

Observation Well	Time of Measurement	Top of Casing Elevation A	Depth to Water B	Water Level Elevation A-B
		feet		feet
EAST "A"	1019	598.93	27.22	571.71
EAST "B"	1040	596.23	Dry	596.23
EAST "C"	1025	598.69	21.74	576.95
EAST "D"	1022	593.20	16.20	577.00
NCR-3S	1014	579.60	3.82	575.78
NCR-4S	1033	577.88	2.90	574.98
NCR-5S	1105	579.34	6.40	572.94
NCR-13S	1049	577.15	4.88	572.27

WET WELLS

Wet Well	Time of Measurement	Total Flow	Depth of Water
WW A	0957		3' 1"
WW B	1036		2' 2"
WW C	1016		2' 6"
WW D	1044		5' 2"

Total System Flow	Time of Measurement
15273	1010

x 1000 Gallons

Water Level Meter: NF07181

FP-3D

APPENDIX H
COMPACT DISC CONTAINING REPORT