

**2018 ANNUAL GROUNDWATER MONITORING,
CORRECTIVE ACTION REPORT,
AND
STATISTICAL EVALUATION OF DETECTION
MONITORING RESULTS**

General Waste & Recycling, LLC
Coal Combustion Residual Landfill



PREPARED BY:



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JANUARY 2019

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PURPOSE

The purpose of this document is to meet U.S. Code of Federal Regulation (CFR) requirements for General Waste & Recycling, LLC's (General Waste's) Keewatin, Minnesota, Coal Combustion Residual (CCR) landfill (the Facility) for preparation of an "Annual Groundwater Monitoring and Corrective Action Report" per CFR §257.90 (e).

INTRODUCTION

General Waste's Keewatin Facility consists of a composite lined industrial landfill (CCR Unit) and an unlined demolition debris disposal cell. The Facility is located on approximately 70 acres of land in: Township 57 North, Range 22 West, Section 25 of Itasca County, as shown on Figure 1, Site Vicinity Map and Figure 2, Site Location Map. The location of the active CCR Units (Cell A and Cell B), and CCR groundwater monitoring system is shown on Figure 3, Site Detail Map.

HYDROGEOLOGIC CONCEPTUAL MODEL

Hydrogeologic conditions were investigated while conducting permitting activities for the Facility during 2013. An extensive investigation was completed at that time to refine the hydrologic model of the Facility in preparation of the installation of a groundwater monitoring system. The hydrogeologic investigation and groundwater monitoring system has been certified by a licensed professional engineer (PE) as meeting CRF 257.91 requirements and the certification has been posted on a CCR Website for the Facility per CFR 257.105(h)(3).

Geologic Units

Three (3) stratigraphic units have been identified for the hydrogeological conceptual model as follows:

1. Mine overburden stockpile unit that varies across the landfill footprint in depths ranging from 5 to 80 feet and consists of sand, silty-clayey sand, and sandy silty clay.
2. Native soil unit which consists of fine sand and silty sand near the top of the unit and generally grades to a silty medium grained sand with abundant gravel.
3. Mine tailings unit which consists of interlayered grey and black silt and fine sand sized taconite tailings. The mine tailings are approximately range from 10 to 26 feet thick and were placed in the tailings basin constructed directly to the west of the mine overburden stockpile.

The location of the mine overburden stockpile and the mine tailings (i.e., the Tailings Basin) are shown on Figure 2.

Hydrogeologic Setting

An unconfined aquifer exists below the Facility with the water table present within the mine overburden stockpile near the contact of the mine overburden stockpile unit with the native soil unit, except on the western edge of the permitted landfill boundary near MW-7 where the water table is within the tailings. Groundwater flow is generally to the east and southeast towards a ditch (Welcome Creek) located east

adjacent to the Facility. Welcome Creek is considered a groundwater divide and is a discharge point for shallow unconfined groundwater.

ENVIRONMENTAL MONITORING SYSTEM

The CCR Groundwater Monitoring System (GMS) consists of four (4) water table monitoring wells as follows:

- MW-7 is an up-gradient (with respect to general groundwater flow direction) monitoring well; and,
- MW-3R, MW-8 and MW-9 are down-gradient (with respect to general groundwater flow direction) monitoring wells.

The groundwater monitoring system and active CCR Units (Cell A and Cell B) are shown on Figure 3. Groundwater monitoring well details are summarized in Table 1, including static water level and potentiometric surface data (i.e., groundwater elevation data).

GROUNDWATER MONITORING SUMMARY

CCR groundwater monitoring was conducted semi-annually during the Spring and Fall of each year (i.e., during April and October, respectively). Groundwater monitoring was performed on April 23, 2018 and October 11, 2018 for CCR Appendix III parameters (Table 2). Static water levels were obtained and groundwater elevations calculated for both groundwater monitoring events (Table 1). CCR groundwater monitoring will continue through the active life of the CCR Unit and post closure. CCR Unit post closure monitoring will be conducted for 30 years.

Groundwater Elevations and General Groundwater Flow Direction

Groundwater elevations summarized in Table 1 were graphed (see Figure 4 Hydrograph). Potentiometric surface (groundwater elevation) contour maps were created and general groundwater flow direction evaluated (Figures 5 and 6). Groundwater elevations fluctuated the most in the upgradient monitoring well MW-7, most likely due to MW-7 being more susceptible to precipitation events affecting surface water within the tailings basin and therefore within groundwater in the area. MW-7 is a relatively shallow well (i.e., screened depth 16.6 to 26.6 feet below the ground surface) installed within the tailings basin (Figure 3).

Based on evaluation of the groundwater data, the general direction of groundwater flow is east-southeast (Figures 5, and 6) towards the ditch (Welcome Creek) consistent with historical groundwater flow. Evaluation of groundwater elevation trends will continue throughout the active life of the CCR Unit and post closure.

Quality Assurance and Data Validation

Quality control (QC) samples were included for the CCR monitoring events. QC samples include field blanks and field duplicates analyzed for the same parameters as the respective monitoring well. The QC samples are used to determine the integrity of the field sampling procedures and the validity of the analytical results.

Groundwater Monitoring Results

Groundwater monitoring results are summarized in Table 3 (CCR Appendix III Lab Results Summary). Statistical analysis of the groundwater monitoring results, including determination of whether or not a Statistically Significant Increase (SSI) has been observed is presented below.

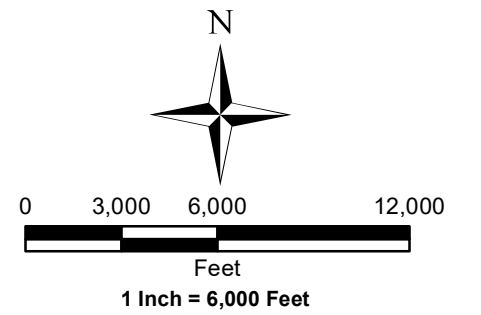
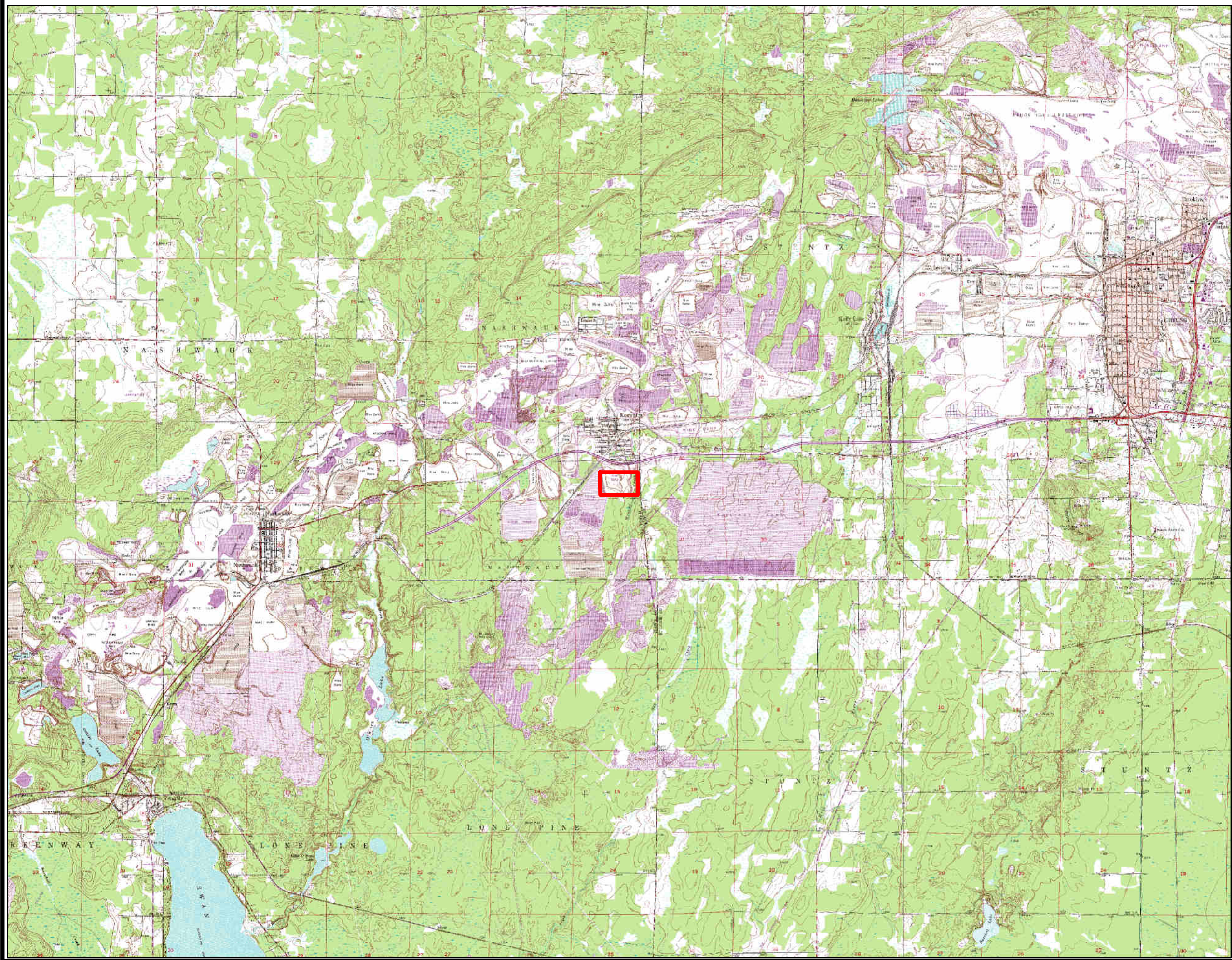
STATISTICAL ANALYSIS

Statistical Analysis was performed using the laboratory analysis results of the April 23, 2018 to October 11, 2018 groundwater monitoring events based on the Statistical Analysis Plan (SAP) written for the facility. No SSIs were determined to have occurred based on the statistical evaluation of 2018 groundwater monitoring results. The statistical analysis are presented in Appendix B.

CONCLUSIONS AND RECOMMENDATIONS

Review of the collected data indicates that a SSI of CCR Appendix III parameter concentrations has not occurred in the downgradient monitoring wells (see Appendix B). Detection monitoring should continue as described in the Statistical Analysis Plan.

FIGURES



Legend



Notes:

-Background image has been provided by MNGEO Web Services

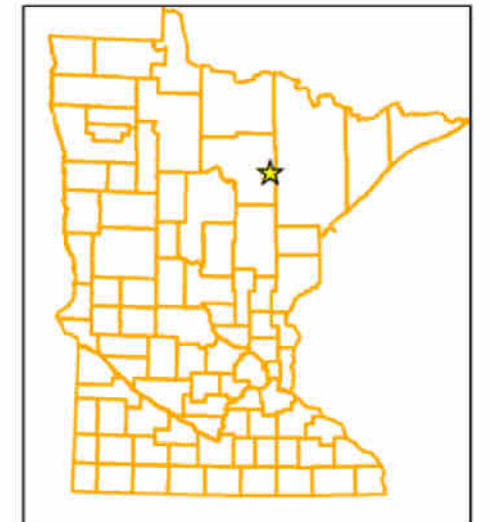
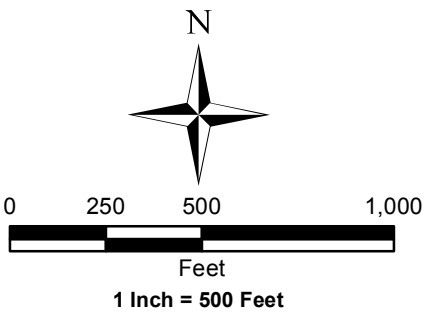
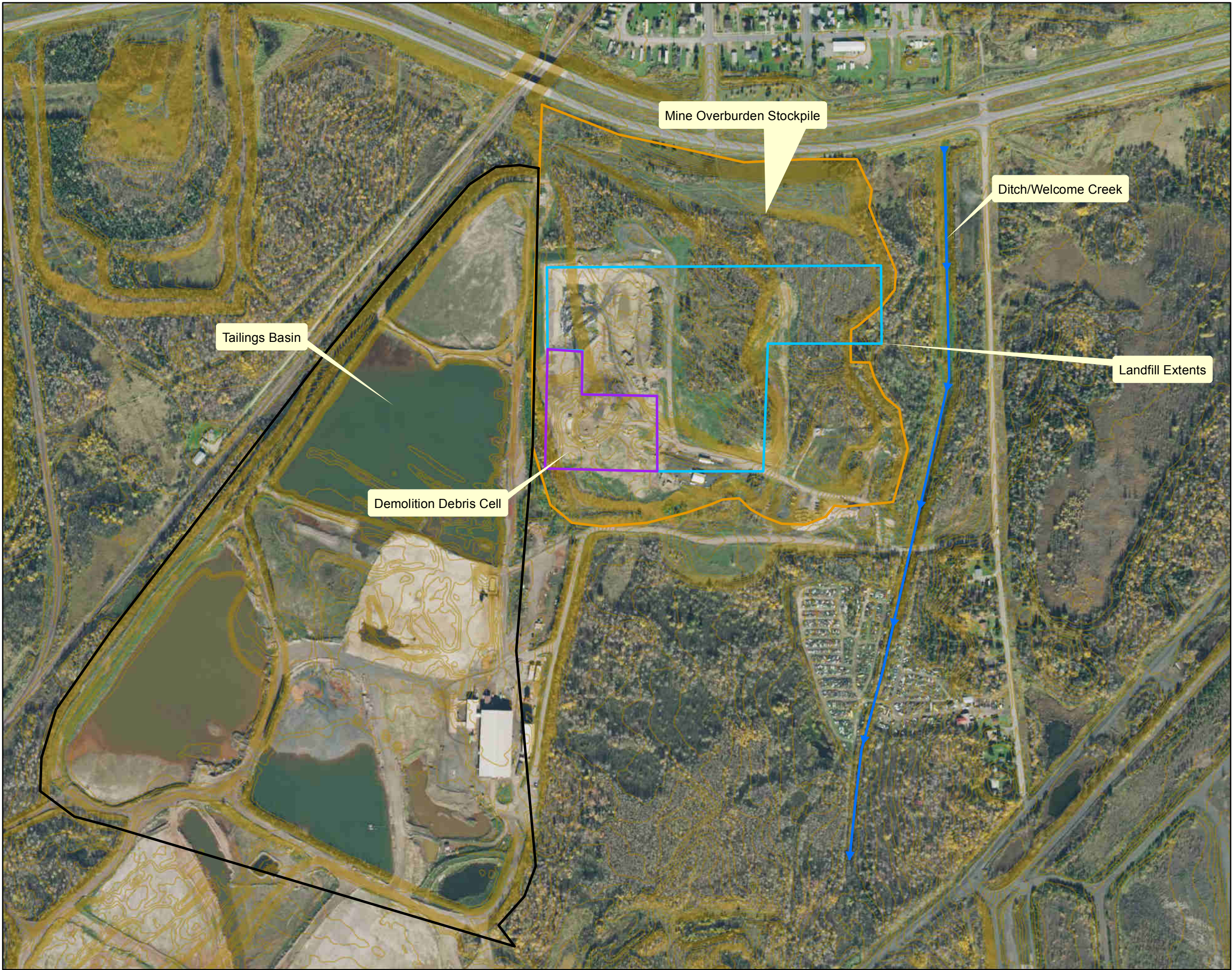


Figure 1
Site Vicinity Map







General Waste Industrial Landfill
CCR Groundwater Monitoring System
Keewatin, MN (Itasca)



Date Drawn :
January 16, 2019
Drawn By :
Alain Moll
NTS Project #:
6385CC



Legend

-  Demolition Debris Cell
-  CCR Landfill Footprint
-  Tailings Basin
-  Mine Overburden Stockpile
-  Ditch/Welcome Creek
-  Contours

Notes:

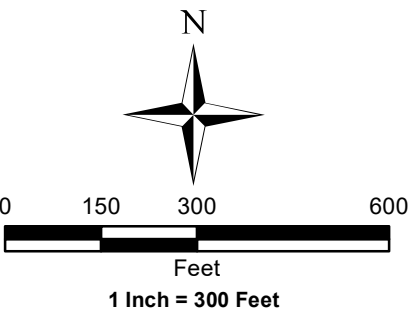
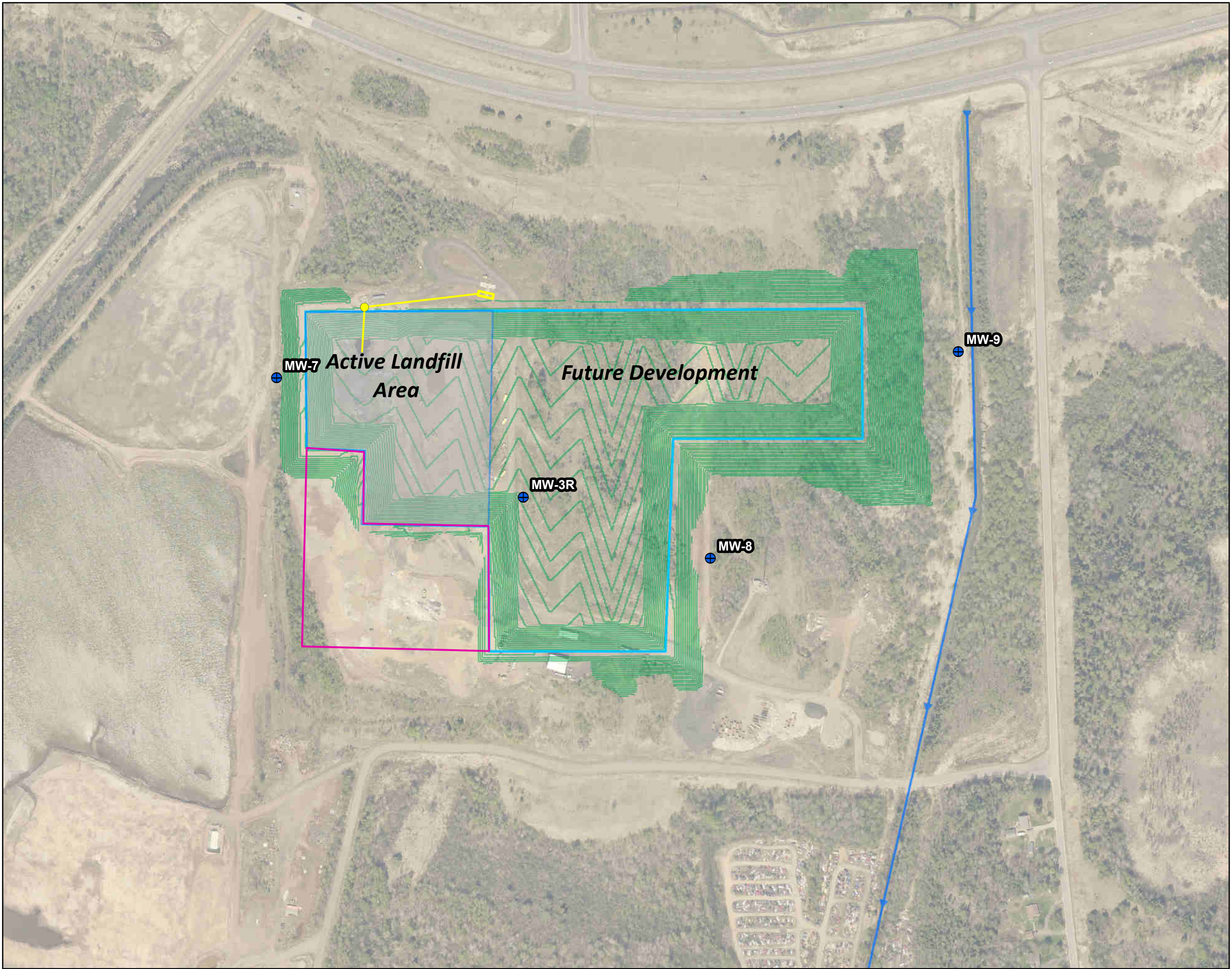
-Background image has been provided by MNGEO Web Services, Image Date 2013

Figure 2
Site Location Map

General Waste Industrial Landfill
CCR Groundwater Monitoring System
Keewatin, MN (Itasca)



Date Drawn :
January16, 2019
Drawn By :
Alain Moll
NTS Project #:
6385CC



Legend

- Groundwater Monitoring Well
- Leachate Pump Access Vault
- Leachate Collection Pipe
- Leachate Collection Pad
- Demolition Debris Cell
- Landfill Footprint
- Landfill Base Grade Contours
- Ditch

Notes:
-Background image has been provided by St. Louis County Web Services, App Image Date: May, 2016

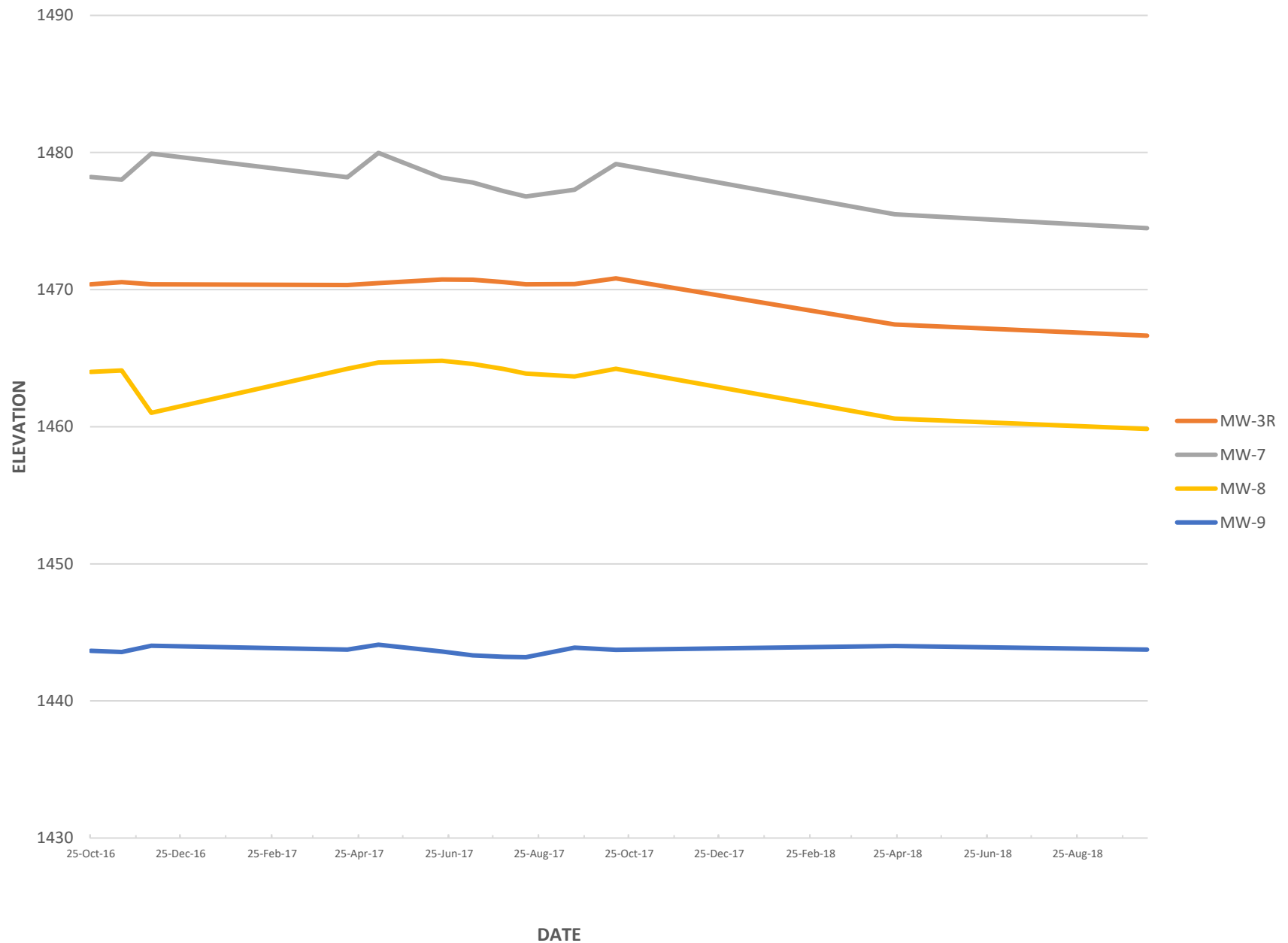
Figure 3
Site Detail Map

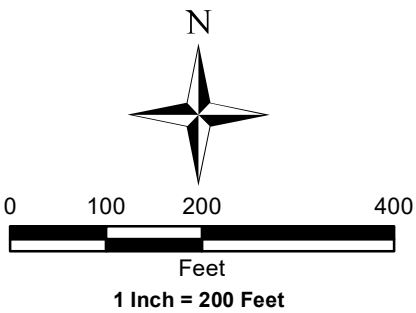
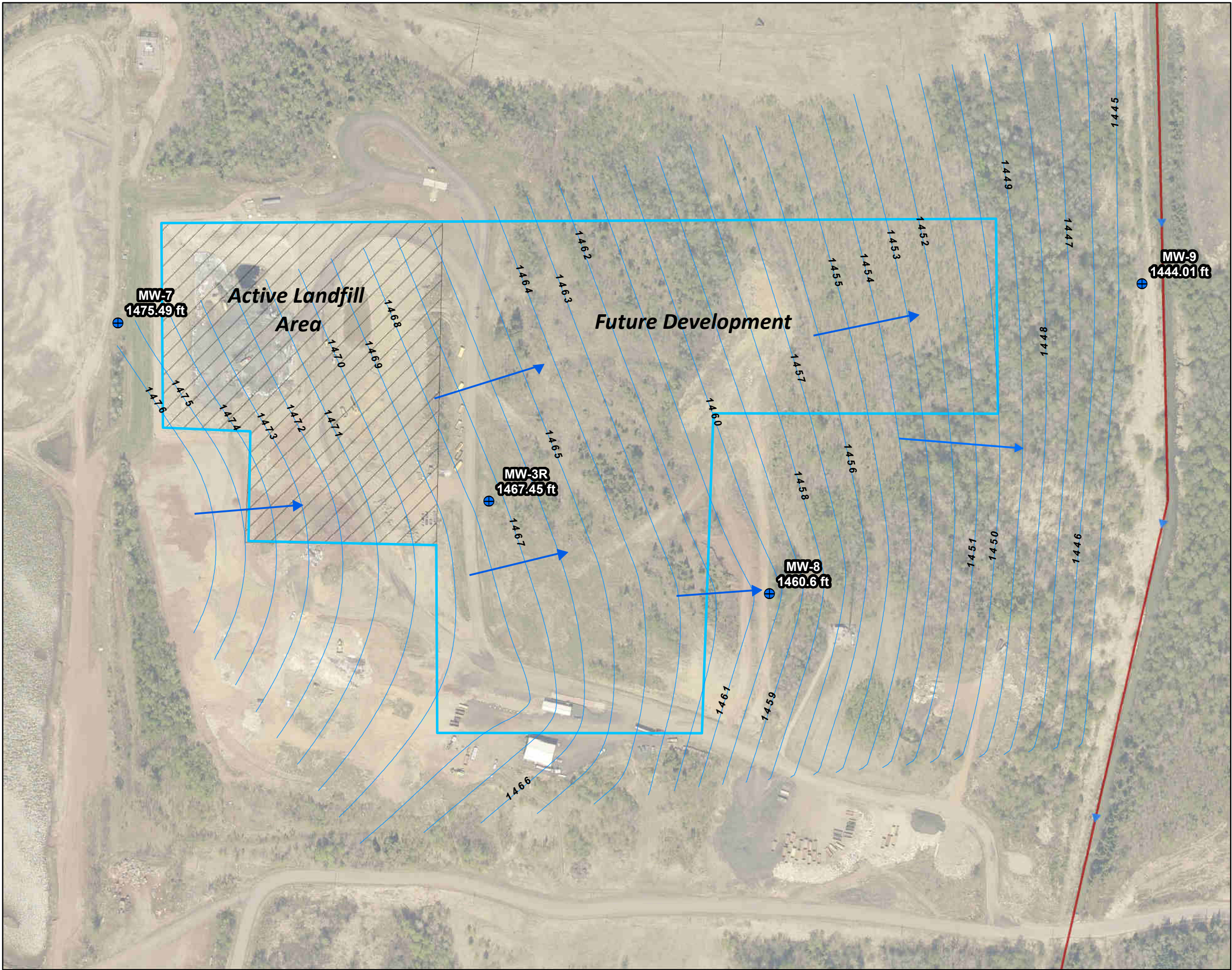
**General Waste Industrial Landfill
CCR Groundwater Monitoring System
Keewatin, MN (Itasca)**



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January 16, 2019
Drawn By :
Evan Johnson
NTS Project #:
6385CC

FIGURE 4
HYDROGRAPH





Legend

- ⊕ Groundwater Monitoring Wells
- April, 2018 Contours
- Landfill Footprint
- ➡➡➡➡ Ditch
- ➡ Approximate Groundwater Flow Direction

Notes:

-Background image has been provided by St. Louis County Web Services, App Image Date: May, 2016

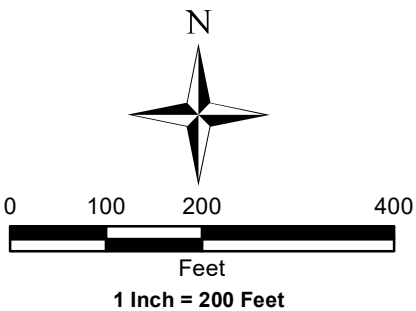
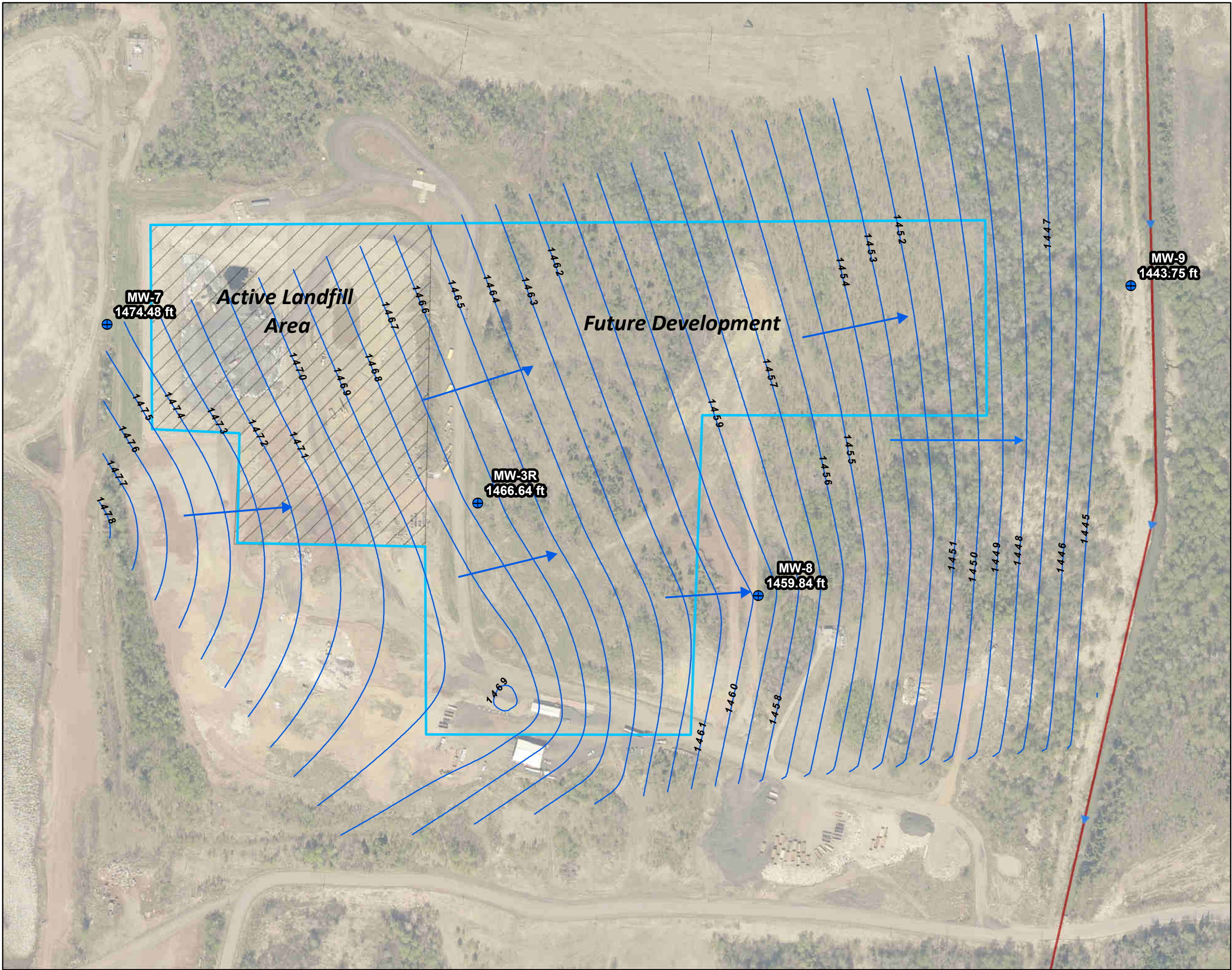
Figure 5

**April 23, 2018
Groundwater Flow Map**

General Waste Industrial Landfill
CCR Groundwater Monitoring System
Keewatin, MN (Itasca)



Date Drawn :
January 16, 2019
Drawn By :
Evan Johnson
NTS Project #:
6385CC



Legend

- ⊕ Groundwater Monitoring Wells
- October, 2018 contours
- Landfill Footprint
- ➡➡➡➡ Ditch
- ➡ Approximate Groundwater Flow Direction

Notes:

-Background image has been provided by St. Louis County Web Services, App Image Date: May, 2016

Figure 6
October 11, 2018
Groundwater Flow Map

General Waste Industrial Landfill
CCR Groundwater Monitoring System
Keewatin, MN (Itasca)



Date Drawn :
January 16, 2019
Drawn By :
Evan Johnson
NTS Project #:
6385CC

TABLES

TABLE 1
GROUNDWATER MONITORING WELL DETAILS
GENERAL WASTE AND RECYCLING CCR LANDFILL

	MW-3R		MW-7		MW-8		MW-9	
MDH Unique Well #	797239		817979		817978		817980	
Northing (UTM NAD83)	5248332.87		5248449.356		5248271.719		5248474.904	
Easting (Zone 15 Meters)	494267.27		494024.588		494451.676		494695.922	
Installation Date	7/9/15		9/30/2016		9/29/2016		9/30/2016	
Ground Elev. (ft)	1530.10		1493.62		1491.63		1452.93	
Riser Top Elev. (ft)	1532.29		1496.13		1494.41		1454.72	
Total Depth (ft)	75.0		26.6		41.3		18.9	
Screened Interval (ft)	65 - 75		16.6 - 26.6		31.3 - 41.3		8.9 - 18.9	
Screened Elevation	1465.10 - 1455.10		1477.02 - 1467.02		1460.33 - 1450.33		1444.03 - 1434.03	
Date of Measurement	Static Level	GW Elev.	Static Level	GW Elev.	Static Level	GW Elev.	Static Level	GW Elev.
25-Oct-16	61.90	1470.39	17.92	1478.21	30.42	1463.99	11.07	1443.65
15-Nov-16	61.75	1470.54	18.11	1478.02	30.31	1464.10	11.16	1443.56
5-Dec-16	61.90	1470.39	16.22	1479.91	33.40	1461.01	10.69	1444.03
17-Apr-17	61.95	1470.34	17.93	1478.20	30.18	1464.23	10.98	1443.74
8-May-17	61.82	1470.47	16.16	1479.97	29.72	1464.69	10.62	1444.10
20-Jun-17	61.56	1470.73	17.97	1478.16	29.60	1464.81	11.11	1443.61
11-Jul-17	61.57	1470.72	18.32	1477.81	29.84	1464.57	11.40	1443.32
1-Aug-17	61.74	1470.55	18.95	1477.18	30.21	1464.20	11.50	1443.22
16-Aug-17	61.90	1470.39	19.34	1476.79	30.53	1463.88	11.53	1443.19
18-Sep-17	61.89	1470.40	18.85	1477.28	30.74	1463.67	10.84	1443.88
16-Oct-17	61.47	1470.82	16.97	1479.16	30.18	1464.23	11.00	1443.72
23-Apr-18	64.84	1467.45	20.64	1475.49	33.81	1460.60	10.71	1444.01
11-Oct-18	65.65	1466.64	21.65	1474.48	34.57	1459.84	10.97	1443.75

TABLE 2
CCR APPENDIX III PARAMETERS

Parameter	MCL
Boron	NA
Calcium	NA
Chloride	NA
Fluoride	4.0 mg/L
pH	NA
Sulfate	NA
Total Dissolved Solids (TDS)	NA

TABLE 3
CCR APPENDIX III LAB RESULTS SUMMARY
GENERAL WASTE AND RECYCLING, LLC

PARAMETER	UNITS	DATE	MW-3R	MW-7	MW-8	MW-9	Field Dup	Field Blank
Boron	µg/L	17-Apr-17	<160	<160	<160	<160	<160	<40.0
		8-May-17	<160	<160	<160	<160	<160	<40.0
		20-Jun-17	<160	<160	<160	<160	<160	<40.0
		11-Jul-17	124	76.4	70.7	<40.0	<40.0	<40.0
		1-Aug-17	123	75.9	69.5	<40.0	<40.0	<40.0
		16-Aug-17	114	<80.0	<80.0	<80.0	<80.0	<40.0
		18-Sep-17	122	<80.0	<80.0	<80.0	<80.0	<40.0
		16-Oct-17	126	87.8	<80.0	<80.0	<80.0	<40.0
		23-Apr-18	123	73.8	79.5	43.3	39.7	39.3
		11-Oct-18	103	70.8	64.7	<40.0	<40.0	<40.0
Calcium	mg/L	17-Apr-17	563	350	384	197	192	<0.50
		8-May-17	588	404	402	203	209	<1.0
		20-Jun-17	607	524	373	211	207	<0.50
		11-Jul-17	628	355	387	199	199	<0.50
		1-Aug-17	650	375	415	189	185	<0.50
		16-Aug-17	609	341	388	179	178	<0.50
		18-Sep-17	538	316	369	192	191	<100
		16-Oct-17	585	357	448	197	197	<100
		23-Apr-18	551	371	371	229	222	<0.50
		11-Oct-18	532	400	331	193	192	<1.0

TABLE 3
CCR APPENDIX III LAB RESULTS SUMMARY
GENERAL WASTE AND RECYCLING, LLC

PARAMETER	UNITS	DATE	MW-3R	MW-7	MW-8	MW-9	Field Dup	Field Blank
Chloride	mg/L	25-Oct-16	1.1	109	1	606	606	<1.0
		15-Nov-16	2.2	105	1.2	4.1	4.3	<1.0
		5-Dec-16	1.6	102	1.2	5.8	5.8	<1.0
		17-Apr-17	1.1	63.8	1.1	6.6	7.6	<1.0
		8-May-17	1.1	52.2	<1.0	14.9	13.9	<1.0
		20-Jun-17	1.1	52.5	1	8.9	9	<1.0
		11-Jul-17	1.1	55.6	1	17.6	17.5	<1.0
		1-Aug-17	1.2	61.0	1.3	20.8	20.3	<1.0
		16-Aug-17	1.2	67.5	1.2	19	19.8	<1.0
		18-Sep-17	1.2	82.4	1	10.4	10.7	<1.0
		16-Oct-17	1.1	52.0	1.2	8.7	8.8	<1.0
		23-Apr-18	1.5	124	<1.2	2.8	2.5	<1.2
		11-Oct-18	2.0	91.4	1.4	8.4	8.4	<1.0
Fluoride	mg/L	25-Oct-16	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
		15-Nov-16	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
		5-Dec-16	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
		17-Apr-17	0.11	0.11	<0.10	<0.10	<0.10	<0.10
		8-May-17	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
		20-Jun-17	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
		11-Jul-17	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
		1-Aug-17	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
		16-Aug-17	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
		18-Sep-17	0.1	<0.10	<0.10	<0.10	<0.10	<0.10
		16-Oct-17	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
		23-Apr-18	0.086	0.080	0.053	0.075	0.068	<0.050
		11-Oct-18	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

TABLE 3
CCR APPENDIX III LAB RESULTS SUMMARY
GENERAL WASTE AND RECYCLING, LLC

PARAMETER	UNITS	DATE	MW-3R	MW-7	MW-8	MW-9	Field Dup	Field Blank
pH, Lab	mg/L	25-Oct-16	7.3	7.4	7.4	7.4	7.3	6.3
		15-Nov-16	7.3	7.2	7.2	7.2	7.2	6.0
		5-Dec-16	6.8	6.6	6.6	6.9	6.8	7.1
		17-Apr-17	7.3	7.4	7.3	7.3	7.3	6.1
		8-May-17	7.2	7.1	7.1	7.2	7.2	6.2
		20-Jun-17	7.1	7.1	7.2	7.2	7.2	5.9
		11-Jul-17	7.1	7.1	7.1	7.2	7.2	6.0
		1-Aug-17	7.1	7.1	7.2	7.2	7.2	6.0
		16-Aug-17	7.1	7.2	7.2	7.2	7.2	5.8
		18-Sep-17	7.2	7.1	7.2	7.2	7.2	5.8
		16-Oct-17	7.3	7.2	7.2	7.3	7.3	6.0
		23-Apr-18	6.8	7.0	7.0	6.3	6.6	8.6
		11-Oct-18	7.2	7.2	7.2	7.2	7.2	6.1
Sulfate	mg/L	25-Oct-16	1980	937	823	462	458	<2.0
		15-Nov-16	1820	929	764	475	470	<2.0
		5-Dec-16	1840	903	778	460	460	<2.0
		17-Apr-17	1710	551	780	454	441	<2.0
		8-May-17	1760	712	731	438	433	<2.0
		20-Jun-17	1810	746	672	459	458	<2.0
		11-Jul-17	1870	548	707	406	412	<2.0
		1-Aug-17	1830	511	700	339	342	<2.0
		16-Aug-17	1840	447	703	354	348	<2.0
		18-Sep-17	1890	441	719	432	436	<2.0
		16-Oct-17	1840	675	1010	443	432	<2.0
		23-Apr-18	1520	488	617	481	464	<1.2
		11-Oct-18	1550	695	589	460	461	<2.0

TABLE 3
CCR APPENDIX III LAB RESULTS SUMMARY
GENERAL WASTE AND RECYCLING, LLC

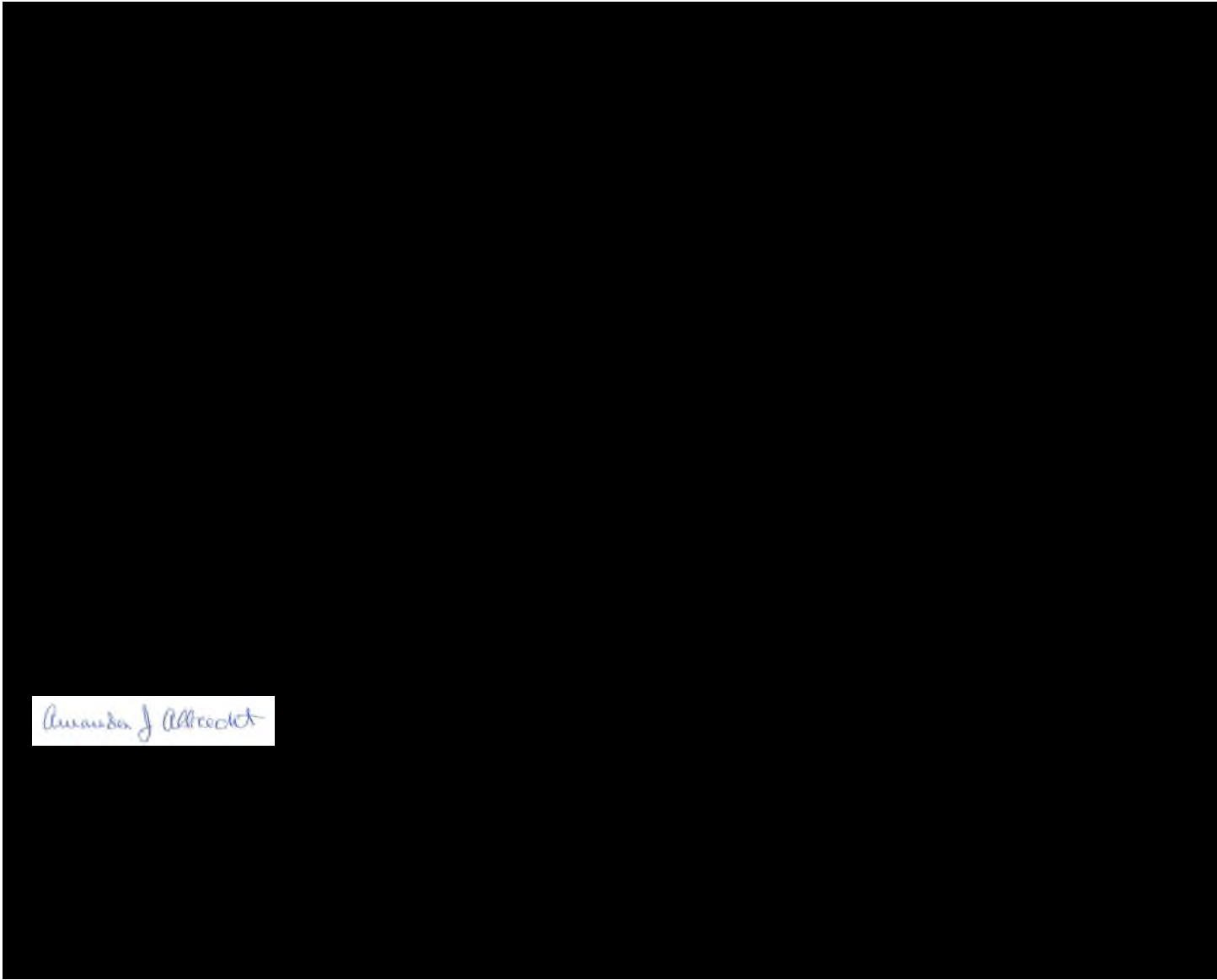
PARAMETER	UNITS	DATE	MW-3R	MW-7	MW-8	MW-9	Field Dup	Field Blank
Total Dissolved Solids (TDS)	mg/L	25-Oct-16	3300	2070	1740	1070	1090	<10.0
		15-Nov-16	3130	2090	1710	1190	1140	<10.0
		5-Dec-16	3110	1940	1710	1100	1110	<10.0
		17-Apr-17	3160	1500	1760	1180	1120	<10.0
		8-May-17	3010	1610	1630	1050	1040	<10.0
		20-Jun-17	3190	1700	1510	1090	1120	<10.0
		11-Jul-17	3040	1380	1550	1010	1020	<10.0
		1-Aug-17	3290	1300	1560	864	888	12
		16-Aug-17	3360	1300	1610	979	957	32
		18-Sep-17	2580	1310	1580	1100	1000	<10.0
		16-Oct-17	3110	1380	1800	993	1010	<10.0
		23-Apr-18	2870	1420	1400	1080	1080	<10.0
		11-Oct-18	2850	1600	1350	1100	1120	<10.0

APPENDICES

APPENDIX A

ANALYTICAL LABORATORY REPORTS & FIELD REPORTS

May 08, 2018



Alexandra J. Albrecht

cc: Dave Brownell, General Waste (Dem-Con)
Erin Chamberlain, Dem-Con Companies
Rick Crum, NTS
Bill Keegan, Dem-Con Companies
Accounts Payable, Dem-Con Companies
Scott Seeley, Northeast Technical Services, Inc.



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

REPORT OF LABORATORY ANALYSIS

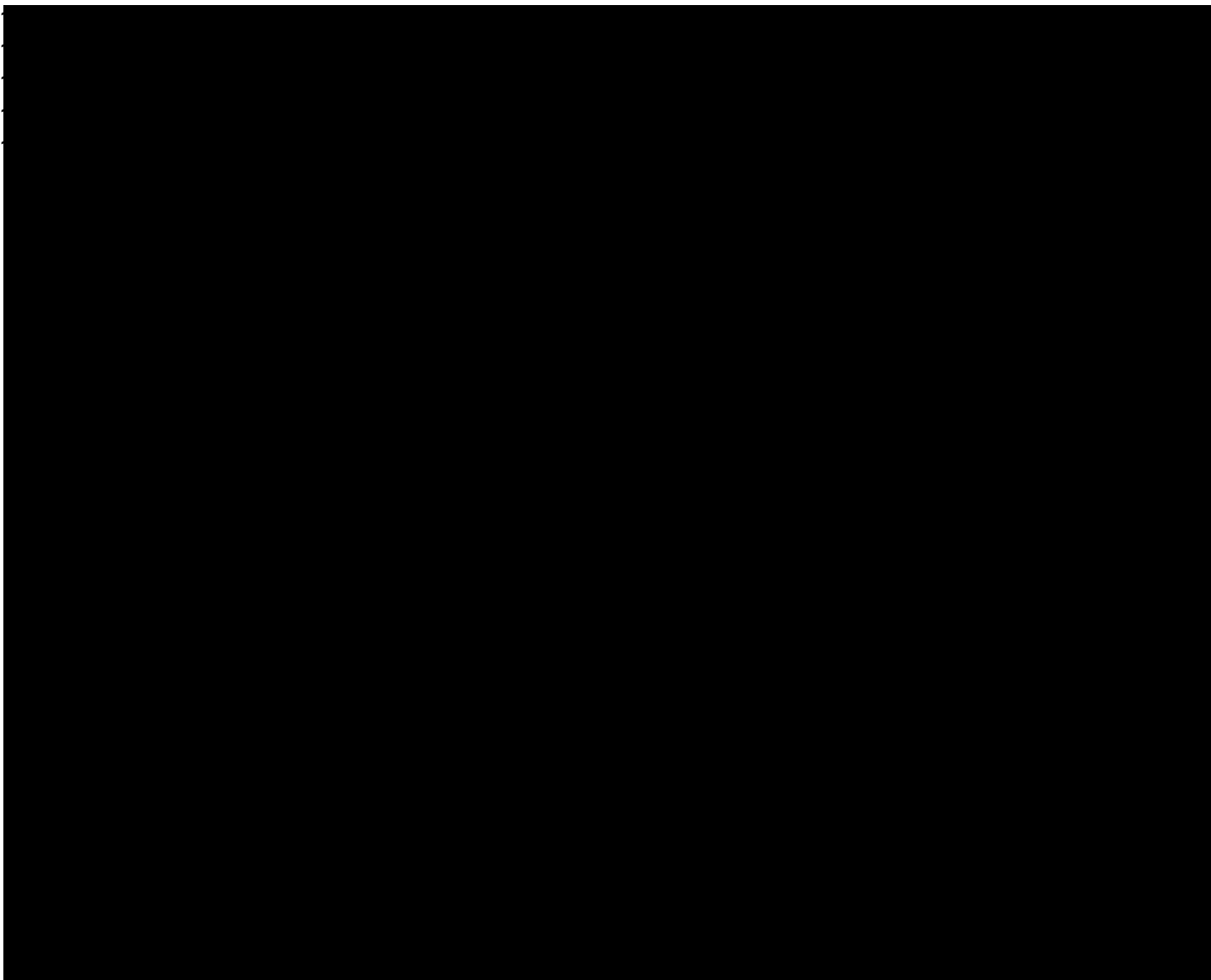
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SAMPLE SUMMARY

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10428289001	MW3R	Water	04/23/18 10:33	04/24/18 10:00



REPORT OF LABORATORY ANALYSIS

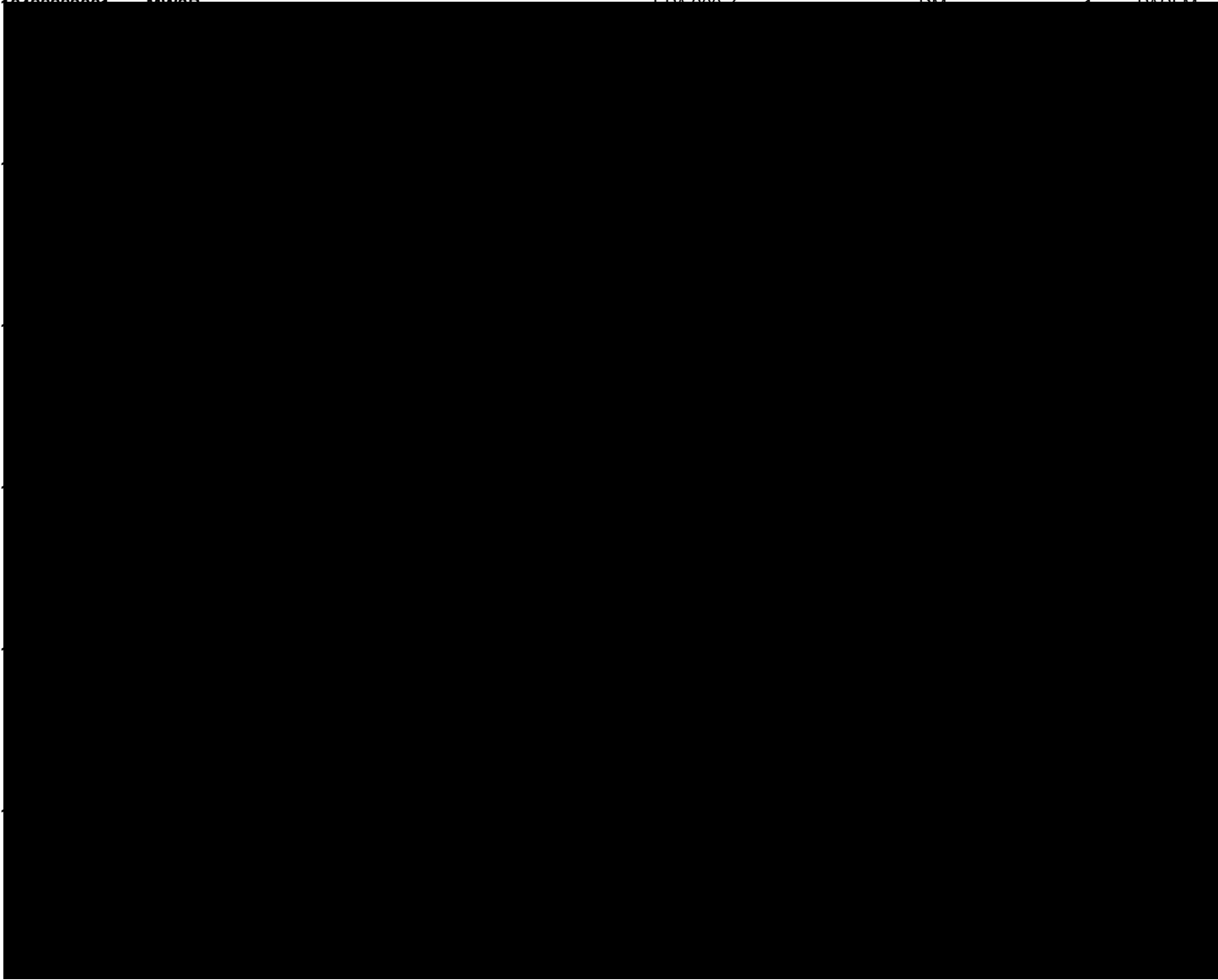
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SAMPLE ANALYTE COUNT

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10100000001	MM000	EPA 800.7	DM	1	PAC LM



REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: MW3R		Lab ID: 10428289001	Collected: 04/23/18 10:33	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
C								
2								
B								
2								
T								
4								
P								
3								
C								
P								
S								

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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: MW7		Lab ID: 10428289002	Collected: 04/23/18 09:37	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
C								
2								
B								
2								
T								
4								
P								
3								
C								
P								
S								

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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: MW8		Lab ID: 10428289003	Collected: 04/23/18 11:37	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
C								
2								
B								
2								
T								
4								
P								
3								
C								
P								
S								

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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: MW9		Lab ID: 10428289004	Collected: 04/23/18 12:30	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
C								
2								
B								
2								
T								
4								
P								
3								
C								
P								
S								

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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: Field Duplicate		Lab ID: 10428289005	Collected: 04/23/18 12:35	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
C								
2								
B								
2								
T								
4								
P								
3								
C								
P								
S								

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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: Field Blank		Lab ID: 10428289006	Collected: 04/23/18 12:20	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
C								
2								
B								
2								
T								
4								
P								
3								
C								
P								
S								

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

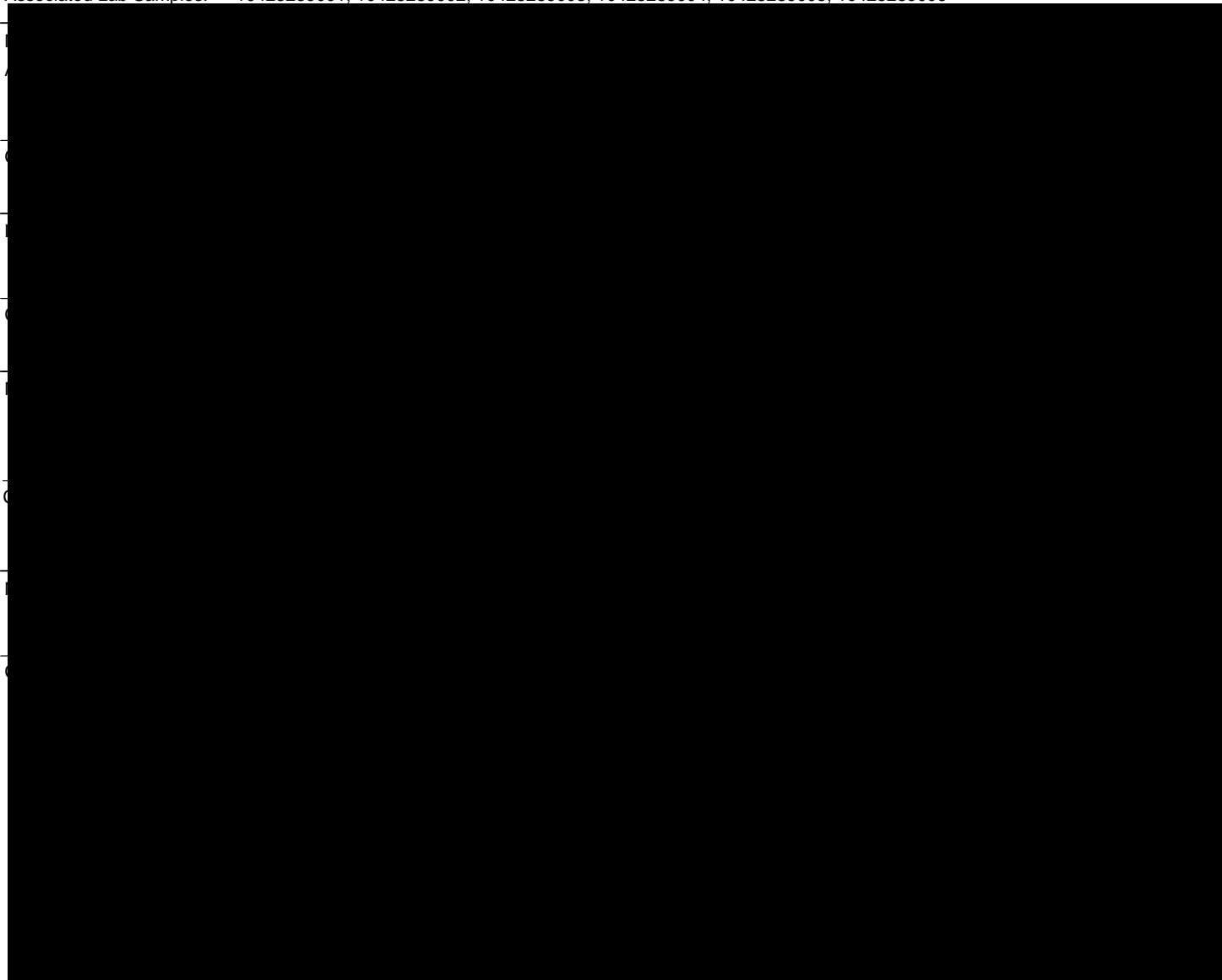
QC Batch: 533927

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 MET

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

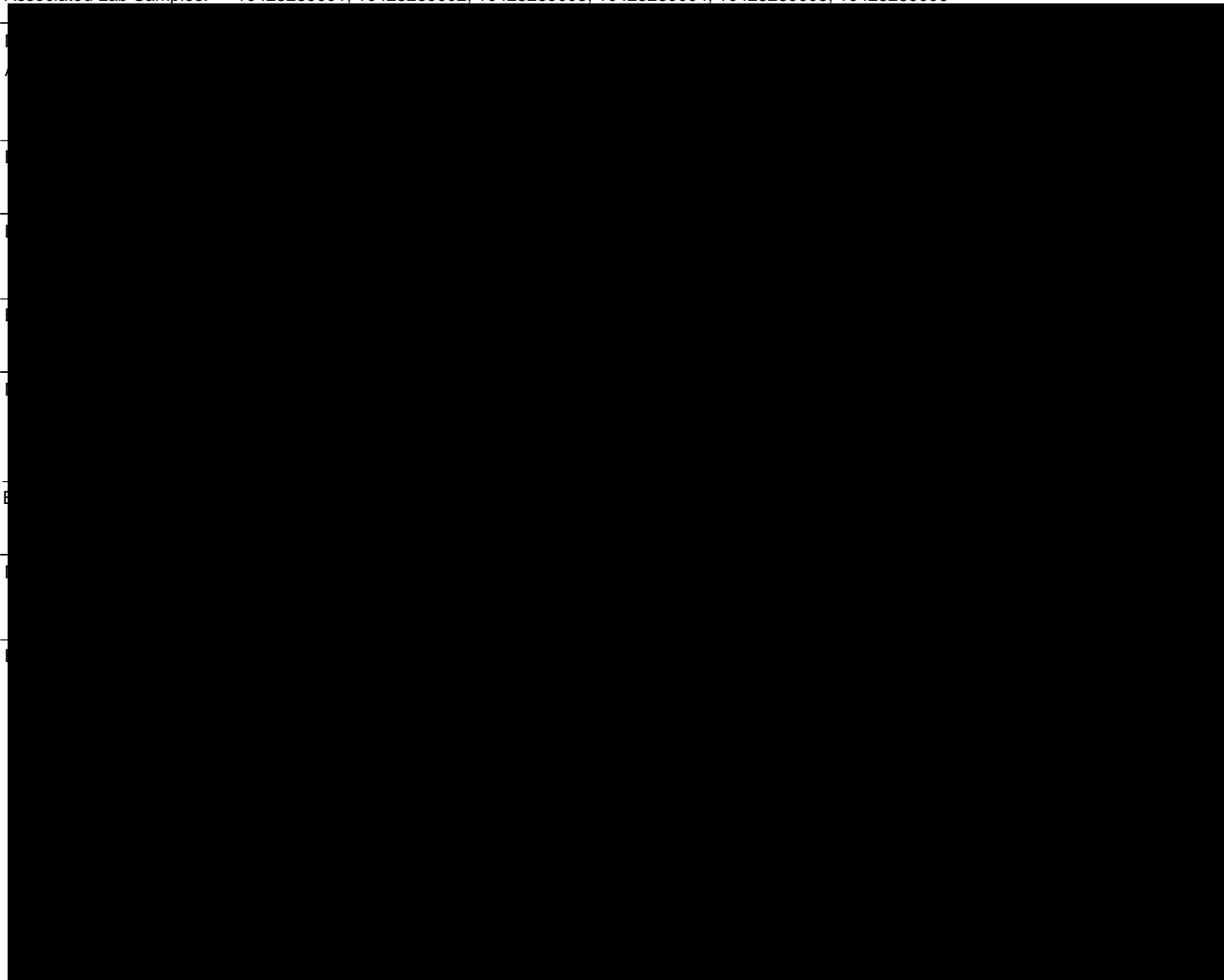
QC Batch: 533928

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

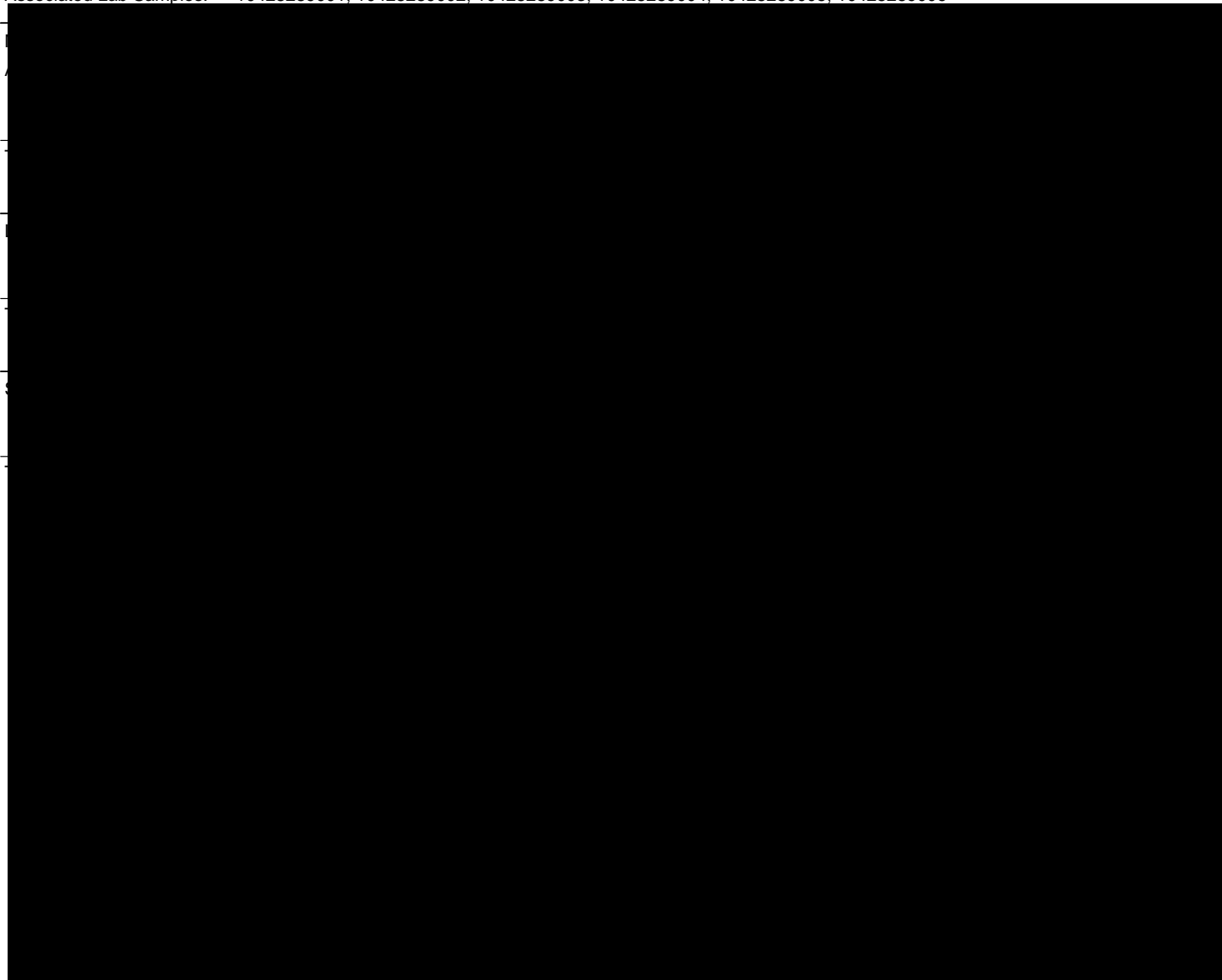
QC Batch: 534680

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

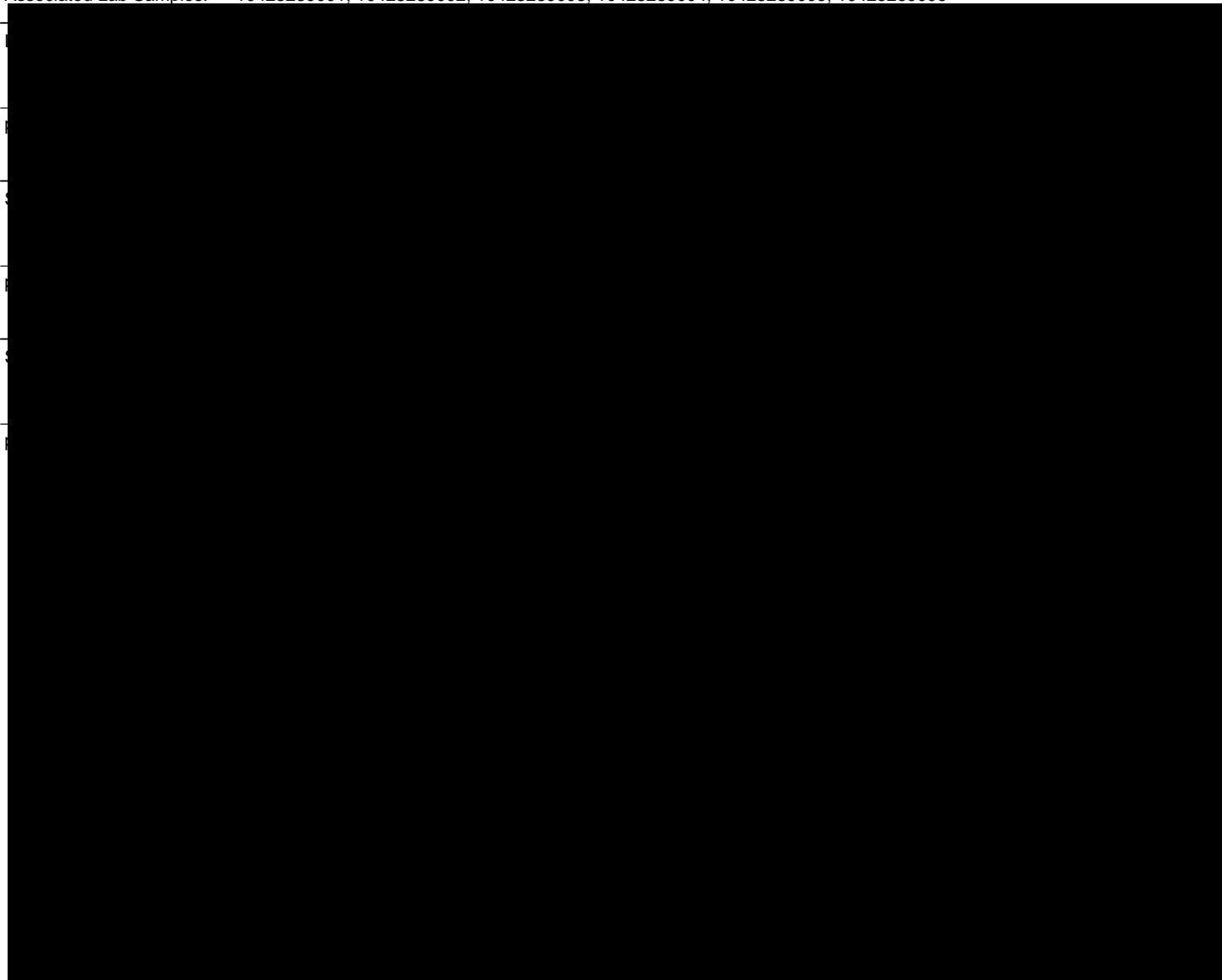
QC Batch: 535049

Analysis Method: SM 4500-H+B

QC Batch Method: SM 4500-H+B

Analysis Description: 4500H+B pH

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

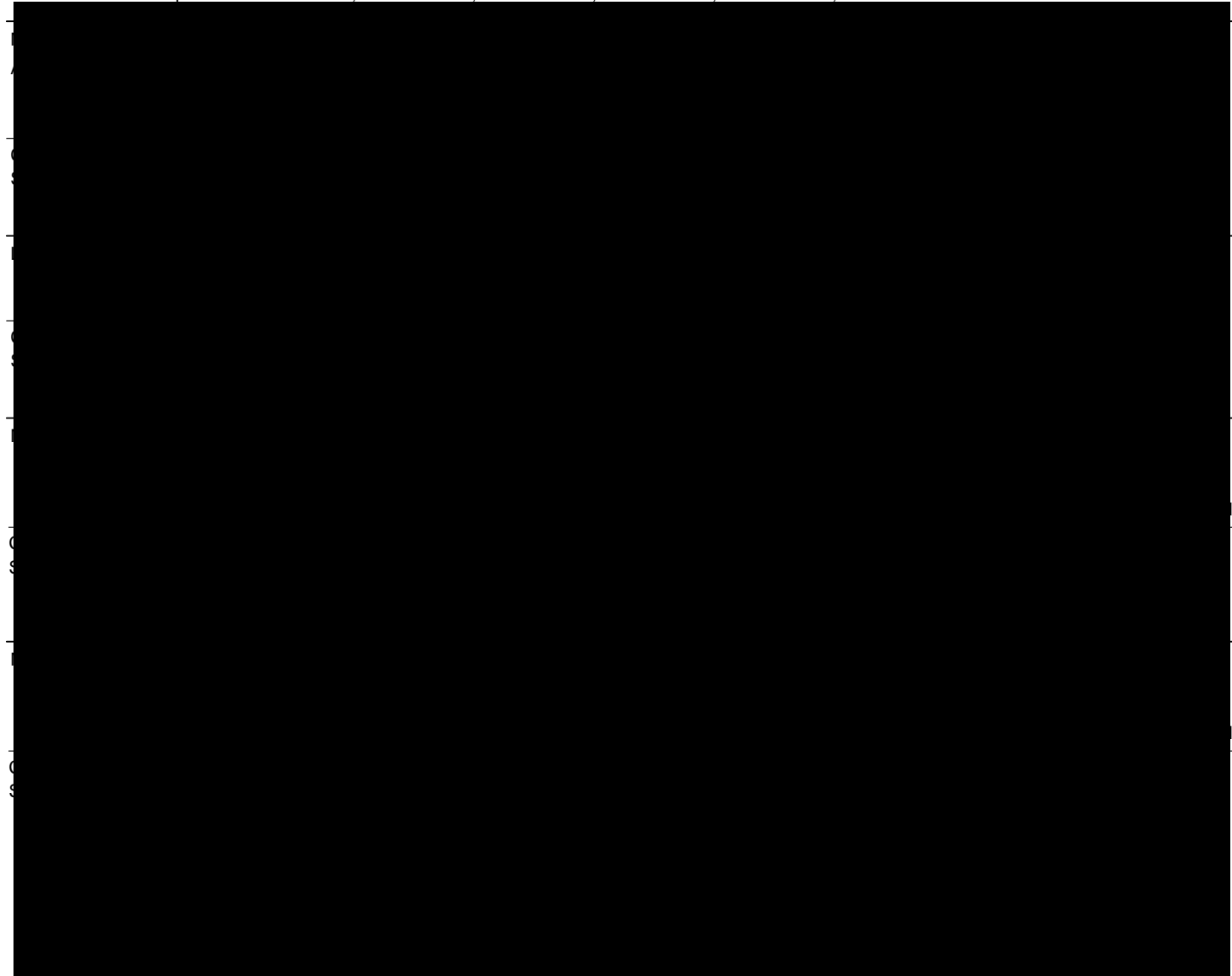
QC Batch: 534208

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

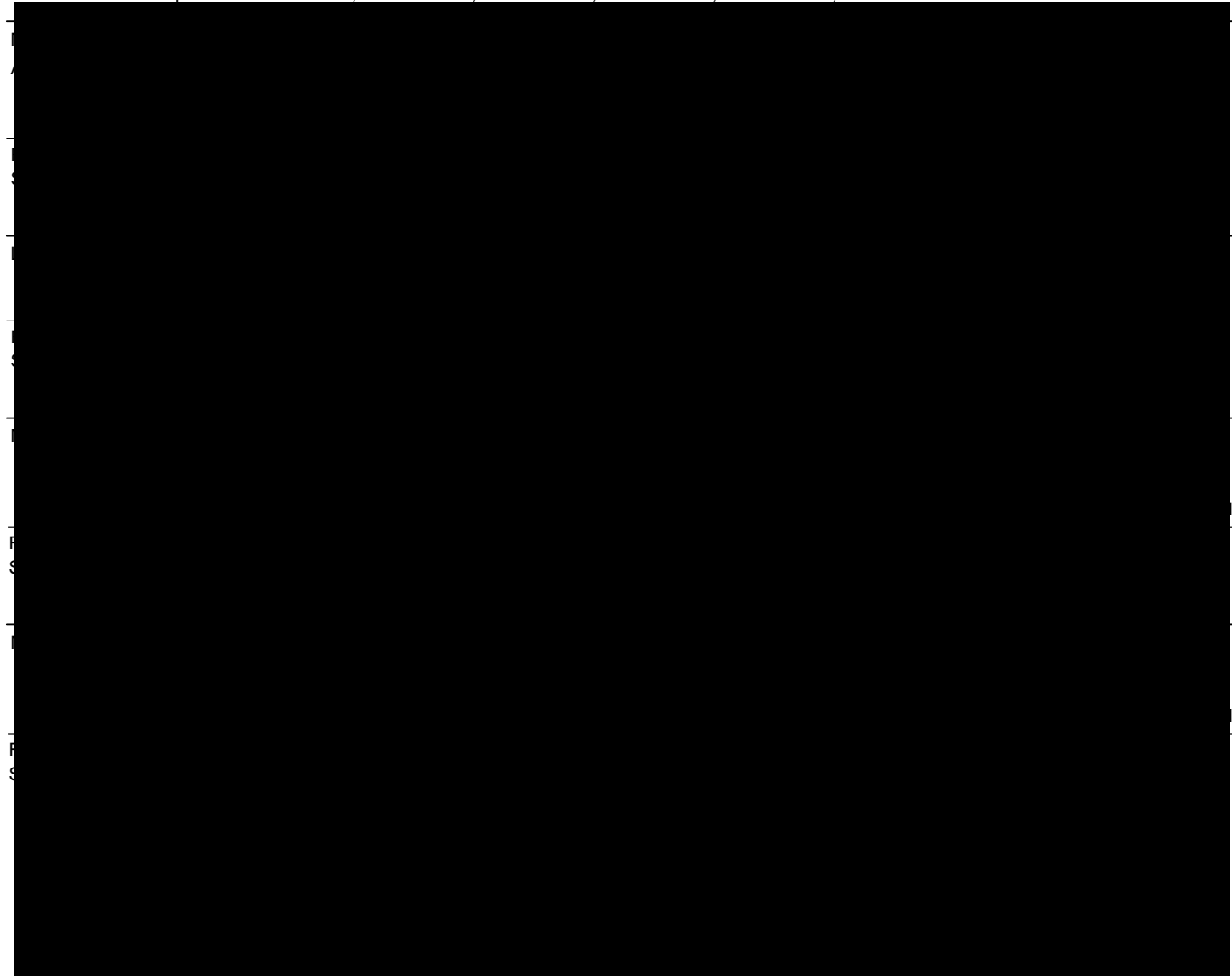
QC Batch: 535414

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



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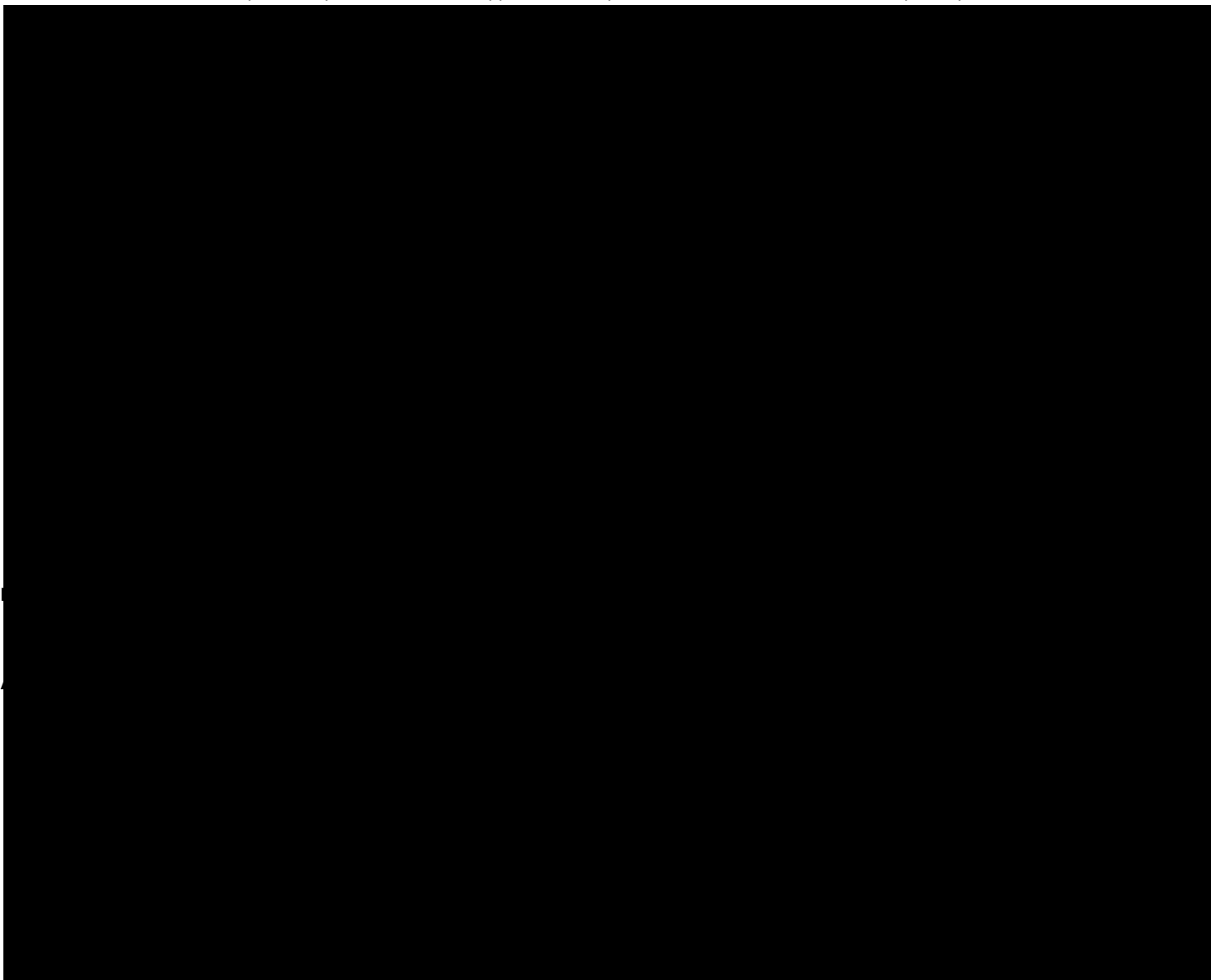
QUALIFIERS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

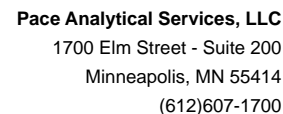
DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.



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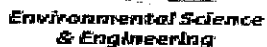


Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

REPORT OF LABORATORY ANALYSIS

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526 CHESTNUT STREET

VIRGINIA, MN 55792
(218) 741-4290 Fax: (218) 741-4291


PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

REQUIRED TURN-AROUND TIME: 2 Weeks from submittal date

CLIENT NAME, ADDRESS, PHONE#: GENERAL WASTE and RECYLING LLC DEMOLITION & INDUSTRIAL LANDFILL ITASCA COUNTY, MINNESOTA			REPORT TO: ERIN CHAMBERLAIN, DENNIS SCHUBBE, RICK CRUM & SCOTT SEELEY			TYPE & # CONTAINERS			SPECIAL INSTRUCTIONS: SEE ATTACHED LIST WITH METHODS WO# : 10428289  10428289		
SAMPLER: <i>Corey Andrews</i>			PERMIT REQ.: SW-620			VOC M: 8260 (HCL) GENERAL CHEMISTRY (NO PRES) GENERAL CHEMISTRY (H2SO4) TOTAL METALS (HN03) DISSOLVED METALS (HN03)					
PROJECT: GENERAL WASTE DISPOSAL and RECYCLING, LLC.			Apr-18								
PROJECT NUMBER: 6385CC CCR Monitoring			COLLECTION:			MATRIX			filtered		
LOG-IN #	SAMPLE #	DESCRIPTION:	DATE:	TIME:	LIQ.	SOL.					REQUIRED ANALYSIS:
	MW3R	GW WELL	4/23/18	1033	X		N	1		1	Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS 001
	MW7	GW WELL	I	0937	X		N	1		1	Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS 002
	MW8	GW WELL		1137	X		N	1		1	Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS 003
	MW9	GW WELL		1230	X		N	1		1	Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS 004
	Field Duplicate	GW WELL		1235	X		N	1		1	Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS 005
	Field Blank	Field Blank		1220	X		N	1		1	Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS 006
RELINQUISHED BY: <i>Corey Andrews</i>			DATE: 4/23/18			RECEIVED BY: <i>Janet</i>			DATE: 4/24/18		
RELINQUISHED TO NTS SAMPLE LOCK-UP BY:			DATE:			RECEIVED FROM NTS SAMPLE LOCKUP BY:			DATE:		
TIME:			TIME:			TIME:			TIME:		
RECEIVED FOR LAB BY: <i>B Mathews</i>			TEMP. AT ARRIVAL: 4.0 C								
DATE: 4/23/18			TIME: 1415								

Det'd by: *M. E. Woods* 4/23/18 15:16

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

**Sample Condition
Upon Receipt**

Client Name:

Project #:

WO# : 10428289

PM: AA1 Due Date: 04/30/18
CLIENT: DEM-CON CO.

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Speedee ☐ Other: _____
Tracking Number: 7720 6397 0658

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No Seals Intact? ☐ Yes ☒ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer ☐ 151401163 ☒ G87A9155100842
Used: Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 2.1 Cooler Temp Corrected (°C): 2.1 Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A
Temp should be above freezing to 6°C Correction Factor: True Date and Initials of Person Examining Contents: JX1 4/24/18

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>11-61</u>
(HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin. <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review:



Date: 4/24/18

Note: Whenever there is a discrepancy affecting this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

GENERAL WASTE CCR METHODS

PARAMETER	SYMBOL	EPA Method
Boron	B	200.8
Calcium	Ca	200.7
Chloride	Chloride	300.0
Fluoride	Flouride	300.0
pH	pH	SM 4500 H+B
Sulfate	SO ₄	300.0
TDS	TDS	SM 2540C



Environmental Science
& Engineering

Field Report Cover Sheet

NORTHEAST TECHNICAL SERVICES, INC.
526 CHESTNUT STREET P.O. BOX 1142
VIRGINIA, MINNESOTA 55792
218-741-4290 FAX 218-741-4291
E-mail: nts@nettechnical.com

Project: April 2018 CCR Monitoring

Client: General Waste

Location: Kee watin

Project Number: 6385CC

Project Manager: Dennis Schubbbe

Date: 2018-04-23
(yyyy-mm-dd)

Weather/Temp: 65°F/Sunny

COC#: 10428289

Prep/Unload/Report Time: 1.25 1.25 Total 2.5
Prep Unload/Report

Site Time: 0845 1315 Total 4.5
Arrive Depart

Travel Time: 0.75 1.0 Total 1.75
To From

Total Field Time Entered to Stoneware: 8.75 Vehicle #: 60 76 Miles :Driven

Summary of Technical and/or Engineering Services Performed

Prepped i went to Gen- Waste to conduct the April 2018 CCR well monitoring project.

Samples & field parameters obtained after stabilization at GW wells MW-3R, MW-7, MW-8, & MW-9.

Samples ceded to PACE Analytical.

For add'l details see field sheets, field notes, & COC.

Site Sketch

Please Indicate North

Field Test Data is Estimated Pending Final Laboratory Results.

Attach other documents as defined by the Project Manager.

Field Scientist: [Signature]

Approved by: _____

Date: 4/23/2018

Page _____ of _____

Fill out and hand in field sheet on a real-time basis, any questions or comments, contact your project manager.

6385CC Gen Waste CCR Monitoring 4/23/18
Coney Andrews V#60 76 miles

High 65°F / Sunny / Wind SW 5-10
0645-0800 Prep / Cal / Load.

856 MW7 0937 Sample
SWL: 20.64' WC: 6.13'

TWD: 26.77 Vol: 1 gal

pt Spc Temp Turb ORP LDO
6.34 2008 11.4 32.8 404 0.00

0905 Begin pumping @ 0.2 GPM
Need new lock for well.

0956 MW3B 1033 Sample
SWL: 64.84 WC: 12.74

TWD: 77.58 Vol: 2.1 gal

pt Spc Temp Turb ORP LDO
6.45 3131 8.8 7.7 63 0.00

1005 Begin pumping @ 0.5 GPM
Slight odor in sample H₂O. Well looked
in good condition

1051 MW8 1137 Sample
SWL: 33.81 WC: 7.69

TWD: 41.46 Vol: 1.2 gal

pt Spc Temp Turb ORP LDO
6.40 1894 11.2 57.1 201 0.00

1105 begin pumping @ 0.25 GPM
* well needs new lock.

6385CC Gen Waste CCR Monitoring 4/23/18
Coney Andrews V#60

High 65°F / Sunny / Wind SW 5-10

1154 MW9 1230 Sample 1235 Dep 1220 F8
SWL: 10.71 WC: 8.24'

TWD: 18.95 Vol: 1.3 gal

pt Spc Temp Turb ORP LDO
6.60 1562 8.6 3.8 114 0.00

1210 Begin pumping @ 0.5 GPM
1315 Depart General Waste after
meeting up w/ Rob Fosse.

1415 Cole Samples to PACE

1417 Arrive back at NYS Office
Unload / Post check / Report.

Coney Andrews
4/23/2018

Daily Tailgate Safety

Project: 6385CC

Date: 4/23/2018

Work Site Hazard Assessment Worksheet

- ☐ PPE Required (List): _____ Level* D
- ☐ Weather Conditions (List): 65°F / Sunny
- ☐ Vehicular Traffic ☐ Communications
- ☐ Noise ☐ Equipment/Tools
- ☐ Housekeeping ☐ Other Site Hazards**

☐ I have examined the work place named and found no hazards

☐ I have examined the work place named and hazards found are listed below with corrective action taken

Hazards Identified/Safety Items Discussed:

Slips, Trips, & Falls

Preservatives in sample bottles

Corrective Actions Taken:

watch footing

wear nitrile gloves

Participants in Safety Discussion:

Print Name	Signature
1. <u>Corey Andrews</u>	<u>Corey Andrews</u>
2. <u>ROBERT FOSSELL</u>	<u>Robert Fossell 1050</u>
3. _____	_____
4. _____	_____
5. _____	_____

Signature of Site Supervisor/Examiner: Corey Andrews Date: 4/23/2018

*Level D, C, B or A

**Examples: Heavy Equipment, Air Quality, Flammable materials, Wildlife, Work Site Security, Confined Space



Northeast Technical Services, Inc.
Daily Vehicle Inspection

Driver's Name: C. Andrews Date: 4/23 Time: 0740

Odometer Reading: _____ Vehicle #: 60

Place a ✓ (check) next to each item inspected

Driver/Passenger Side

External Side Mirrors (Right and Left): ✓
Tires (Properly inflated, adequate tread): ✓ Windows: (Clean, free of cracks): ✓

COMMENTS: _____

Inside of Vehicle

Truck is clean inside: ✓ Gauges: ✓
Windshield wipers and fluid: ✓ Seatbelts: (working condition) ✓
Check horn: ✓ Check parking brake reset/release: ✓ Oil change current: ✓
Brakes: ✓ Check inside mirrors, rearview: ✓ Check oil level weekly: ✓

COMMENTS: _____

Front and Rear of Vehicle

Tail lights: ✓ Head Lights: ✓ Bumpers: ✓ Fluid leaks: No
License plates (Tags Current): ✓ Exterior damage to body: No Turn signals: ✓

COMMENTS: _____

General/Safety

Insurance Card/Operator's Manual: ✓ Wheel chocks: ✓ First Aid Kit: ✓
Strobe light: ✓ Buggy whip: ✓ (If needed)

COMMENTS: _____

Deficiencies Corrected: 0

Signature: Corey J. [Signature]

Date: 4/23/2018

STABILIZATION/RECOVERY TEST FORM

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.				CALIBRATION:				NTS	
DATE: 4/23/2018				NO:					
TIME: 0856				YES: <input checked="" type="checkbox"/>				MANUAL: <input checked="" type="checkbox"/>	
SAMPLE DESIG.: MW-7 (Unique Well #817979)				TIME: Prior to				AUTO: <input type="checkbox"/>	
WEATHER				PARAMETERS:					
CONDITIONS: 48°F / Sunny / winds SW 5-10				PH: <input checked="" type="checkbox"/>		COND: <input checked="" type="checkbox"/>		NTU: <input checked="" type="checkbox"/>	
PERSONNEL: Corey Andrews								D.O.: <input checked="" type="checkbox"/>	
PUMP RATE (GPM): 0.2 EPM									
WELL DEPTH: 26.77'				FIELD DUPLICATE: <input type="checkbox"/> No					
STATIC LEVEL: 20.64'				EXCEPTIONS TO PROTOCOL:					
WELL VOL. (GAL.) 1 Gallon				NONE: <input type="checkbox"/> FLOW CELL USED: <input checked="" type="checkbox"/>					
STATIC LEVEL AFTER: 21.9'									
RECOVERY				PURGE METHOD:					
METHOD: <input type="checkbox"/>				Whale pump					
STABILIZATION									
METHOD: <input checked="" type="checkbox"/>									
APPEARANCE: slightly Turbid									
TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5% +/- >10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	ORP mV	VOL. REMOVED: Gallons		
0910	6.32	1984	220.2	0.06	12.5	446	1		
0915	6.33	2016	76.4	0.00	12.1	443	2		
0920	6.34	2010	39.4	0.00	11.5	435	3		
0925	6.34	2003	30.2	0.00	11.6	421	4		
0930	6.34	2005	33.6	0.00	11.5	413	5		
0935	6.34	2008	32.8	0.00	11.4	404	6		
0940									
INITIAL:									
2ND									
RECHAR.									
3RD									
RECH.:									
COMMENTS: Key #0410. Good Recharge. - slow recharge rate.									
* Well needs new lock 0937 Sample									

STABILIZATION/RECOVERY TEST FORM

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.				CALIBRATION: NTS			
DATE: 4/23/18				NO: <input type="checkbox"/>			
TIME: 1051				YES: <input checked="" type="checkbox"/>			
SAMPLE DESIG.: MW-8 (Unique Well #817978)				TIME: <u>10:20</u>			
WEATHER				PARAMETERS:			
CONDITIONS: 58°F / Sunny / winds SW 5-10				PH: <input checked="" type="checkbox"/> COND: <input checked="" type="checkbox"/> NTU: <input checked="" type="checkbox"/> D.O.: <input checked="" type="checkbox"/>			
PERSONNEL: <u>Carey Andrews</u>				FIELD DUPLICATE: <input type="checkbox"/> No			
PUMP RATE(GPM): 0.25 GPM				EXCEPTIONS TO PROTOCOL:			
WELL DEPTH: 41.40				NONE: <input type="checkbox"/> FLOW CELL USED: <input checked="" type="checkbox"/>			
STATIC LEVEL: 33.81							
WELL VOL. (GAL.) 1.2 Gal							
STATIC LEVEL							
AFTER: 34.39							
RECOVERY				PURGE METHOD:			
METHOD: <input type="checkbox"/>				Whale pump			
STABILIZATION							
METHOD: <input checked="" type="checkbox"/>							
APPEARANCE: slightly Turbid							
TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5%+/->10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	PH mV ORP	VOL. REMOVED: Gallons
1110	6.37	1930	525	0.00	11.3	200	1
1115	6.38	1925	180.3	0.00	11.2	196	2
1120	6.39	1828	83.4	0.00	11.2	200	3
1125	6.39	1904	60.1	0.00	11.3	201	4
1130	6.40	1907	57.2	0.00	11.3	201	5
1135	6.40	1894	57.1	0.00	11.2	201	6
INITIAL:							
2ND							
RECHAR.							
3RD							
RECH.:							
COMMENTS: Key #0410. Good Recharge.							
* well needs new lock. 1137 Sample							

STABILIZATION/RECOVERY TEST FORM

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.				CALIBRATION: NTS			
DATE: 4/23/18				NO: <input type="checkbox"/>			
TIME: 0956				YES: <input checked="" type="checkbox"/>			
SAMPLE DESIG.: MW-3R (Unique Well # 797239)				TIME: Prior to			
WEATHER				PARAMETERS:			
CONDITIONS: 49°F / Sunny / wind SW 5-10				PH: <input checked="" type="checkbox"/> COND: <input checked="" type="checkbox"/> NTU: <input checked="" type="checkbox"/> D.O.: <input checked="" type="checkbox"/>			
PERSONNEL: Corey Andrews				FIELD DUPLICATE: <input type="checkbox"/> No			
PUMP RATE (GPM): 0.5 GPM				EXCEPTIONS TO PROTOCOL:			
WELL DEPTH: 77.58				NONE: <input type="checkbox"/> FLOW CELL USED: <input checked="" type="checkbox"/>			
STATIC LEVEL: 64.84							
WELL VOL. (GAL.): 2.1 gal/s							
STATIC LEVEL AFTER: 65.03							
RECOVERY METHOD: <input type="checkbox"/>				PURGE METHOD: <input type="checkbox"/> Whale pump (mega)			
STABILIZATION METHOD: <input checked="" type="checkbox"/>							
APPEARANCE: clear / slight odor							
TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5% +/- >10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	ORP mV	VOL. REMOVED: Gallons
1010	6.59	3039	62.8	0.00	8.7	56	1
1015	6.49	3145	20.1	0.00	8.7	60	2
1020	6.45	3156	9.8	0.00	8.7	61	3
1025	6.41	3140	8.3	0.00	8.7	62	4
1030	6.45	3131	7.7	0.00	8.8	63	5
INITIAL:							
2ND							
RECHAR.							
3RD							
RECH.:							
COMMENTS:							
COMMENTS: Key #3212. Slow recharge rate. 1033 Sample well locked in good condition							

STABILIZATION/RECOVERY TEST FORM


SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.				CALIBRATION:				NTS	
DATE: 4/23/18				NO:					
TIME: 11:54				YES: <input checked="" type="checkbox"/>				MANUAL: <input checked="" type="checkbox"/>	
SAMPLE DESIG.: MW-9 (Unique Well #817980)				TIME: Pro-to				AUTO: <input type="checkbox"/>	
WEATHER CONDITIONS: 61°F / Sunny / winds SW S-10				PARAMETERS:					
PERSONNEL: Corey Andrews				PH: <input checked="" type="checkbox"/>		COND: <input checked="" type="checkbox"/>		NTU: <input checked="" type="checkbox"/>	
PUMP RATE(GPM): 0.5 GPM								D.O.: <input checked="" type="checkbox"/>	
WELL DEPTH: 18.95'				FIELD DUPLICATE: <input checked="" type="checkbox"/> Yes					
STATIC LEVEL: 10.71				EXCEPTIONS TO PROTOCOL:					
WELL VOL. (GAL.): 6.3 Gal				NONE: <input type="checkbox"/> FLOW CELL USED: <input checked="" type="checkbox"/>					
STATIC LEVEL AFTER: 10.77'									
RECOVERY METHOD: <input type="checkbox"/>				PURGE METHOD: <input checked="" type="checkbox"/> Whale pump					
STABILIZATION METHOD: <input checked="" type="checkbox"/>									
APPEARANCE: clear / no odor									
TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5%+/->10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	mV ORP	VOL. REMOVED: Calcare		
1213	6.57	1618	25.0	0.00	7.7	113	1		
1216	6.58	1596	8.5	0.00	8.6	113	2		
1219	6.59	1587	6.5	0.00	8.6	113	3		
1222	6.60	1580	5.0	0.00	8.5	113	4		
1225	6.60	1576	4.2	0.00	8.6	114	5		
1228	6.60	1562	3.8	0.00	8.6	114	6		
INITIAL:									
2ND									
RECHAR.									
3RD									
RECH.:									
COMMENTS: Key #0410. Good Recharge.									
1230 Sample									
1235 Dup									
1220 FB									



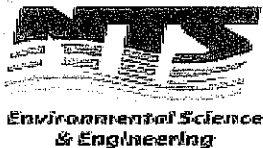
Environmental Science
& Engineering

NTS FIELD INSTRUMENT CALIBRATION LOG

Instrument used:	MS5	
Instrument I.D.	#8 R04-F	
Required Parameters:	pH (SU), Spec. Cond. (µS / cm), Diss. Oxyg. (100% Saturation), Turbidity (NTU), ORP (mV)	
Date / Initials:	2018-04-23 CH	

	<u>Standard</u>	<u>Before Field Event</u>	<u>After Field Event</u>
<u>pH (SU)</u>	4.0	4.0	3.9
	7.0	7.0	6.9
	10.0	10.0	9.9
		Temp. (°C)= 19.05	Temp. (°C)= 19.43
<u>Specific Conductance (µS / cm)</u>	1000	1000	1006
		Temp. (°C)= 18.87	Temp. (°C)= 19.59
<u>ORP (mV)</u>	439 @ 20.0	439	442
		Temp. (°C)= 19.89	Temp. (°C)= 20.42
<u>Turbidity (NTU)</u>	0.0/106	0.0/106	0.0/104.3
		Temp. (°C)= 18.89	Temp. (°C)= 20.05
<u>Calibrate D.O. to 100% Saturation (Yes / No)</u>		Yes	
		B.P. (mm Hg)= 728	
		Temp. (°C)= 18.91	
	<u>Time</u>	0645	1435
	<u>Initials</u>	CH	CH

NOTES:



NTS
526 CHESTNUT STREET
VIRGINIA, MN 55792
(218) 741-4290 Fax: (218) 741-4291

PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

REQUIRED TURN-AROUND TIME: 2 Weeks from submittal date

CLIENT NAME, ADDRESS, PHONE#:			REPORT TO:			TYPE & # CONTAINERS			SPECIAL INSTRUCTIONS:		
GENERAL WASTE and RECYCLING LLC DEMOLITION & INDUSTRIAL LANDFILL ITASCA COUNTY, MINNESOTA			ERIN CHAMBERLAIN, DENNIS SCHUBBE, RICK CRUM & SCOTT SEELEY			VOC M. 8260 (HCL) GENERAL CHEMISTRY (NO PRES) GENERAL CHEMISTRY (H2SO4) TOTAL METALS (HN03) DISSOLVED METALS (HN03)			SEE ATTACHED LIST WITH METHODS		
SAMPLER: <i>Corey Andrews</i>			PERMIT REQ.: SW-620								
PROJECT: GENERAL WASTE DISPOSAL and RECYCLING, LLC.			Apr-18								
PROJECT NUMBER: 6385CC CCR Monitoring			COLLECTION:			MATRIX			Filtered		
LOG-IN #	SAMPLE #	DESCRIPTION:	DATE:	TIME:	LIQ.	SOL.					REQUIRED ANALYSIS:
	MW3R	GW WELL	4/23/18	1033	X		N	1	1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
	MW7	GW WELL		0937	X		N	1	1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
	MW8	GW WELL		1137	X		N	1	1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
	MW9	GW WELL		1230	X		N	1	1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
	Field Duplicate	GW WELL		1235	X		N	1	1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
	Field Blank	Field Blank		1220	X		N	1	1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
RELINQUISHED BY: <i>Corey Andrews</i>			DATE: 4/23/18			RECEIVED BY:			DATE:		
			TIME: 1415						TIME:		
RELINQUISHED TO NTS SAMPLE LOCK-UP BY:			DATE:			RECEIVED FROM NTS SAMPLE LOCKUP BY:			DATE:		
			TIME:						TIME:		
RECEIVED FOR LAB BY: <i>B Mathews</i>			TEMP AT ARRIVAL:								
			4.0 C								
DATE: 4/23/18			TIME: 1415								

GENERAL WASTE CCR METHODS

PARAMETER	SYMBOL	EPA Method
Boron	B	200.8
Calcium	Ca	200.7
Chloride	Chloride	300.0
Fluoride	Flouride	300.0
pH	pH	SM 4500 H+B
Sulfate	SO ₄	300.0
TDS	TDS	SM 2540C

October 23, 2018

Dennis Schubbe
Northeast Technical Services
526 Chestnut Street
Virginia, MN 55792

RE: Project: 6385CC General Waste
Pace Project No.: 12117329

Dear Dennis Schubbe:

Enclosed are the analytical results for sample(s) received by the laboratory on October 12, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carrie Jensen
carrie.jensen@pacelabs.com
(218)742-1042
Project Manager

Enclosures

cc: Sample Data, Northeast Technical Services
Scott Seeley, NTS
Karissa Vosen, NTS



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 6385CC General Waste

Pace Project No.: 12117329

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792

Montana Certificate #CERT0103

Alaska Certification UST-107

Minnesota Dept of Health Certification #: 027-137-445

North Dakota Certification: # R-203

Wisconsin DNR Certification # : 998027470

WA Department of Ecology Lab ID# C1007

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 6385CC General Waste

Pace Project No.: 12117329

Lab ID	Sample ID	Matrix	Date Collected	Date Received
12117329001	MW3R	Water	10/11/18 13:35	10/12/18 12:30
12117329002	MW7	Water	10/11/18 09:50	10/12/18 12:30
12117329003	MW8	Water	10/11/18 16:15	10/12/18 12:30
12117329004	MW9	Water	10/11/18 16:56	10/12/18 12:30
12117329005	Field Duplicate	Water	10/11/18 17:00	10/12/18 12:30
12117329006	Field Blank	Water	10/11/18 16:35	10/12/18 12:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 6385CC General Waste

Pace Project No.: 12117329

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
12117329001	MW3R	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V
12117329002	MW7	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V
12117329003	MW8	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V
12117329004	MW9	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V
12117329005	Field Duplicate	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V
12117329006	Field Blank	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6385CC General Waste
Pace Project No.: 12117329

Sample: MW3R		Lab ID: 12117329001		Collected: 10/11/18 13:35		Received: 10/12/18 12:30		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Boron	103	ug/L	40.0	1	10/15/18 14:49	10/16/18 13:08	7440-42-8		
Calcium	532	mg/L	1.0	10	10/15/18 14:49	10/16/18 14:06	7440-70-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)							
Total Dissolved Solids	2850	mg/L	20.0	1		10/16/18 19:03			
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		10/12/18 15:28			H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	2.0	mg/L	1.0	1		10/13/18 10:17	16887-00-6		
Fluoride	ND	mg/L	0.10	1		10/13/18 10:17	16984-48-8		
Sulfate	1550	mg/L	28.0	14		10/13/18 16:42	14808-79-8		

Sample: MW7		Lab ID: 12117329002		Collected: 10/11/18 09:50		Received: 10/12/18 12:30		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Boron	70.8	ug/L	40.0	1	10/15/18 14:49	10/16/18 13:15	7440-42-8		
Calcium	400	mg/L	1.0	10	10/15/18 14:49	10/16/18 14:10	7440-70-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)							
Total Dissolved Solids	1600	mg/L	20.0	1		10/16/18 19:02			
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		10/12/18 15:31			H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	91.4	mg/L	1.0	1		10/13/18 10:34	16887-00-6		
Fluoride	ND	mg/L	0.10	1		10/13/18 10:34	16984-48-8		
Sulfate	695	mg/L	14.0	7		10/13/18 16:59	14808-79-8		

Sample: MW8		Lab ID: 12117329003		Collected: 10/11/18 16:15		Received: 10/12/18 12:30		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Boron	64.7	ug/L	40.0	1	10/15/18 14:49	10/16/18 12:44	7440-42-8		
Calcium	331	mg/L	1.0	10	10/15/18 14:49	10/16/18 14:03	7440-70-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)							
Total Dissolved Solids	1350	mg/L	20.0	1		10/16/18 19:08			

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6385CC General Waste
Pace Project No.: 12117329

Sample: MW8		Lab ID: 12117329003		Collected: 10/11/18 16:15		Received: 10/12/18 12:30		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		10/12/18 15:35		H6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	1.4	mg/L	1.0	1		10/13/18 10:50	16887-00-6		
Fluoride	ND	mg/L	0.10	1		10/13/18 10:50	16984-48-8		
Sulfate	589	mg/L	12.0	6		10/13/18 17:15	14808-79-8		

Sample: MW9		Lab ID: 12117329004		Collected: 10/11/18 16:56		Received: 10/12/18 12:30		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Boron	ND	ug/L	40.0	1	10/15/18 14:49	10/16/18 12:56	7440-42-8		
Calcium	193	mg/L	0.10	1	10/15/18 14:49	10/16/18 12:56	7440-70-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)							
Total Dissolved Solids	1100	mg/L	20.0	1		10/16/18 19:04			
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		10/12/18 15:38			H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	8.4	mg/L	1.0	1		10/13/18 11:07	16887-00-6		
Fluoride	ND	mg/L	0.10	1		10/13/18 11:07	16984-48-8		
Sulfate	460	mg/L	8.0	4		10/13/18 17:32	14808-79-8		

Sample: Field Duplicate		Lab ID: 12117329005		Collected: 10/11/18 17:00		Received: 10/12/18 12:30		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Boron	ND	ug/L	40.0	1	10/15/18 14:49	10/16/18 13:00	7440-42-8		
Calcium	192	mg/L	0.10	1	10/15/18 14:49	10/16/18 13:00	7440-70-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)							
Total Dissolved Solids	1120	mg/L	20.0	1		10/16/18 19:04			
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		10/12/18 15:42			H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	8.4	mg/L	1.0	1		10/13/18 11:24	16887-00-6		
Fluoride	ND	mg/L	0.10	1		10/13/18 11:24	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6385CC General Waste

Pace Project No.: 12117329

Sample: Field Duplicate		Lab ID: 12117329005		Collected: 10/11/18 17:00		Received: 10/12/18 12:30		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Sulfate	461	mg/L	8.0	4		10/13/18 17:49	14808-79-8		

Sample: Field Blank		Lab ID: 12117329006		Collected: 10/11/18 16:35		Received: 10/12/18 12:30		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Boron	ND	ug/L	40.0	1	10/15/18 14:49	10/16/18 12:10	7440-42-8		
Calcium	ND	mg/L	0.10	1	10/15/18 14:49	10/16/18 12:10	7440-70-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)							
Total Dissolved Solids	ND	mg/L	10.0	1		10/16/18 19:06			
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	6.1	Std. Units	0.10	1		10/12/18 15:47		H6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	ND	mg/L	1.0	1		10/13/18 11:41	16887-00-6		
Fluoride	ND	mg/L	0.10	1		10/13/18 11:41	16984-48-8		
Sulfate	ND	mg/L	2.0	1		10/13/18 11:41	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6385CC General Waste

Pace Project No.: 12117329

QC Batch: 154408 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

METHOD BLANK: 611084 Matrix: Water
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	40.0	10/16/18 12:18	
Calcium	mg/L	ND	0.10	10/16/18 12:18	

LABORATORY CONTROL SAMPLE: 611085

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	248	99	85-115	
Calcium	mg/L	25	25.1	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 611086 611087

Parameter	Units	12117352001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	48.8	250	250	295	292	99	97	70-130	1	20	
Calcium	mg/L	48700 ug/L	25	25	75.3	75.8	106	109	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 611088 611089

Parameter	Units	12117329002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	70.8	250	250	296	305	90	94	70-130	3	20	
Calcium	mg/L	400	25	25	428	430	111	121	70-130	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6385CC General Waste

Pace Project No.: 12117329

QC Batch: 154544 Analysis Method: SM 2540C (1997)
QC Batch Method: SM 2540C (1997) Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

METHOD BLANK: 611542 Matrix: Water
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10/16/18 18:58	

METHOD BLANK: 611546 Matrix: Water
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10/16/18 19:01	

LABORATORY CONTROL SAMPLE: 611543

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	255	228	89	80-120	

SAMPLE DUPLICATE: 611544

Parameter	Units	12117223003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	498	476	5	5	

SAMPLE DUPLICATE: 611545

Parameter	Units	12117081009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	878	876	0	5	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6385CC General Waste

Pace Project No.: 12117329

QC Batch: 154302 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

LABORATORY CONTROL SAMPLE: 610709

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH at 25 Degrees C	Std. Units	7	7.1	101	98-102	H6

SAMPLE DUPLICATE: 610710

Parameter	Units	12117317001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.4	8.5	1	10	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6385CC General Waste

Pace Project No.: 12117329

QC Batch: 154317 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

METHOD BLANK: 610736 Matrix: Water
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	10/13/18 02:23	
Fluoride	mg/L	ND	0.10	10/13/18 02:23	
Sulfate	mg/L	ND	2.0	10/13/18 02:23	

LABORATORY CONTROL SAMPLE: 610737

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	51.0	102	90-110	
Fluoride	mg/L	5	5.2	104	90-110	
Sulfate	mg/L	50	50.7	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 610738 610739

Parameter	Units	12117286001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	60.6	50	50	113	113	105	106	90-110	0	20	
Fluoride	mg/L	0.14	5	5	5.6	5.6	108	109	90-110	1	20	
Sulfate	mg/L	25.6	50	50	79.7	80.0	108	109	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 610740 610741

Parameter	Units	12117305004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	14.7	50	50	68.3	68.7	107	108	90-110	1	20	
Fluoride	mg/L	<0.10	5	5	5.4	5.5	107	108	90-110	1	20	
Sulfate	mg/L	4.2	50	50	58.7	59.1	109	110	90-110	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 6385CC General Waste

Pace Project No.: 12117329

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-V Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

H6 Analysis initiated outside of the 15 minute EPA required holding time.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 6385CC General Waste

Pace Project No.: 12117329

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
12117329001	MW3R	EPA 200.8	154408	EPA 200.8	154431
12117329002	MW7	EPA 200.8	154408	EPA 200.8	154431
12117329003	MW8	EPA 200.8	154408	EPA 200.8	154431
12117329004	MW9	EPA 200.8	154408	EPA 200.8	154431
12117329005	Field Duplicate	EPA 200.8	154408	EPA 200.8	154431
12117329006	Field Blank	EPA 200.8	154408	EPA 200.8	154431
12117329001	MW3R	SM 2540C (1997)	154544		
12117329002	MW7	SM 2540C (1997)	154544		
12117329003	MW8	SM 2540C (1997)	154544		
12117329004	MW9	SM 2540C (1997)	154544		
12117329005	Field Duplicate	SM 2540C (1997)	154544		
12117329006	Field Blank	SM 2540C (1997)	154544		
12117329001	MW3R	SM 4500-H+B	154302		
12117329002	MW7	SM 4500-H+B	154302		
12117329003	MW8	SM 4500-H+B	154302		
12117329004	MW9	SM 4500-H+B	154302		
12117329005	Field Duplicate	SM 4500-H+B	154302		
12117329006	Field Blank	SM 4500-H+B	154302		
12117329001	MW3R	EPA 300.0	154317		
12117329002	MW7	EPA 300.0	154317		
12117329003	MW8	EPA 300.0	154317		
12117329004	MW9	EPA 300.0	154317		
12117329005	Field Duplicate	EPA 300.0	154317		
12117329006	Field Blank	EPA 300.0	154317		

REPORT OF LABORATORY ANALYSIS

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NTS
526 CHESTNUT STREET
VIRGINIA, MN 55792
(218) 741-4290 Fax: (218) 741-4291

CHAIN OF CUSTODY
REQUIRED TURN-AROUND TIME: 2 Weeks from receipt

MO#: 12117329
12117329

CLIENT NAME/ADDRESS/PHONE#				REPORT TO:				TYPE & # CONTAINERS				SPECIAL INSTRUCTIONS:			
GENERAL WASTE and RECYCLING LLC DEMOLITION & INDUSTRIAL LANDFILL ITASCA COUNTY, MINNESOTA				ERIN CHAMBERLAIN, DENNIS SCHUBBE, RICK CRUM & SCOTT SEELEY				VOC M. 8260 (HCL) GENERAL CHEMISTRY (NO PRES) GENERAL CHEMISTRY (H2SO4) TOTAL METALS (HN03) DISSOLVED METALS (HN03)				SEE ATTACHED LIST WITH METHODS			
PROJECT NUMBER: 6385CC				CCR Monitoring				PERMIT REQ.: SW-620 Oct-18							
LOG-IN #		SAMPLE #		DESCRIPTION		DATE		TIME		MATRIX		REQUIRED ANALYSIS:			
		MW3R		GW WELL		10/11/18		1335		X		1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS	
		MW7		GW WELL		10/11/18		0950		X		1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS	
		MW8		GW WELL		10/11/18		1615		X		1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS	
		MW9		GW WELL		10/11/18		1656		X		1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS	
		Field Duplicate		GW WELL		10/11/18		1700		X		1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS	
		Field Blank		Field Blank		10/11/18		1635		X		1		Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS	
RELINQUISHED BY: <i>de Stach</i>				DATE: 10/11/18				RECEIVED BY:				DATE: 10/11/18			
RELINQUISHED TO NTS SAMPLE LOCK-UP BY:				DATE: 10/11/18				RECEIVED FROM NTS SAMPLE LOCKUP BY:				DATE: 10/11/18			
RECEIVED FOR LAB BY: <i>P. Mathias</i>				TEMP AT ARRIVAL: <i>0.7</i> °C											
DATE: 10/12/18		TIME: 1230													

PARAMETER	SYMBOL	EPA Method
Boron	B	200.8
Calcium	Ca	200.7
Chloride	Chloride	300.0
Fluoride	Flouride	300.0
pH	pH	SM 4500 H+B
Sulfate	SO ₄	300.0
TDS	TDS	SM 2540C

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

**Sample Condition
Upon Receipt**

Client Name:

NTS

Project #:

WO#: 12117329

PM: CLJ

Due Date: 10/26/18

CLIENT: NTS-Dennis

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client
☐ Commercial ☐ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No

Seals Intact? ☐ Yes ☐ No

Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: _____

Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808

Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: *1.4*

Cooler Temp Corrected °C: *1.7*

Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C

Correction Factor: *10.3*

Date and Initials of Person Examining Contents: *Bm 10/12/18*

Comments:

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5. If Fecal: <input type="checkbox"/> <8 hours <input type="checkbox"/> >8, <24 hours <input type="checkbox"/> >24 hours
Short Hold Time Analysis (<72 hr)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <i>pH</i>
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Includes Date/Time/ID/Analysis Matrix: <i>Wt</i>		
All containers needing acid/base preservation will be checked and documented in the pH logbook.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____

Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N

TEMPERATURE WAIVER ON FILE Y N

Project Manager Review:

Cavin

Date: 10/13/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)



Environmental Science
& Engineering

Field Report Cover Sheet

NORTHEAST TECHNICAL SERVICES, INC.
526 CHESTNUT STREET P.O. BOX 1142
VIRGINIA, MINNESOTA 55792
218-741-4290 FAX 218-741-4291
E-mail: nts@netechnical.com

Project: October 2018 CLR Monitoring

Client: General Waste

Location: Keewatin

Prep/Unload/Report Time: 0.5 1.0 Total 1.5
Prep Unload/Report

Site Time: various times Total 4.5
Arrive Depart

Travel Time: — 0.75 — Total 0.75
To From

Total Field Time Entered to Stoneware: 6.75

Project Number: 6385CC

Project Manager: Dennis Schutte

Date: 2018-10-11
(yyyy-mm-dd)

Weather/Temp: 40°F/Overcast

COC#: 12117329

Vehicle #: 60 35 Miles Driven

Summary of Technical and/or Engineering Services Performed

Prepped & went to Gen. Waste to conduct the Fall 2018 CLR well monitoring project.
Samples & field parameters obtained after stabilization at GW wells MW-3R, MW-7, MW-8, & MW-9.
Samples ceded to PACT Analytical.
For add'l details see field sheets, field notes, & COC.

Site Sketch

Please Indicate North

Field Test Data is Estimated Pending Final Laboratory Results.

Attach other documents as defined by the Project Manager.

Field Scientist: Carey

Approved by: [Signature]

Date: 10/11/2018

Page 1 of 11

Fill out and hand in field sheet on a real-time basis, any questions or comments, contact your project manager.

6385 CC Gen Waste Fall CCR Monitoring

10/10/18

Corey Andrews

High 40°F / Overcast / winds 15 mph WNW

0630-0745 Prep / Cal / Load

0745 Depart NTS

0830 Arrive at Gen Waste

0836 MW7 0950 Sample

SWL	TWD	WC	Vol	Pump Rate
21.65'	26.7'	5.05'	.82 gal	0.25 GPM

0853 begin pumping @ 0.25 GPM

H₂O Very Turbid

1300 MW3R 1335 Sample

SWL	TWD	WC	Vol	Pump Rate
65.65	77.40	11.75	2 gal	0.5 GPM

Super purger used for stabilization of well.

1510 MW8 1615 Sample

SWL	TWD	WC	Vol	Pump Rate
34.57	41.25	6.68	1 gal	0.25

1624 MW9 1656 Sample 1700 Dup 1635 FB

SWL	TWD	WC	Vol	Pump Rate
10.97	18.91	7.94	1.3	0.5 GPM

1730 Depart Gen Waste

1815 Arrive back at NTS office. Unload / Postcheck

Corey Andrews

10/11/2018

STABILIZATION/RECOVERY TEST FORM

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.				CALIBRATION:				NTS	
DATE: 10/11/2018				NO:					
TIME: 1300				YES:		<input checked="" type="checkbox"/>		MANUAL: <input checked="" type="checkbox"/>	
SAMPLE DESIG.: MW-3R (Unique Well # 797239)				TIME:		0645		AUTO: <input type="checkbox"/>	
WEATHER: 32°F/ Mostly Cloudy/ winds WNW 15 mph				PARAMETERS:					
PERSONNEL: Corey Andrews				PH:		<input checked="" type="checkbox"/>		COND: <input checked="" type="checkbox"/>	
PUMP RATE (GPM): 0.5 GPM				NTU:		<input checked="" type="checkbox"/>		D.O.: <input checked="" type="checkbox"/>	
WELL DEPTH: 77.40									
STATIC LEVEL: 65.65				FIELD DUPLICATE: <input type="checkbox"/> No					
WELL VOL. (GAL.): 2 gal				EXCEPTIONS TO PROTOCOL:					
STATIC LEVEL AFTER: 65.65				NONE:		<input type="checkbox"/>		FLOW CELL USED: <input checked="" type="checkbox"/>	
RECOVERY METHOD: <input type="checkbox"/>				PURGE METHOD: <input checked="" type="checkbox"/> Super purger					
STABILIZATION METHOD: <input checked="" type="checkbox"/>									
APPEARANCE: clear									
TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5% +/- >10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	ORP mV	VOL. REMOVED: Gallons		
1314	6.49	3059	37.5	0.11	7.26	109	1		
1318	6.30	3143	19.4	0.11	7.23	128	2		
1322	6.29	3152	9.2	0.08	7.18	129	3		
1326	6.27	3136	6.0	0.08	7.10	128	4		
1330	6.27	3132	5.4	0.08	7.18	127	5		
1334	6.27	3128	4.9	0.07	7.20	125	6		
INITIAL:									
2ND									
RECHAR.									
3RD									
RECH.:									
COMMENTS:									
COMMENTS: Key #3212. Slow recharge rate. 1310 Begin pumping @ 0.5 GPM									
1335 Sample									

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STABILIZATION/RECOVERY TEST FORM

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.		CALIBRATION:		NTS	
DATE: 10/11/2018		NO:			
TIME: 0836		YES: X		MANUAL: X	
SAMPLE DESIG.: MW-7 (Unique Well #817979)		TIME: 0645		AUTO:	
WEATHER CONDITIONS: 28°F / Light Snow / wind WNW 15mph		PARAMETERS:			
PERSONNEL: Corey Andrews		PH: X COND: X NTU: X D.O.: X			
PUMP RATE (GPM): 0.25 GPM		FIELD DUPLICATE: No			
WELL DEPTH: 26.7		EXCEPTIONS TO PROTOCOL:			
STATIC LEVEL: 21.65		NONE: FLOW CELL USED: X			
WELL VOL. (GAL.): 0.82					
STATIC LEVEL AFTER: 22.31'					
RECOVERY METHOD: PURGE METHOD: Whate pump					
STABILIZATION METHOD: X					

APPEARANCE: Reddish / cloudy

TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5% +/- >10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	PH mV	VOL. REMOVED: Gallons
0857	6.16	1102	637.0	0.14	7.34	485	1
0901	6.19	1096	975	0.56	6.78	380	2
0905	6.24	2098	1939	0.64	5.19	369	3
0909	6.24	2108	1421	0.71	5.14	372	4
0913	6.24	2107	1647	0.80	5.21	366	5
0917	6.25	2111	1201	0.88	5.28	357	6
0921	6.25	2110	918	0.93	5.32	353	7
0925	6.26	2114	794	0.97	5.41	351	8
0929	6.27	2114	554	0.99	5.44	346	9
0933	6.27	2118	419	1.01	5.48	346	10
0937	6.28	2117	228.1	1.03	5.42	344	11

COMMENTS: Key #0410. Good Recharge.

0853 Begin pumping @ 0.25 GPM 0950 sample

Well very turbid throughout stabilization. Unable to get water to clear. Adjusted pump several times.

* Needs new lock

0941	6.28	1436	172.5	1.05	5.51	346	12 *Cleaned sensor
0945	6.29	1429	279	1.07	5.44	340	13
0949	6.29	1428	321	1.07	5.47	339	14

10/4/11

STABILIZATION/RECOVERY TEST FORM

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.				CALIBRATION:				NTS	
DATE: 10/11/2008				NO:					
TIME: 1510				YES:		X		MANUAL: X	
SAMPLE DESIG.: MW-8 (Unique Well #817978)				TIME:		0645		AUTO:	
WEATHER CONDITIONS: 32°F / Overcast / winds WNW 15				PARAMETERS:					
PERSONNEL:				PH:		COND:		NTU:	
PUMP RATE (GPM): 0.25 GPM				X		X		X	
WELL DEPTH: 241.25									
STATIC LEVEL: 34.57				FIELD DUPLICATE: No					
WELL VOL. (GAL.): 1 gal				EXCEPTIONS TO PROTOCOL:					
STATIC LEVEL AFTER: 35.15				NONE:				FLOW CELL USED: X	
RECOVERY METHOD:				PURGE METHOD: Whale Pump					
STABILIZATION METHOD: X									
APPEARANCE: slightly cloudy									
TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5% +/- >10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	ORP mV	VOL. REMOVED: Gallons		
1534	6.29	1833	1735	0.38	5.73	264	1		
1538	6.30	1836	834	0.30	5.90	251	2		
1542	6.32	1831	540	0.19	5.86	247	3		
1546	6.32	1821	237.5	0.15	5.80	243	4		
1550	6.32	1812	176.2	0.11	5.71	239	5		
1554	6.33	1808	92.3	0.10	5.60	237	6		
1558	6.33	1805	70.8	0.08	5.60	235	7		
1602	6.33	1800	47.5	0.09	5.64	233	8		
1606	6.33	1803	40.1	0.08	5.70	231	9		
1610	2ND RECHARGE	1798	39.8	0.06	5.74	230	10		
1614	3RD RECHARGE	1793	39.0	0.06	5.80	229	11		
COMMENTS: Key #0410. Good Recharge.									
1530 Begin pumping @ 0.25 GPM									
1615 Sample									

STABILIZATION/RECOVERY TEST FORM

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.					CALIBRATION:		NTS	
DATE: 10/4/2018					NO: <input type="checkbox"/>			
TIME: 1624					YES: <input checked="" type="checkbox"/>		MANUAL: <input checked="" type="checkbox"/>	
SAMPLE DESIG.: MW-9 (Unique Well #817980)					TIME: 0645		AUTO: <input type="checkbox"/>	
WEATHER: 32°F / Overcast / winds WNW 15					PARAMETERS:			
CONDITIONS: Corey/Andrews					PH: <input checked="" type="checkbox"/>		COND: <input checked="" type="checkbox"/>	
PERSONNEL: Corey/Andrews					NTU: <input checked="" type="checkbox"/>		D.O.: <input checked="" type="checkbox"/>	
PUMP RATE (GPM): 0.56 GPM								
WELL DEPTH: 18.91								
STATIC LEVEL: 10.97'					FIELD DUPLICATE: <input checked="" type="checkbox"/>			
WELL VOL. (GAL.): 1.3								
STATIC LEVEL AFTER: 10.97'					EXCEPTIONS TO PROTOCOL:			
RECOVERY METHOD: <input type="checkbox"/>					NONE: <input type="checkbox"/>			
PURGE METHOD: <input checked="" type="checkbox"/> Whisk pump					FLOW CELL USED: <input checked="" type="checkbox"/>			
STABILIZATION METHOD: <input checked="" type="checkbox"/>								
APPEARANCE: clear								
TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5% +/- >10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	mV ORP	VOL. REMOVED: Gallons	
1643	6.55	1538	10.1	0.10	7.61	126	1	
1646	6.53	1542	3.1	0.05	7.65	128	2	
1649	6.53	1545	2.9	0.04	7.62	127	3	
1652	6.52	1537	2.9	0.04	7.59	127	4	
1655	6.52	1526	2.8	0.04	7.61	126	5	
INITIAL:								
2ND								
RECHAR.								
3RD								
RECH.:								
COMMENTS: Key #0410. Good Recharge.								
1640 Begin pumping well @ 0.5 GPM								
1656 sample								



NTS FIELD INSTRUMENT CALIBRATION LOG

Instrument used:	M55	
Instrument I.D.	#6	
Required Parameters:	pH (SU), Spec. Cond. (µS / cm), Diss. Oxyg. (100% Saturation), Turbidity (NTU), ORP (mV)	
Date / Initials:	2018-10-11 CA	

	Standard	Before Field Event	After Field Event
pH (SU)	4.0	4.0	3.82
	7.0	7.0	6.92
	10.0	10.0	9.9
		Temp. (°C)= 17.68	Temp. (°C)= 18.92
Specific Conductance (µS / cm)	1000	0.0 / 1000	0.0 / 1000
		Temp. (°C)= 18.00	Temp. (°C)= 18.50
ORP (mV)	430 ⊙ 24.0°C	430	441
		Temp. (°C)= 24.03	Temp. (°C)= 18.09
Turbidity (NTU)	0.0 / 93	0.0 / 93.0	0.0 / 94.2
		Temp. (°C)= 18.93	Temp. (°C)= 16.85
Calibrate D.O. to 100% Saturation (Yes / No)		28.22 in Hg	
		B.P. (mm Hg)= 717	
		Temp. (°C)= 19.31	
	Time	0635	1820
	Initials	CA	CA

NOTES:

pg 7 of 11

Daily Tailgate Safety

Project: 6385CC 6385C Date: 10/11/2018

Work Site Hazard Assessment Worksheet

- ☐ PPE Required (List): High Vis. Level* D
- ☐ Weather Conditions (List): _____
- ☐ Vehicular Traffic ☐ Communications
- ☐ Noise ☐ Equipment/Tools
- ☐ Housekeeping ☐ Other Site Hazards**

- ☐ I have examined the work place named and found no hazards
- ☐ I have examined the work place named and hazards found are listed below with corrective action taken

Hazards Identified/Safety Items Discussed:

Slips trips & falls

Preservatives in sample containers

Corrective Actions Taken:

walk cautiously

wear nitrile gloves

Participants in Safety Discussion:

- | Print Name | Signature |
|-------------------------|--------------------|
| 1. <u>Corey Andrews</u> | <u>[Signature]</u> |
| 2. _____ | _____ |
| 3. _____ | _____ |
| 4. _____ | _____ |
| 5. _____ | _____ |

Signature of Site Supervisor/Examiner: [Signature] Date: 10/11/2018

*Level D, C, B or A

**Examples: Heavy Equipment, Air Quality, Flammable materials, Wildlife, Work Site Security, Confined Space



Northeast Technical Services, Inc.
Daily Vehicle Inspection

Driver's Name: C. Andrews Date: 10/30/2018 Time: 0735
Odometer Reading: _____ Vehicle #: 60

Place a √ (check) next to each item inspected

Driver/Passenger Side

External Side Mirrors (Right and Left): ✓
Tires (Properly inflated, adequate tread): ✓ Windows: (Clean, free of cracks): ✓

COMMENTS: _____

Inside of Vehicle

Truck is clean inside: ✓ Gauges: ✓
Windshield wipers and fluid: ✓ Seatbelts: (working condition) ✓
Check horn: ✓ Check parking brake reset/release: ✓ Oil change current: ✓
Brakes: ✓ Check inside mirrors, rearview: ✓ Check oil level weekly: ✓

COMMENTS: _____

Front and Rear of Vehicle

Tail lights: ✓ Head Lights: ✓ Bumpers: ✓ Fluid leaks: No
License plates (Tags Current): ✓ Exterior damage to body: No Turn signals: ✓

COMMENTS: _____

General/Safety

Insurance Card/Operator's Manual: ✓ Wheel chocks: ✓ First Aid Kit: ✓
Strobe light: ✓ Buggy whip: ✓ (If needed)

COMMENTS: _____

Deficiencies Corrected: _____

Signature:  Date: 10/11/2018

NTS

526 CHESTNUT STREET

VIRGINIA, MN 55792

(218) 741-4290 Fax: (218) 741-4291

Environmental Science
& Engineering

PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

REQUIRED TURN-AROUND TIME: 2 Weeks from submittal date

CLIENT NAME, ADDRESS, PHONE #		REPORT TO:		TYPE & VOLUMES		SPECIAL INSTRUCTIONS	
GENERAL WASTE and RECYCLING LLC DEMOLITION & INDUSTRIAL LANDFILL ITASCA COUNTY, MINNESOTA		ERIN CHAMBERLAIN, DENNIS SCHUBBE, RICK CRUM & SCOTT SEELEY				SEE ATTACHED LIST WITH METHODS	
SAMPLER: <i>Corey Andrews</i>		PERMIT REQ.: SW-620					
PROJECT: GENERAL WASTE DISPOSAL and RECYCLING, LLC.		Oct-18					
PROJECT NUMBER: 6385CC		CCR Monitoring					
LOG-IN #	SAMPLE #	DESCRIPTION	DATE	TIME	MATRIX	LIQ. SOL.	REQUIRED ANALYSIS
	MW3R	GW WELL	10/11/18	1335	X	N	✓ ✓ ✓ Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
	MW7	GW WELL	10/11/18	0950	X	N	Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
	MW8	GW WELL	10/11/18	1615	X	N	Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
	MW9	GW WELL	10/11/18	1656	X	N	Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
	Field Duplicate	GW WELL	10/11/18	1700	X	N	Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
	Field Blank	Field Blank	10/11/18	1635	X	N	Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS
RELINQUISHED BY: <i>Ch. Schubbe</i>		DATE: 10/12/18		RECEIVED BY:		DATE: TIME:	
RELINQUISHED TO NTS SAMPLE LOCK-UP BY:		DATE: TIME: 12:35		RECEIVED FROM NTS SAMPLE LOCKUP BY:		DATE: TIME:	
RECEIVED FOR LAB BY: <i>P. Matheson</i>		DATE: 12/12/18		TEMP AT ARRIVAL: C		DATE: TIME:	

PARAMETER	SYMBOL	EPA Method
Boron	B	200.8
Calcium	Ca	200.7
Chloride	Chloride	300.0
Fluoride	Fluoride	300.0
pH	pH	SM 4500 H+B
Sulfate	SO ₄	300.0
TDS	TDS	SM 2540C

APPENDIX B

STATISTICAL ANALYSIS

July 25, 2017

Mr. Jon Penheiter
Dem-Con Companies
13020 Dem-Con Drive
Shakopee, MN 55379
jonpenheiter@dem-con.com

Sent Via Email

RE: Statistical Analysis for April 2018 groundwater monitoring event for CCR compliance at the Keewatin, MN facility

Mr. Penheiter,

NTS is pleased to submit this report summarizing the CCR monitoring data collected in April, 2018 as well as the statistical analysis completed in accordance with the facility Statistical Analysis Plan (SAP).

Review of the data shows that no detection monitoring trigger values were exceeded during the April, 2018 monitoring event at any of the compliance/downgradient wells (MW-3R, MW-8, MW-9). In the up-gradient well MW-7, Chloride was measured at 124 mg/L, which is above the established trigger value of 81.94 mg/L. MW-7 is not a compliance well and therefore this would not be assessed in regards to determining if a statistically significant increase (SSI) has occurred due to the CCR facility. However, it may indicate changing hydrologic/environmental conditions that may affect the hydrology/groundwater quality at the CCR facility and established detection monitoring trigger values. It is recommended that detection monitoring continue per the SAP and the potentially changing up-gradient conditions be assessed when the background dataset is updated following 2 years of detection monitoring.

Detection Monitoring

Detection monitoring at the Keewatin facility includes monitoring of 4 groundwater well, one upgradient well (MW-7) and three downgradient wells (MW-3R, MW-8, and MW-9). Field parameters and laboratory samples were collected on April 23, 2018. Laboratory results were received from PACE Analytical on May 8, 2018. Lab analyses completed includes those found in the CCR guidance Appendix III table (See Appendix C). The monitoring results and the established detection monitoring trigger values can be seen in Tables 1 and 2, respectively. The highlighted cells in Table 1 indicate monitored results above the trigger value (MW-7, Chloride).

Table 1
2018 April Detection Monitoring Event Results

Parameter	MW-7	MW-3R	MW-8	MW-9
Boron (ug/L)	73.8	123	79.5	43.3
Calcium (mg/L)	371	551	371	229
Chloride (mg/L)	124	1.5	ND (Non-Detect)	2.8
Fluoride (mg/L)	0.08	0.086	0.053	0.075
pH (SU)	6.34	6.45	6.40	6.60
Sulfate (mg/L)	488	1520	617	481
Total Dissolved Solids (mg/L)	1420	2870	1400	1080

Table 2
Detection Monitoring Trigger Values

Parameter	MW-7	MW-3R	MW-8	MW-9
Boron (ug/L)	87.8	130.1	87.8	87.8
Calcium (mg/L)	506.7	667.5	506.7	506.7
Chloride (mg/L)	81.94	81.94	81.94	81.94
Fluoride (mg/L)	0.11	0.11	0.11	0.11
pH (SU)	6.286 – 6.814	6.286 – 6.814	6.286 – 6.814	6.286 – 7.318
Sulfate (mg/L)	811.1	1937	811.1	811.1
Total Dissolved Solids (mg/L)	1742	3571	1742	1742

Statistical Analysis

The Statistical Analysis Plan (SAP) for the facility and CCR guidance details that only downgradient wells (compliance wells) are to be analyzed for Statistically Significant Increases (SSIs). All downgradient wells were below the detection monitoring trigger values and therefore a SSI has not occurred at the facility.

A review of the 2017 annual report detailed a few points of interest that were to be further assessed following additional monitoring. The following are excerpts from the annual report with responses in light of the April, 2018 monitoring event:

“Review of Sulfate concentrations in MW-3R indicated a statistically significant increasing trend. Due to the narrow range (1710-1890 mg/L) of measured values, no correction for trending was completed. This should be further assessed following additional monitoring events.”

The April, 2018 event indicated a sulfate value of 1520 mg/L in MW-3R. This value does not support the measured trend in the background dataset. This further indicates the observed trend to be coincidental.

“[In the October 16, 2017 background monitoring event] Total Dissolved Solids (TDS) in MW-8 exceeded the determined ‘trigger’ value (1800 mg/L compared to 1742 (mg/L)). Comparison of the background mean for MW-7 and MW-8 shows MW-8 to have a mean TDS concentration of 190 mg/L higher than MW-7. This may be another example of spatial variation and warrant the use of an intrawell analysis for TDS in MW-8. An SSI has not occurred as the SAP outlines a 1-of-2 rejection for an SSI (the need for two consecutive samples to exceed the trigger value to determine a SSI). If an intrawell analysis is completed for TDS in MW-8, an UPL of 1832 mg/L is determined, indicating the observed 1800 mg/L is not above the ‘trigger’ value. Further analysis should be completed following the next monitoring event.”

The measured Total Dissolved Solids (TDS) in MW-8 for the April, 2018 event measured 1400 mg/L. This is below the trigger value of 1742 mg/L. This confirms that an SSI has not occurred. The interwell method of determining the trigger value (upgradient vs. downgradient) will continue to be used for this location and parameter.

If you have any questions, please contact me at (218) 742-1022.

Sincerely,
Northeast Technical Services, Inc.



8-3-18

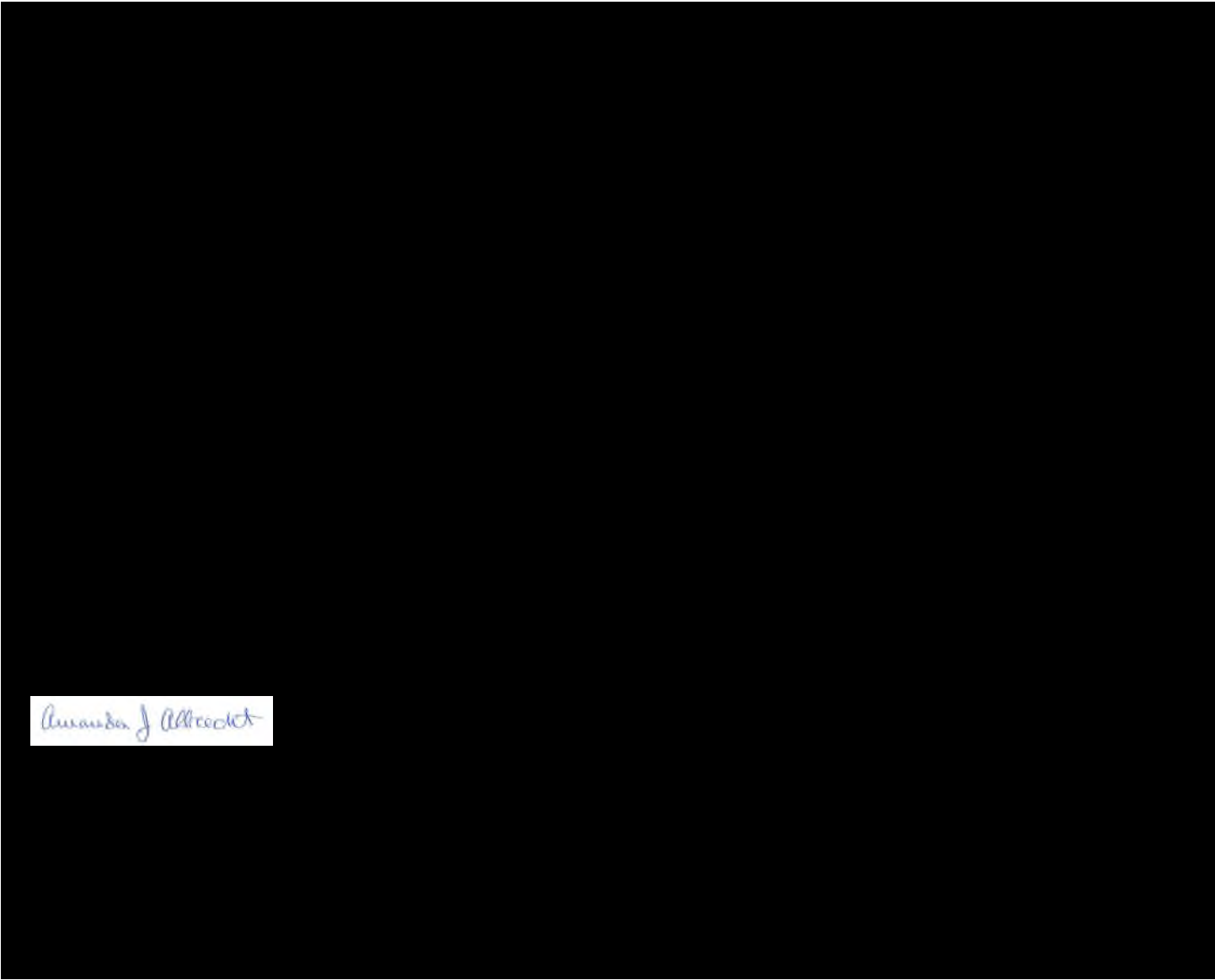
Evan C. Johnson, PE
Geotechnical Engineer

Appendix A: April 2018 Monitoring Results
Appendix B: Statistical Analysis Plan
Appendix C: Appendix III Parameters

Appendix A:
April 2018 Monitoring Results

LOCATION:	COLLECTION DATE:	COLLECTION TIME:	PARAMETER:	RESULT:
MW7	4/23/2018	9:37	Conductance, Specific (µmho/cm)	2008
MW7	4/23/2018	9:37	pH (Standard Units)	6.34
MW7	4/23/2018	9:37	Temperature, Water (°C)	11.4
MW7	4/23/2018	9:37	ORP (mV)	404
MW7	4/23/2018	9:37	Oxygen, Dissolved (mg/L)	0
MW7	4/23/2018	9:37	Turbidity (NTU)	32.8
MW7	4/23/2018	9:37	Static Water Level (ft)	20.64
MW3R	4/23/2018	10:33	pH (Standard Units)	6.45
MW3R	4/23/2018	10:33	Temperature, Water (°C)	8.8
MW3R	4/23/2018	10:33	ORP (mV)	63
MW3R	4/23/2018	10:33	Oxygen, Dissolved (mg/L)	0
MW3R	4/23/2018	10:33	Turbidity (NTU)	7.7
MW3R	4/23/2018	10:33	Conductance, Specific (µmho/cm)	3131
MW3R	4/23/2018	10:33	Static Water Level (ft)	64.84
MW8	4/23/2018	11:37	Temperature, Water (°C)	11.1
MW8	4/23/2018	11:37	ORP (mV)	201
MW8	4/23/2018	11:37	Oxygen, Dissolved (mg/L)	0
MW8	4/23/2018	11:37	Turbidity (NTU)	57.1
MW8	4/23/2018	11:37	Conductance, Specific (µmho/cm)	1894
MW8	4/23/2018	11:37	pH (Standard Units)	6.4
MW8	4/23/2018	11:37	Static Water Level (ft)	33.81
MW9	4/23/2018	12:30	ORP (mV)	114
MW9	4/23/2018	12:30	Oxygen, Dissolved (mg/L)	0
MW9	4/23/2018	12:30	Turbidity (NTU)	3.8
MW9	4/23/2018	12:30	Conductance, Specific (µmho/cm)	1562
MW9	4/23/2018	12:30	pH (Standard Units)	6.6
MW9	4/23/2018	12:30	Temperature, Water (°C)	8.6
MW9	4/23/2018	12:30	Static Water Level (ft)	10.71

May 08, 2018



Alexandra J. Albrecht

cc: Dave Brownell, General Waste (Dem-Con)
Erin Chamberlain, Dem-Con Companies
Rick Crum, NTS
Bill Keegan, Dem-Con Companies
Accounts Payable, Dem-Con Companies
Scott Seeley, Northeast Technical Services, Inc.



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

REPORT OF LABORATORY ANALYSIS

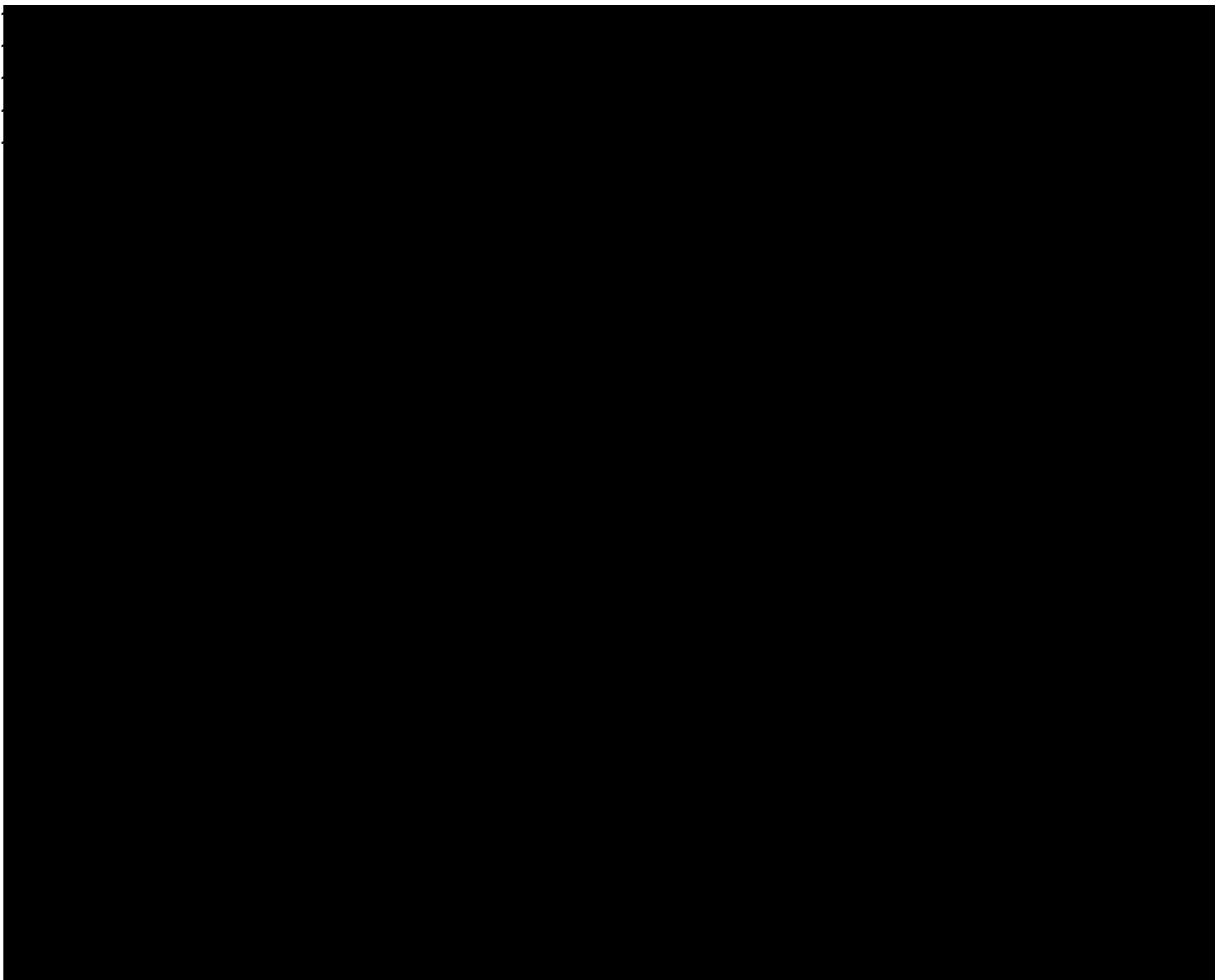
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SAMPLE SUMMARY

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10428289001	MW3R	Water	04/23/18 10:33	04/24/18 10:00



REPORT OF LABORATORY ANALYSIS

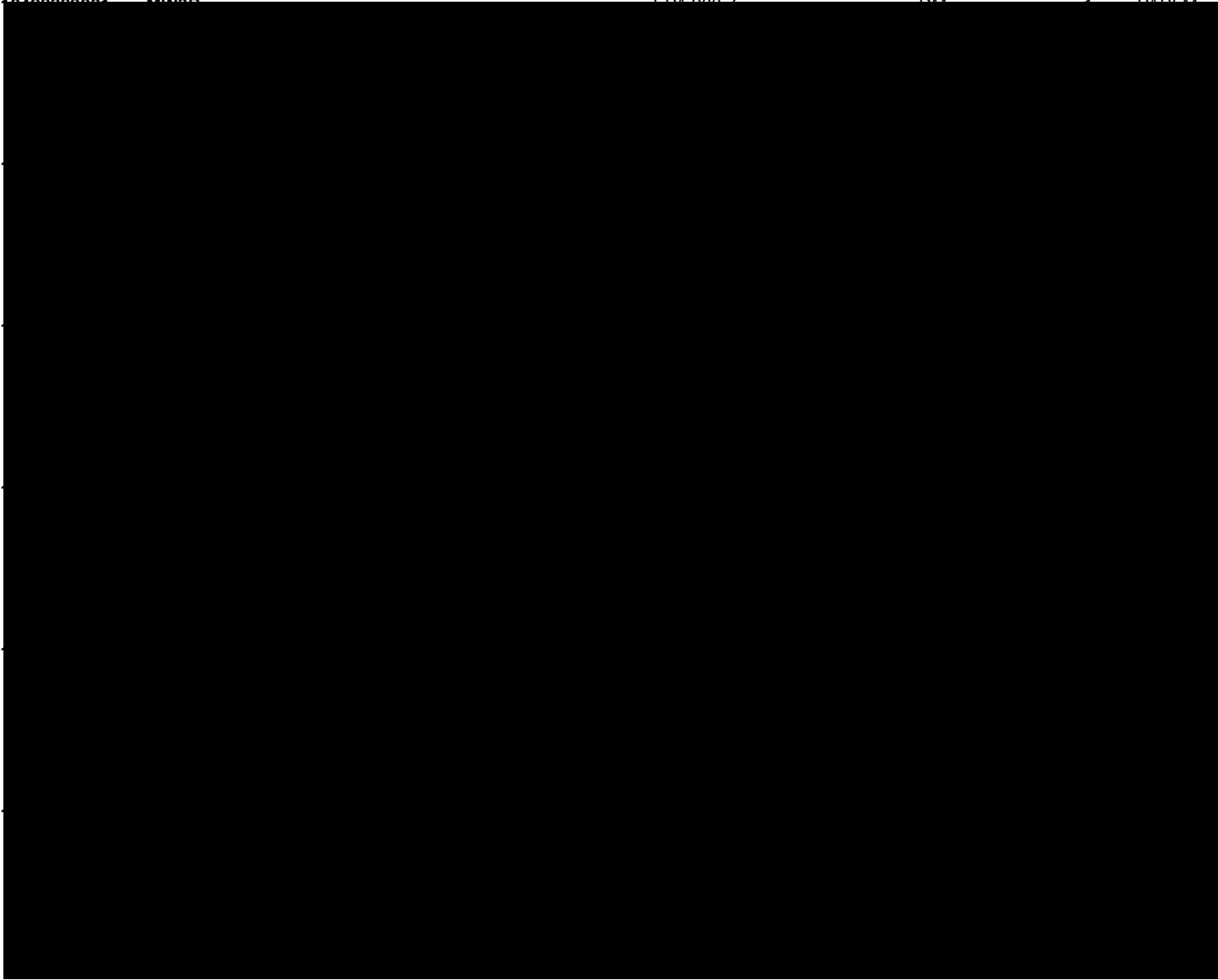
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SAMPLE ANALYTE COUNT

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10100000001	MM000	EPA 800.7	DM	1	PAC LM



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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: MW3R		Lab ID: 10428289001	Collected: 04/23/18 10:33	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
0								
2								
B								
2								
T								
4								
P								
3								
0								
P								
S								

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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: MW7		Lab ID: 10428289002	Collected: 04/23/18 09:37	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
C								
2								
B								
2								
T								
4								
P								
3								
C								
P								
S								

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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: MW8		Lab ID: 10428289003	Collected: 04/23/18 11:37	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
0								
2								
B								
2								
T								
4								
P								
3								
0								
P								
S								

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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: MW9		Lab ID: 10428289004	Collected: 04/23/18 12:30	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
0								
2								
B								
2								
T								
4								
P								
3								
0								
P								
S								

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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: Field Duplicate		Lab ID: 10428289005	Collected: 04/23/18 12:35	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
C								
2								
B								
2								
T								
4								
P								
3								
C								
P								
S								

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ANALYTICAL RESULTS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

Sample: Field Blank		Lab ID: 10428289006	Collected: 04/23/18 12:20	Received: 04/24/18 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

2								
C								
2								
B								
2								
T								
4								
P								
3								
C								
P								
S								

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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

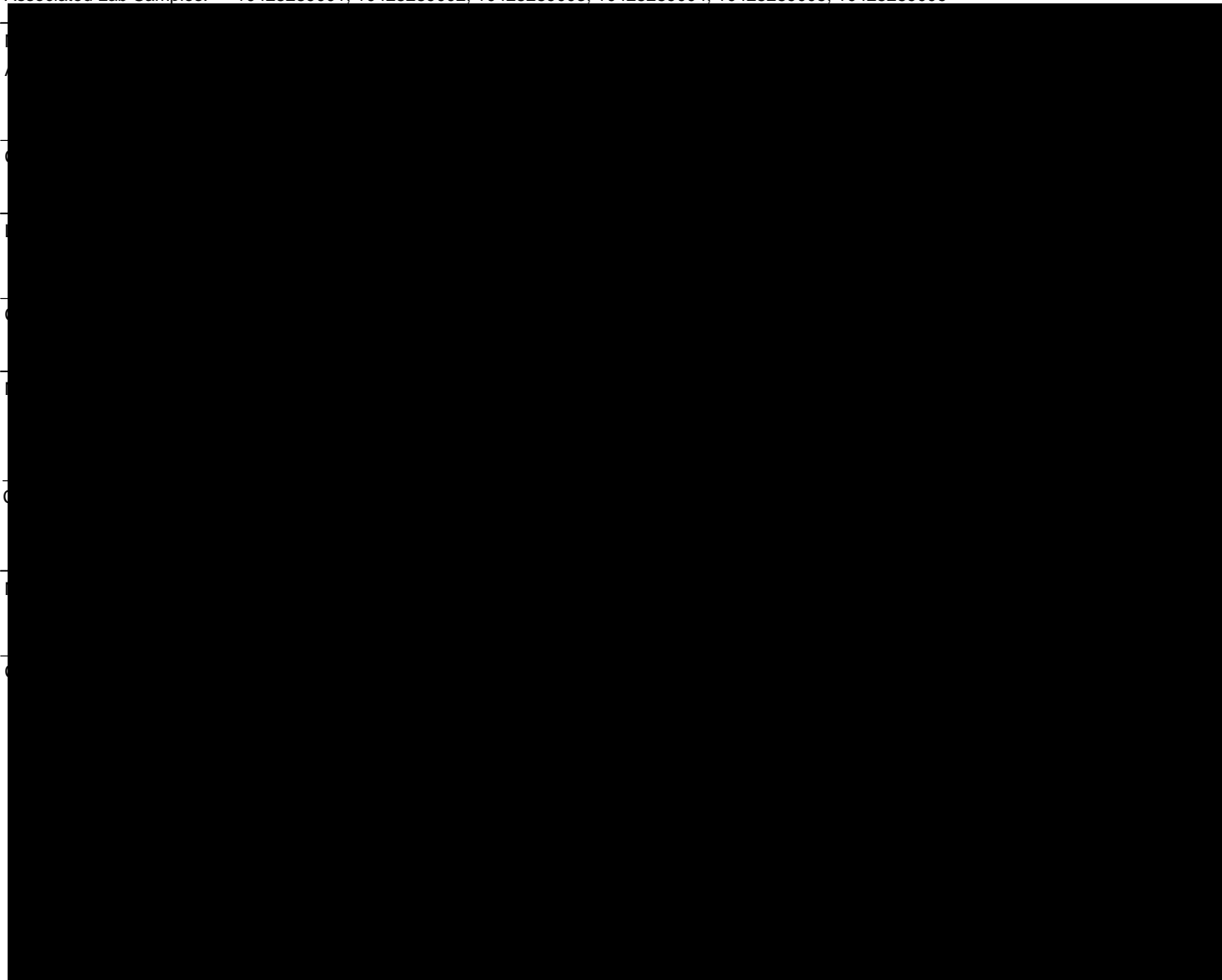
QC Batch: 533927

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 MET

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

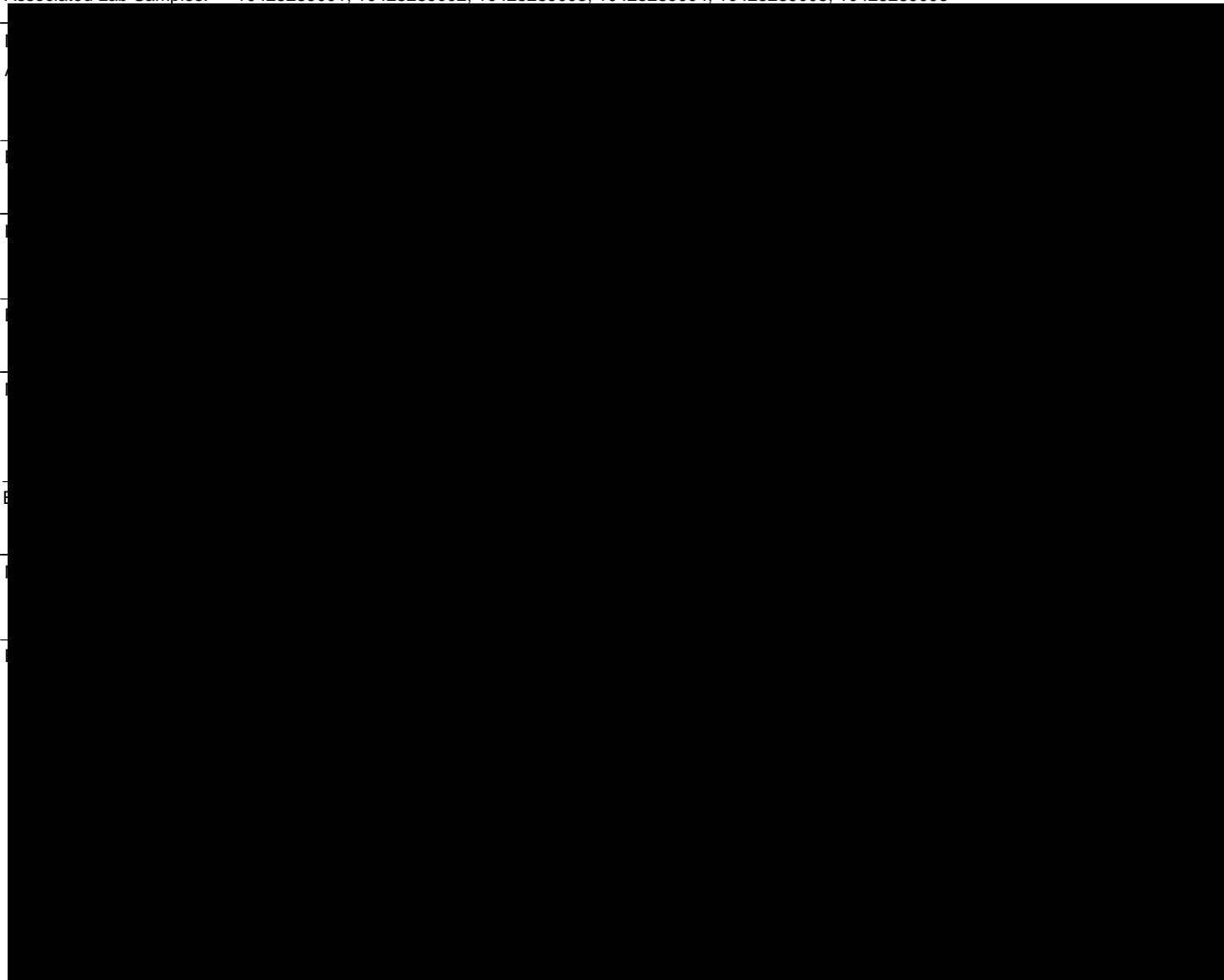
QC Batch: 533928

Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8

Analysis Description: 200.8 MET

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

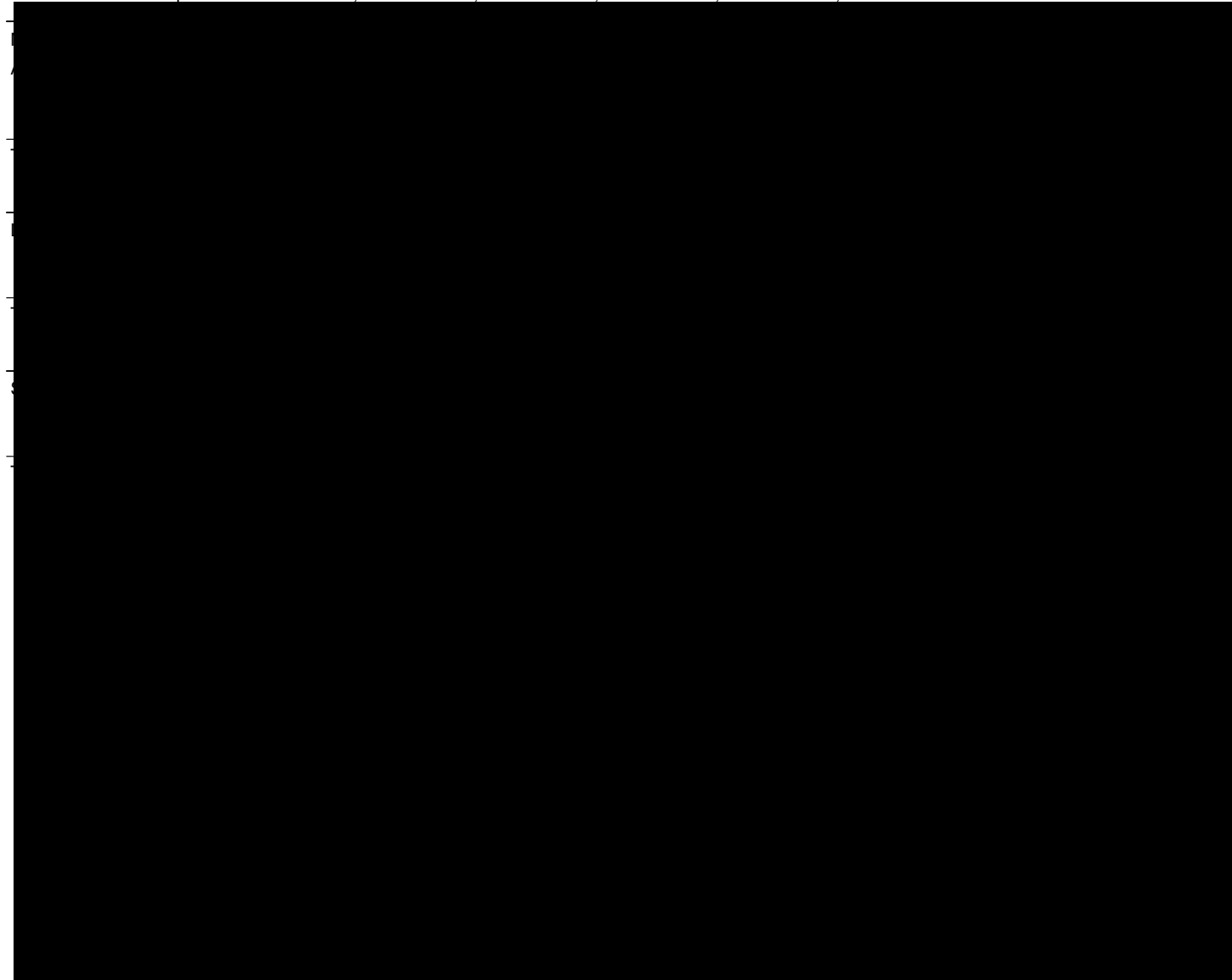
QC Batch: 534680

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

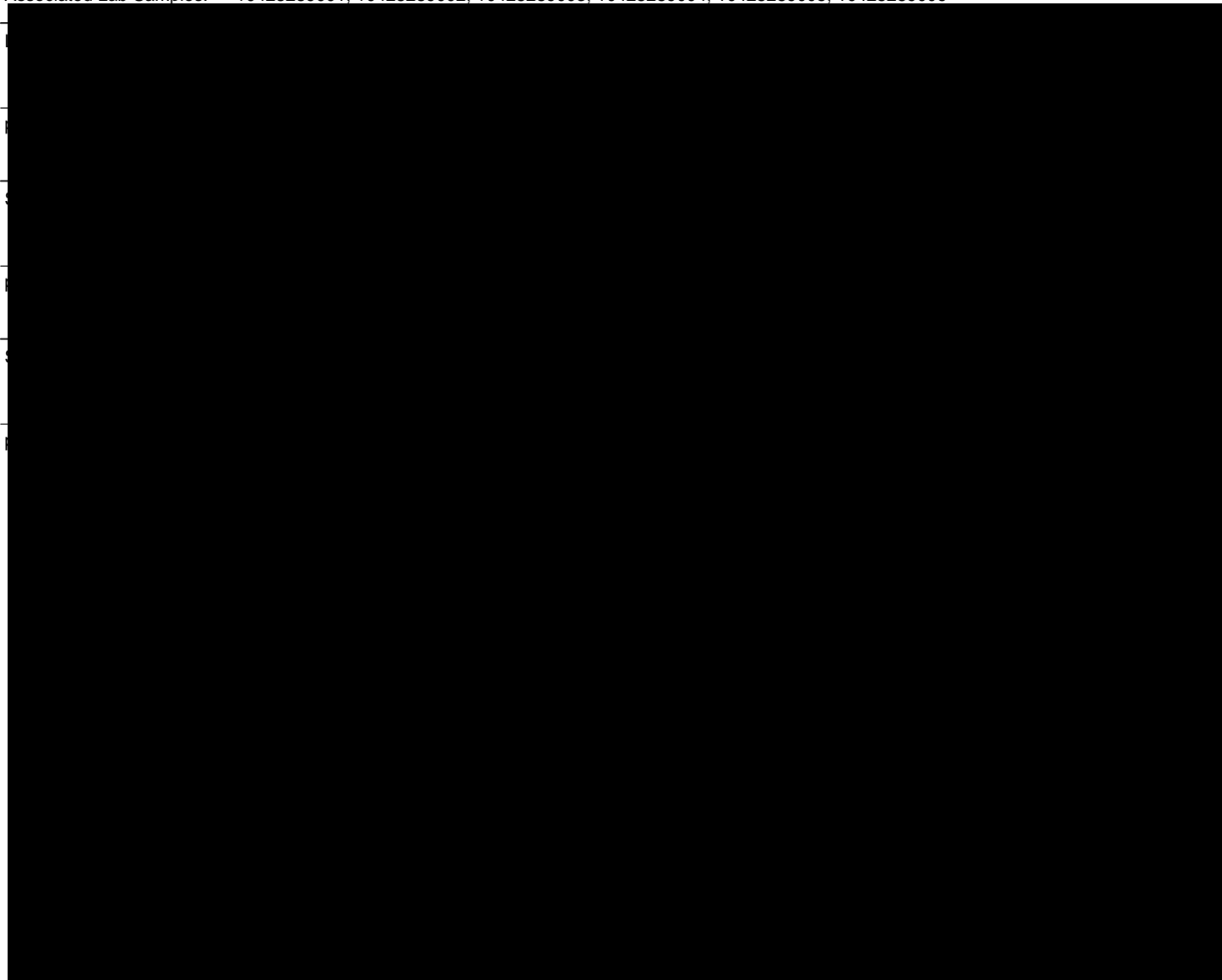
QC Batch: 535049

Analysis Method: SM 4500-H+B

QC Batch Method: SM 4500-H+B

Analysis Description: 4500H+B pH

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

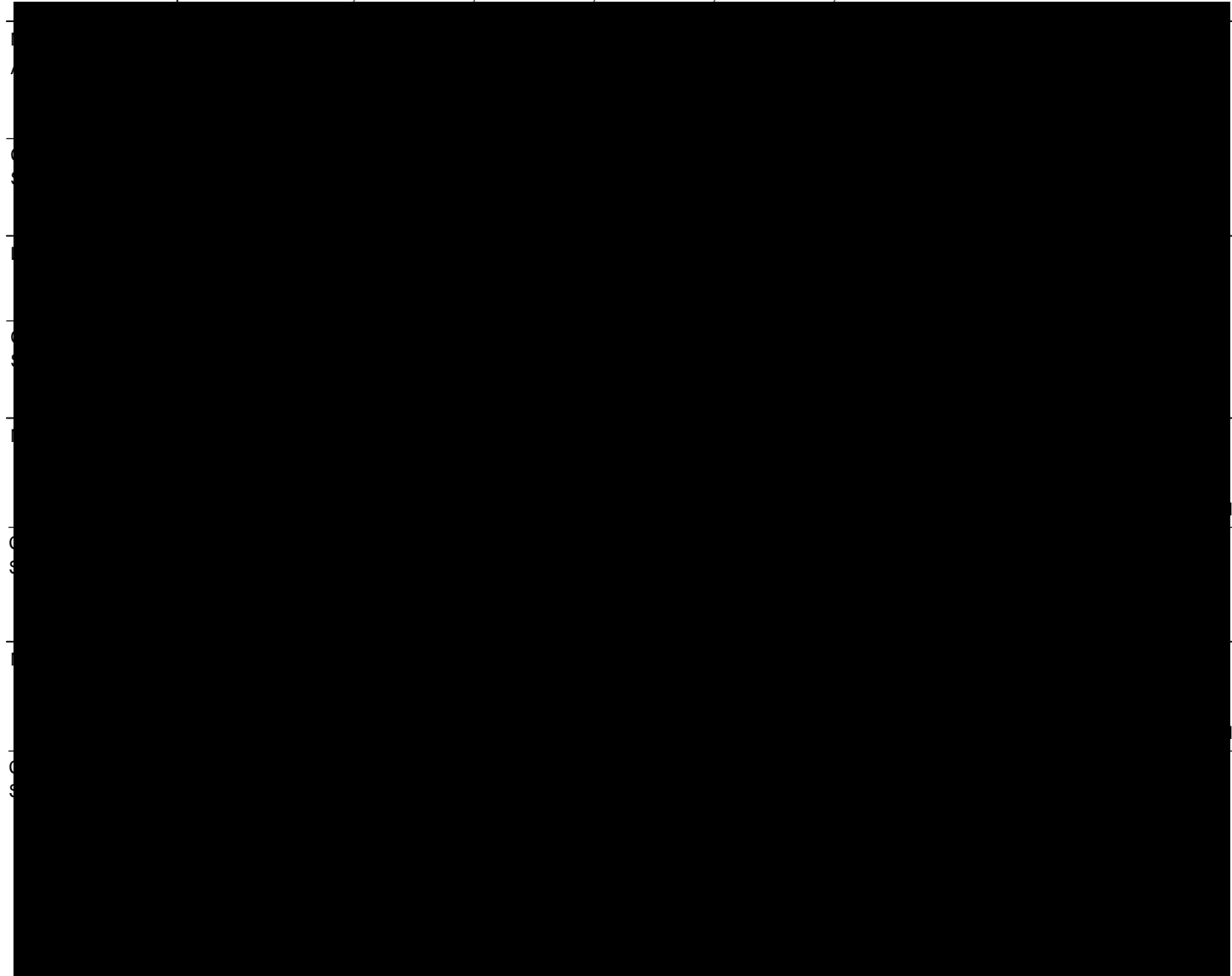
QC Batch: 534208

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



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QUALITY CONTROL DATA

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

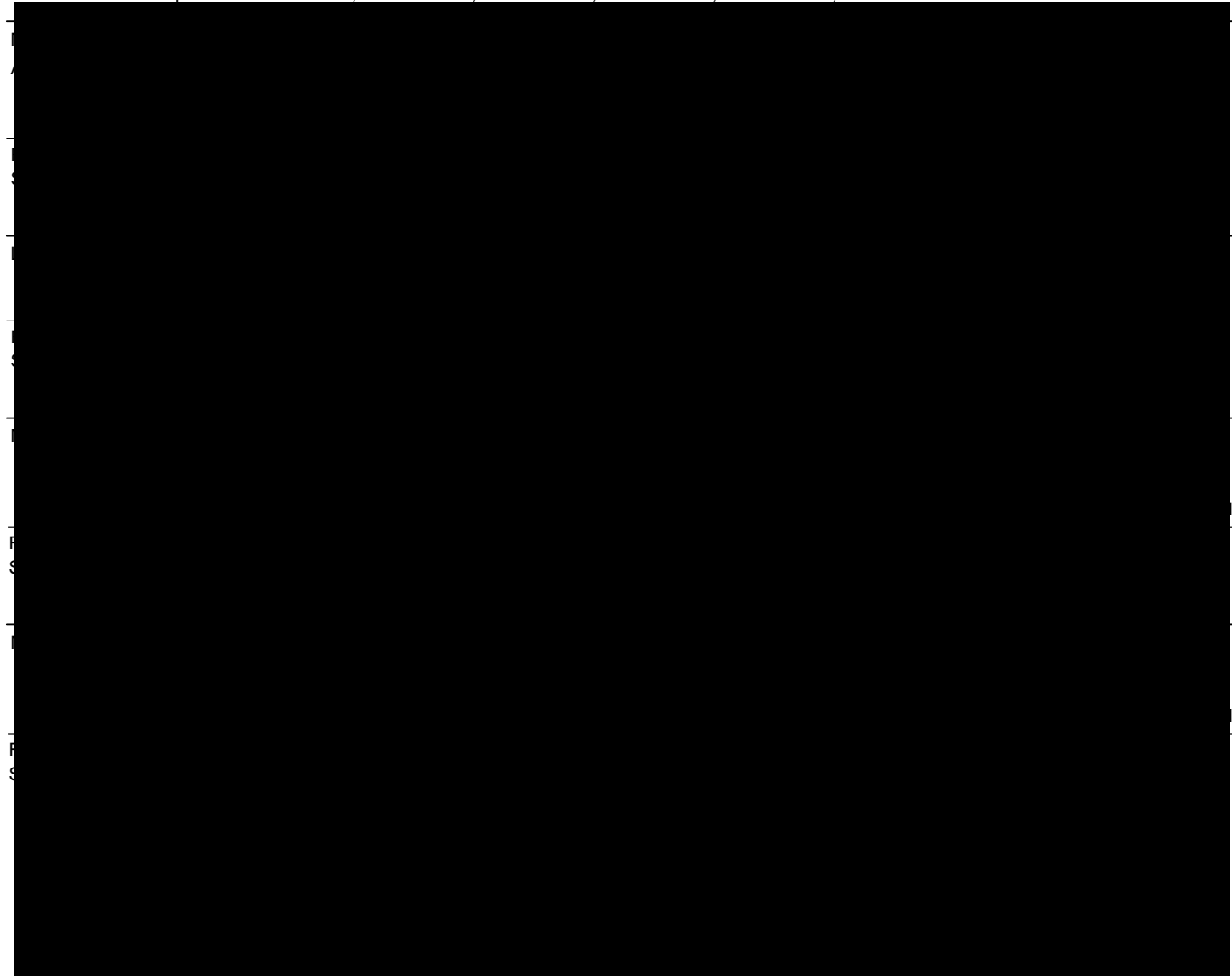
QC Batch: 535414

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 10428289001, 10428289002, 10428289003, 10428289004, 10428289005, 10428289006



Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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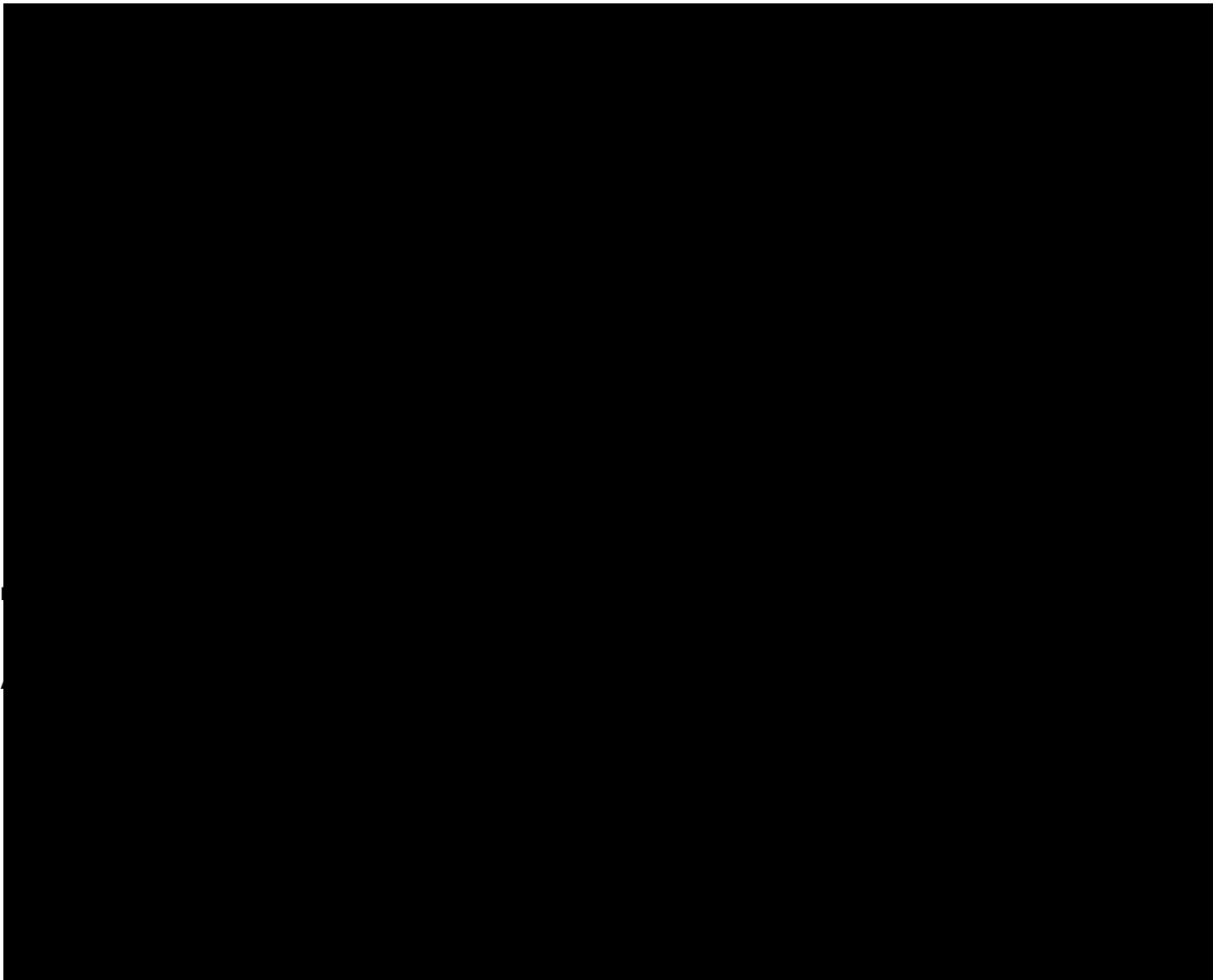
QUALIFIERS

Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

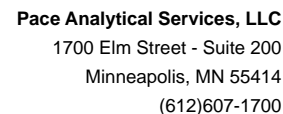
DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.



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Project: 6385CC CCR Monitoring-Revised Report
Pace Project No.: 10428289

REPORT OF LABORATORY ANALYSIS

Page 18 of 21

**NTS**

526 CHESTNUT STREET

VIRGINIA, MN 55792

(218) 741-4290 Fax: (218) 741-4291


PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

REQUIRED TURN-AROUND TIME: 2 Weeks from submittal date

CLIENT NAME ADDRESS PHONE#: GENERAL WASTE and RECYCLING LLC DEMOLITION & INDUSTRIAL LANDFILL ITASCA COUNTY, MINNESOTA			REPORT TO: ERIN CHAMBERLAIN, DENNIS SCHUBBE, RICK CRUM & SCOTT SEELEY			TYPE & # CONTAINERS			SPECIAL INSTRUCTIONS SEE ATTACHED LIST WITH METHODS WO# : 10428289 10428289														
SAMPLER: <i>Corey Andrews</i>			PERMIT REQ.: SW-620			VOC M. 8260 (HCL)			GENERAL CHEMISTRY (NO PRES)			GENERAL CHEMISTRY (H2SO4)			TOTAL METALS (HN03)			DISSOLVED METALS (HN03)					
PROJECT: GENERAL WASTE DISPOSAL and RECYCLING, LLC.			Apr-18																				
PROJECT NUMBER: 6385CC CCR Monitoring			COLLECTION:			MATRIX																	
LOG-IN#			SAMPLE #			DESCRIPTION			DATE			TIME			LIQ.			SOL.			REQUIRED ANALYSIS		
			MW3R			GW WELL			4/23/18			1033			X			N			Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS 001		
			MW7			GW WELL						0937			X			N			Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS 002		
			MW8			GW WELL						1137			X			N			Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS 003		
			MW9			GW WELL						1230			X			N			Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS 004		
			Field Duplicate			GW WELL						1235			X			N			Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS 005		
			Field Blank			Field Blank						1220			X			N			Boron, Calcium, Chloride, Fluoride, pH, Sulfate & TDS 006		
RELINQUISHED BY: <i>Corey Andrews</i>			DATE: 4/23/18			RECEIVED BY: <i>Janet</i>			DATE: 4/24/18			TIME: 10:00			2.0°C								
RELINQUISHED TO NTS SAMPLE LOCK-UP BY:			DATE:			RECEIVED FROM NTS SAMPLE LOCKUP BY:			DATE:			TIME:											
RECEIVED FOR LAB BY: <i>B Mathews</i>			TEMP. AT ARRIVAL:																				
DATE: 4/23/18			TIME: 1415																				

Del. by: M. H. Woods 4/23/18 15:16

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 14Dec2017 Page 1 of 2
	Document No.: F-MN-L-213-rev.22	Issuing Authority: Pace Minnesota Quality Office

**Sample Condition
Upon Receipt**

Client Name:

Project #:

WO# : 10428289

PM: AA1 Due Date: 04/30/18
CLIENT: DEM-CON CO.

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ Speedee ☐ Other: _____
Tracking Number: 7720 6397 0658

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No Seals Intact? ☐ Yes ☒ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer ☐ 151401163 ☒ G87A9155100842
Used: Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 2.1 Cooler Temp Corrected (°C): 2.1 Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A
Temp should be above freezing to 6°C Correction Factor: Two Date and Initials of Person Examining Contents: Jx1 4/24/18

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>11-61</u>
(HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin. <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review:



Date: 4/24/18

Note: Whenever there is a discrepancy affecting this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

GENERAL WASTE CCR METHODS

PARAMETER	SYMBOL	EPA Method
Boron	B	200.8
Calcium	Ca	200.7
Chloride	Chloride	300.0
Fluoride	Flouride	300.0
pH	pH	SM 4500 H+B
Sulfate	SO ₄	300.0
TDS	TDS	SM 2540C

Appendix B:

Statistical Analysis Plan

**GENERAL WASTE & RECYCLING, LLC SW-620
INDUSTRIAL WASTE LANDFILL**

Statistical Analysis Plan for Groundwater Monitoring Data

Prepared For:

GENERAL WASTE & RECYCLING, LLC

Prepared by:

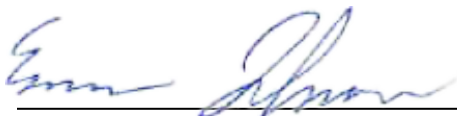
**Northeast Technical Services, Inc.
526 Chestnut Street
Virginia, Minnesota 55792**

(218) 741-4290

October 6, 2017

Project Number: 6385CC

"I certify under penalty of law that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete." I certify that this groundwater statistical analysis plan for the General Waste Industrial Waste Landfill described in this report meets all requirements put forth by 40 CFR §257.93 'Groundwater Sampling and Analysis Requirements.'



Evan Johnson, P.E.
Geotechnical Engineer
Minnesota License No. 53648

10-13-17

Date

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1.0 Purpose

Per 40 CFR 257.93 ‘Groundwater Sampling and Analysis Requirements’ (the rule), a statistical procedure for assessing collected groundwater data as to whether or not a release has occurred must be implemented at all CCR units. The rule outlines five (5) statistical methods that may be utilized for analyzing collected data. The statistical procedure utilized should account for spatial variance, temporal trends, and address the handling of non-detect data. This Statistical Analysis Plan has been prepared to meet the requirements of the rule and provide the framework for analyzing the collected groundwater data at the General Waste & Recycling, LLC facility (the facility) in Keewatin, Minnesota.

2.0 Initial Background Monitoring

2.1 Background Monitoring Parameters

The rule requires background monitoring of all CCR monitoring wells and eight (8) groundwater monitoring events must be completed prior to October 17, 2017. For this Statistical Analysis Plan, background monitoring includes monitoring for all parameters listed in Appendix III and Appendix IV of 40 CFR 257.93 (see Table 1 and Table 2, respectively).

2.2 Background Data Analysis

Per the rule, within 90 days of collecting the final background dataset, statistical analysis of the data is to be completed. Statistical analysis can be any of those allowed by the rule and should establish a means of determining if a Statistically Significant Increase (SSI) of a monitored parameter occurs during operation of the CCR unit to help determine if a leak or release has occurred from the CCR unit.

2.3 Establishing Background Dataset

2.3.1 Summary Statistics and Distribution

Once the final background dataset has been collected, summary statistics should be computed, including mean and variance. An analysis of the data set be conducted to see if data is parametric (normally distributed). A Shapiro-Wilk analysis should be completed to make this determination. This should be completed for each parameter at each well installation. If the data is skewed and does not pass the normality test, the data may be able to be transformed to a normal distribution via lognormal plotting.

If a normal distribution cannot be achieved naturally or by transformation, non-parametric statistics may be utilized.

2.3.2 Interwell and Intrawell Analysis

It is recommended that the primary method of determining if a SSI has occurred at the site utilize an interwell analysis. This analysis will look at the dataset of the upgradient well (background well) to determine the Upper Prediction Limit (UPL), for the downgradient well concentrations. However, if spatial variation is present in the monitoring system, it may be necessary to assess data from an intrawell analysis. This analysis looks at the background dataset for a specific parameter in the same well to determine if a SSI has occurred. Both methods are viable and can be used for specific parameters. It is not necessary to have a single analysis type for all wells for all parameters at the facility.

Care should be taken when conducting an interwell analysis when the background dataset for downgradient wells may be affected by pre-existing CCR impacts. Given the timeframe of placed CCR materials at the facility, the estimated groundwater velocity, and the monitoring well locations, none of the existing monitoring wells would be expected to exhibit any signs of CCR impact. However, analysis should be completed for any future wells installed.

2.3.3 Upper Prediction Limit

Per the recommendation from the USEPA “Statistical Analysis of Groundwater Monitoring Data At RCRA Facilities Unified Guidance (2009)” (Unified Guidance) document, Upper Prediction Limits (UPL) will be utilized to assess for a SSI in the downgradient wells the facility. The UPL is calculated as follows:

$$UPL = \bar{x} + ks$$

Where:

\bar{x} = mean parameter concentration of background dataset

s = standard deviation of background dataset

k = site specific multiplier provided by the Unified Guidance Tables 19, depends on number of wells, number of parameters to be analyzed, size of background dataset

The UPL statistical method allows for both interwell and intrawell comparison.

2.4 Analyzing for Trends

Trends in data may occur due to natural temporal factors, but are not expected to be seen in the initial background dataset. Trend analysis should be completed for the background datasets. If a trend does exist, this should trigger an analysis to assess the potential cause of the trend (especially upward trends of monitored concentrations) and determination of the method to correct for the trend in the statistical approach.

Trend analysis to determine if a statistically significant trend exists can be completed by utilizing the Theil-Sen slope analysis with Mann-Kendall trend test ($\alpha = 0.05$) (non-parametric, more suitable for datasets with >20% non-detect results) or a Ordinary Least Squares (OLS) linear regression with Student’s t-test ($\alpha = 0.01$) (parametric dataset, <20% non-detect results).

2.5 Non-Detect Data

Datasets that have less than 20% non-detect data may substitute the reporting limit divided by 2 (RL/2 method) for non-detect results for statistical analysis.

Datasets that contain 20-50% non-detect data must utilize the Kaplan-Meier method to compute summary statistics for the dataset.

Datasets that contain more than 50% non-detect data will not be able to compute summary statistics data reliably. It is recommended that the UPL be set to the highest or second highest observed value.

If all background data are non-detect, then the UPL shall be set to the highest Reporting Limit (RL) (assuming a reasonable RL have been reported that are below MCL concentrations).

2.6 Outliers

The dataset should be analyzed for outlier datapoints. This can be done visually by examining a time series plot of the data or by a box-and-whisker plot. If a datapoint appears to be an outlier, field notes, lab reports, and analysis programs should be checked for indications of erroneous data or transcription errors.

Numerical methods of determining an outlier may include a 3-sigma analysis for parametric data (data point outside of 3 standard deviations) or the following for non-parametric data if the data point x is:

$$x > x'_{.75} + 3 * IQR$$

Where:

X = individual data point

$x'_{.75}$ = Third Quartile

$IQR = x'_{.75} - x'_{.25}$ (InterQuartile Range)

Datapoints determined to be outliers due to erroneous data collection may be removed from the dataset. Datapoints that appear to be representative data but are extreme may be excluded from the statistical analysis, but should remain in the data for future evaluation if the data set significantly changes.

2.7 Duplicate Samples

Duplicate samples collected for quality control means should not be included in the statistically analyzed dataset as they are not physically independent and will inappropriately skew the data.

3.0 Detection Monitoring

Following the completion of the background monitoring, detection monitoring will be initiated at the facility. Detection monitoring is to be conducted semiannually (preferably in the spring and

fall) and analyzed for Appendix III parameters only. Statistical analysis of the data must be completed within 90 days of receiving laboratory data.

3.1 Statically Significant Increase

3.1.1 Two Sample Test

Two sample testing indicates that if a UPL (either interwell or intrawell) is exceeded for a parameter, then a second sample should be collected and analyzed. If analysis of the second sample indicates a concentration below the UPL, then a SSI has not occurred. If the second sample indicates a value above the UPL, then a SSI has occurred.

Three Sample Testing which would require 3 consecutive samples to indicate concentrations above the UPL for a SSI to be indicated may be appropriate for specific situations. One situation would be if False Positive readings (Type II error) appears to be exceeding 10% of the total dataset.

3.1.2 Practical monitoring Practice

Downgradient constituents should be compared to the established UPL determined from the upgradient well data (for interwell comparisons) or compared to the UPL determined from the segregated background dataset for the individual well (intrawell comparison). If a parameter exceeds a UPL, a second sample should be collected from the well and analyzed. If the second sample indicates a value above the UPL, then it can be determined that a SSI has occurred and Assessment monitoring should be initiated.

3.1.3 Responding to an SSI

If the statistical evaluation indicates a SSI has occurred, the data should be further evaluated to determine if the SSI is likely caused by a CCR unit release and assessment monitoring should be initiated or if other factors of influence can be demonstrated to be taking effect. This demonstration must be certified by a qualified professional engineer within 90 days of completing the statistical evaluation (in addition to the 90 day requirement for conducting the statistical analysis).

4.0 Assessment Monitoring

Assessment monitoring occurs once evaluation of Detection Monitoring parameters (Appendix III) indicates a SSI and there is reason to believe that the SSI could indicate a release from a CCR unit. Assessment monitoring must begin within 90 days of determining that a SSI related to a potential release of the CCR unit has occurred.

4.1 Monitoring Parameters

The initial assessment monitoring event must include all parameters listed in Appendix III and Appendix IV of 40 CFR 257.93 at all monitoring well locations. Subsequent monitoring events may include Appendix III parameters and only the Appendix IV parameters that were detected in the initial monitoring event. Assessment monitoring will also be conducted on a semi-annual basis (e.g., spring and fall monitoring events).

4.2 Groundwater Protection Standard

A Groundwater Protection Standard (GWPS) must be established for each Appendix IV parameter. For parameters for which the USEPA has established a Maximum Contaminant Level (MCL), the MCL (shown on Tables 1 and 2) shall be used for the GWPS. For the parameters for which a MCL has not been established, then the Upper Tolerance Limit (UTL) ($\alpha = 0.05$, 95% coverage) of the parameter utilizing the upgradient (background) well(s) shall be utilized to establish a GWPS for the specific parameter. This determined UTL concentration shall be applied site-wide for all downgradient wells.

4.3 Move to Corrective Action

The UPL and UTL are useful to assess for a SSI or measurable increase above background. However, in order to assess if a dataset has statically exceeded a set value (the GWPS), Confidence Limits would be the most appropriate. If the Lower Confidence Limit (LCL) of the Assessment Monitoring dataset exceeds the GWPS, then movement into Corrective Action is warranted.

This Statistical Analysis Plan does not address Corrective Action methods of monitoring. Corrective Action methods will be developed if required per the rule..

4.4 Return to Detection Monitoring

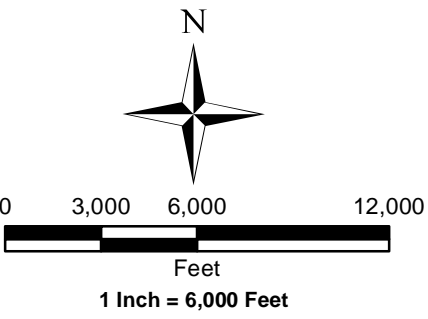
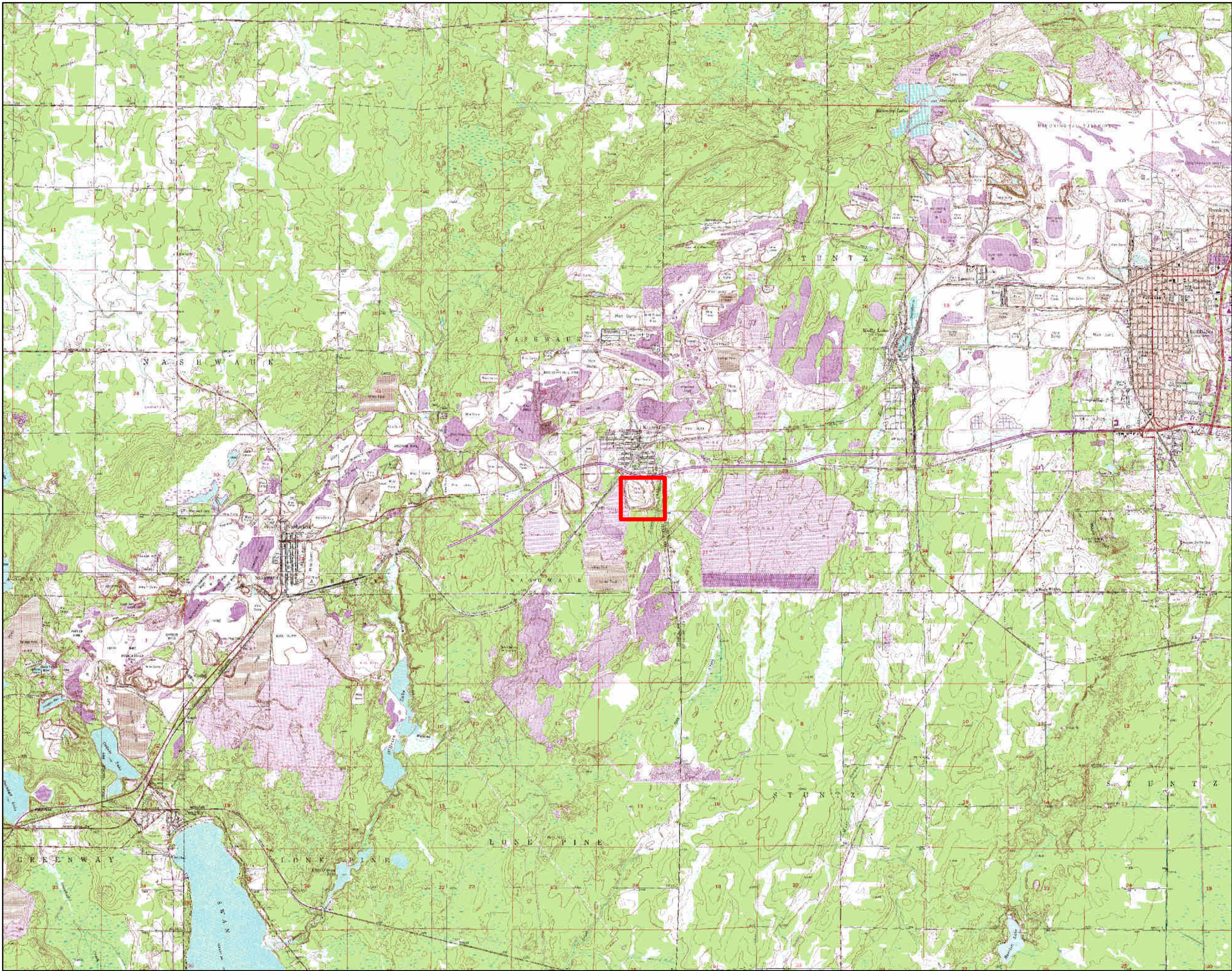
Assessment monitoring may cease and detection monitoring be re-initiated when all Appendix III and monitored Appendix IV parameters are below background (upgradient well) concentrations.

5.0 Updating Background Data

Background datasets should be updated every 2 years assuming that a SSI has not occurred. A Student t-test ($\alpha=0.01$, parametric) or Mann-Whitney ($\alpha = 0.05$, non-parametric) should be utilized to assess if the existing background dataset and the dataset to be added to the background dataset are statistically different. If the data is shown not to be significantly different, the dataset should be pooled and the background dataset updated. If analysis of the data using the t-test or Mann-Whitney test indicates a statistical difference, the data should be analyzed to determine a potential cause for the statistically significant difference.

TABLE 1 Appendix III Parameters	
Parameter	MCL
Boron	NA
Calcium	NA
Chloride	NA
Fluoride	4.0 mg/L
pH	NA
Sulfate	NA
Total Dissolved Solids (TDS)	NA

TABLE 2 Appendix IV Parameters	
Parameter	MCL
Antimony	0.006 mg/L
Arsenic	0.01 mg/L
Barium	2.0 mg/L
Beryllium	0.004 mg/L
Cadmium	0.10 mg/L
Chromium	0.10 mg/L
Cobalt	NA
Fluoride	4.0 mg/L
Lead	0.015 mg/L
Lithium	NA
Mercury	0.002 mg/L
Molybdenum	NA
Selenium	0.05 mg/L
Thallium	0.002 mg/L
Radium 226 and 228 combined	5 pCi/L



Legend

 Project Location

Notes:
-Background image has been provided by MNGEO Web Services

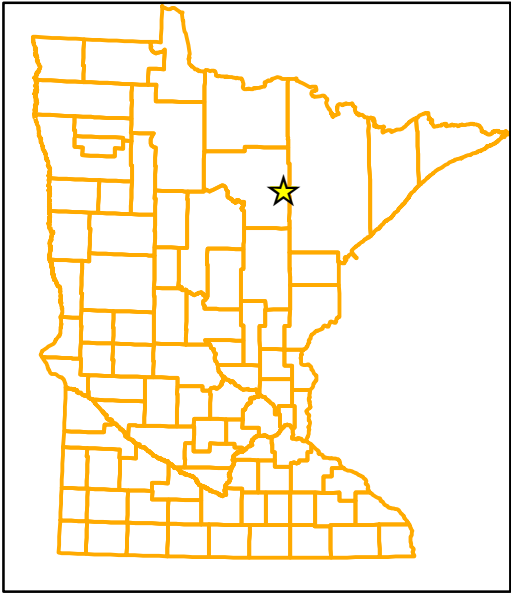


Figure 1
Site Location Map

**General Waste Industrial Landfill
Statistical Analysis Plan Certification
Keewatin, MN (St. Louis)**



Date Drawn :
October 4, 2017
Drawn By :
Evan Johnson
NTS Project #:
6385CC

Appendix C:
Appendix III Parameters

CCR Appendix III Parameters	
Parameter	MCL
Boron	NA
Calcium	NA
Chloride	NA
Fluoride	4.0 mg/L
pH	NA
Sulfate	NA
Total Dissolved Solids (TDS)	NA

January 2, 2019

Mr. Jon Penheiter
Dem-Con Companies
13020 Dem-Con Drive
Shakopee, MN 55379
jonpenheiter@dem-con.com

Sent Via Email

RE: Statistical Analysis for October 2018 groundwater monitoring event for CCR compliance at the Keewatin, MN facility

Mr. Penheiter,

NTS is pleased to submit this report summarizing the CCR monitoring data collected in October, 2018 as well as the statistical analysis completed in accordance with the facility Statistical Analysis Plan (SAP).

Review of the data shows that 1 monitoring trigger value was intersected during the October, 2018 monitoring event at the compliance/downgradient wells (MW-3R, MW-8, MW-9). MW-3R indicated a pH of 6.27 with a lower trigger limit set to 6.286. This is the first occurrence at this location and therefore this is not considered an SSI. This location will be further assessed following the April, 2019 monitoring event. In the up-gradient well MW-7, Chloride was measured at 91.4 mg/L, which is above the established trigger value of 81.94 mg/L. MW-7 is not a compliance well and therefore this would not be assessed in regards to determining if a statistically significant increase (SSI) has occurred due to the CCR facility. However, this is the 2nd consecutive occurrence of elevated chloride observed in this well (124 mg/L in April, 2018) and may indicate changing hydrologic/environmental conditions that may affect the hydrology/groundwater quality at the CCR facility and established detection monitoring trigger values. It is recommended that detection monitoring continue per the SAP and the potentially changing up-gradient conditions be assessed when the background dataset is updated following 2 years of detection monitoring.

Detection Monitoring

Detection monitoring at the Keewatin facility includes monitoring of 4 groundwater wells, one upgradient well (MW-7) and three downgradient wells (MW-3R, MW-8, and MW-9). Field parameters and laboratory samples were collected on October 11, 2018. Laboratory results were received from PACE Analytical on October 23, 2018. Lab analyses completed includes those found in the CCR guidance Appendix III table (See Appendix C). The monitoring results and the established detection monitoring trigger values can be seen in Tables 1 and 2, respectively. The highlighted cells in Table 1 indicate monitored results above the trigger value (MW-7 Chloride, MW-3R pH).

Table 1
2018 October Detection Monitoring Event Results

Parameter	MW-7	MW-3R	MW-8	MW-9
Boron (ug/L)	70.8	103	64.7	ND (Non-Detect)
Calcium (mg/L)	400	532	331	193
Chloride (mg/L)	91.4	2.0	1.4	8.4
Fluoride (mg/L)	ND (Non-Detect)	ND (Non-Detect)	ND (Non-Detect)	ND (Non-Detect)
pH (SU)	6.29	6.27	6.34	6.52
Sulfate (mg/L)	695	1550	589	460
Total Dissolved Solids (mg/L)	1600	2850	1350	1100

Table 2
Detection Monitoring Trigger Values

Parameter	MW-7	MW-3R	MW-8	MW-9
Boron (ug/L)	87.8	130.1	87.8	87.8
Calcium (mg/L)	506.7	667.5	506.7	506.7
Chloride (mg/L)	81.94	81.94	81.94	81.94
Fluoride (mg/L)	0.11	0.11	0.11	0.11
pH (SU)	6.286 – 6.814	6.286 – 6.814	6.286 – 6.814	6.286 – 7.318
Sulfate (mg/L)	811.1	1937	811.1	811.1
Total Dissolved Solids (mg/L)	1742	3571	1742	1742

Statistical Analysis

The Statistical Analysis Plan (SAP) for the facility and CCR guidance details that only downgradient wells (compliance wells) are to be analyzed for Statistically Significant Increases (SSIs). The SAP also specifies a 2-sample test be used to determine if an SSI has occurred. The lower trigger value exceedance at MW-3R is the first occurrence and therefore is not considered an SSI. Additionally, the accuracy of the utilized instrument (Hydroloab MS5) is reported to be 0.2 SU, and typically is only reported to the tenth SU though the instrument reports to the hundredth. Therefore the observed exceedance of 0.01 is not highly defensible.

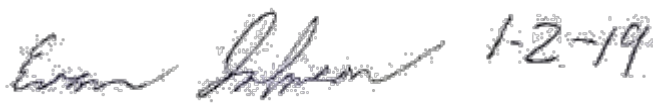
A review of the 2017 annual report detailed a few points of interest that were to be further assessed following additional monitoring. The following are excerpts from the annual report with responses in light of the April and October, 2018 monitoring event:

“Review of Sulfate concentrations in MW-3R indicated a statistically significant increasing trend. Due to the narrow range (1710-1890 mg/L) of measured values, no correction for trending was completed. This should be further assessed following additional monitoring events.”

The April and October, 2018 events indicated a sulfate value of 1520 mg/L and 1550 mg/L in MW-3R. These values do not support the measured trend in the background dataset. This further indicates the observed trend to be coincidental.

If you have any questions, please contact me at (218) 742-1022.

Sincerely,
Northeast Technical Services, Inc.



Evan C. Johnson, PE
Geotechnical Engineer

Appendix A: October 2018 Monitoring Results
Appendix B: Statistical Analysis Plan
Appendix C: Appendix III Parameters

Appendix A

October, 2018 Monitoring Results

October 23, 2018

Dennis Schubbe
Northeast Technical Services
526 Chestnut Street
Virginia, MN 55792

RE: Project: 6385CC General Waste
Pace Project No.: 12117329

Dear Dennis Schubbe:

Enclosed are the analytical results for sample(s) received by the laboratory on October 12, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Carrie Jensen
carrie.jensen@pacelabs.com
(218)742-1042
Project Manager

Enclosures

cc: Sample Data, Northeast Technical Services
Scott Seeley, NTS
Karissa Vosen, NTS



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 6385CC General Waste

Pace Project No.: 12117329

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792

Montana Certificate #CERT0103

Alaska Certification UST-107

Minnesota Dept of Health Certification #: 027-137-445

North Dakota Certification: # R-203

Wisconsin DNR Certification # : 998027470

WA Department of Ecology Lab ID# C1007

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 6385CC General Waste

Pace Project No.: 12117329

Lab ID	Sample ID	Matrix	Date Collected	Date Received
12117329001	MW3R	Water	10/11/18 13:35	10/12/18 12:30
12117329002	MW7	Water	10/11/18 09:50	10/12/18 12:30
12117329003	MW8	Water	10/11/18 16:15	10/12/18 12:30
12117329004	MW9	Water	10/11/18 16:56	10/12/18 12:30
12117329005	Field Duplicate	Water	10/11/18 17:00	10/12/18 12:30
12117329006	Field Blank	Water	10/11/18 16:35	10/12/18 12:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 6385CC General Waste

Pace Project No.: 12117329

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
12117329001	MW3R	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V
12117329002	MW7	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V
12117329003	MW8	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V
12117329004	MW9	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V
12117329005	Field Duplicate	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V
12117329006	Field Blank	EPA 200.8	JJH	2	PASI-V
		SM 2540C (1997)	KER	1	PASI-V
		SM 4500-H+B	CSD	1	PASI-V
		EPA 300.0	CSD	3	PASI-V

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6385CC General Waste
Pace Project No.: 12117329

Sample: MW3R		Lab ID: 12117329001	Collected: 10/11/18 13:35	Received: 10/12/18 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8						
Boron	103	ug/L	40.0	1	10/15/18 14:49	10/16/18 13:08	7440-42-8	
Calcium	532	mg/L	1.0	10	10/15/18 14:49	10/16/18 14:06	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)						
Total Dissolved Solids	2850	mg/L	20.0	1		10/16/18 19:03		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B						
pH at 25 Degrees C	7.2	Std. Units	0.10	1		10/12/18 15:28		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Chloride	2.0	mg/L	1.0	1		10/13/18 10:17	16887-00-6	
Fluoride	ND	mg/L	0.10	1		10/13/18 10:17	16984-48-8	
Sulfate	1550	mg/L	28.0	14		10/13/18 16:42	14808-79-8	

Sample: MW7		Lab ID: 12117329002	Collected: 10/11/18 09:50	Received: 10/12/18 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8						
Boron	70.8	ug/L	40.0	1	10/15/18 14:49	10/16/18 13:15	7440-42-8	
Calcium	400	mg/L	1.0	10	10/15/18 14:49	10/16/18 14:10	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)						
Total Dissolved Solids	1600	mg/L	20.0	1		10/16/18 19:02		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B						
pH at 25 Degrees C	7.2	Std. Units	0.10	1		10/12/18 15:31		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Chloride	91.4	mg/L	1.0	1		10/13/18 10:34	16887-00-6	
Fluoride	ND	mg/L	0.10	1		10/13/18 10:34	16984-48-8	
Sulfate	695	mg/L	14.0	7		10/13/18 16:59	14808-79-8	

Sample: MW8		Lab ID: 12117329003	Collected: 10/11/18 16:15	Received: 10/12/18 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8						
Boron	64.7	ug/L	40.0	1	10/15/18 14:49	10/16/18 12:44	7440-42-8	
Calcium	331	mg/L	1.0	10	10/15/18 14:49	10/16/18 14:03	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)						
Total Dissolved Solids	1350	mg/L	20.0	1		10/16/18 19:08		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6385CC General Waste
Pace Project No.: 12117329

Sample: MW8		Lab ID: 12117329003		Collected: 10/11/18 16:15		Received: 10/12/18 12:30		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		10/12/18 15:35		H6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	1.4	mg/L	1.0	1		10/13/18 10:50	16887-00-6		
Fluoride	ND	mg/L	0.10	1		10/13/18 10:50	16984-48-8		
Sulfate	589	mg/L	12.0	6		10/13/18 17:15	14808-79-8		

Sample: MW9		Lab ID: 12117329004		Collected: 10/11/18 16:56		Received: 10/12/18 12:30		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Boron	ND	ug/L	40.0	1	10/15/18 14:49	10/16/18 12:56	7440-42-8		
Calcium	193	mg/L	0.10	1	10/15/18 14:49	10/16/18 12:56	7440-70-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)							
Total Dissolved Solids	1100	mg/L	20.0	1		10/16/18 19:04			
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		10/12/18 15:38			H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	8.4	mg/L	1.0	1		10/13/18 11:07	16887-00-6		
Fluoride	ND	mg/L	0.10	1		10/13/18 11:07	16984-48-8		
Sulfate	460	mg/L	8.0	4		10/13/18 17:32	14808-79-8		

Sample: Field Duplicate		Lab ID: 12117329005		Collected: 10/11/18 17:00		Received: 10/12/18 12:30		Matrix: Water	
Parameters		Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Boron	ND	ug/L	40.0	1	10/15/18 14:49	10/16/18 13:00	7440-42-8		
Calcium	192	mg/L	0.10	1	10/15/18 14:49	10/16/18 13:00	7440-70-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)							
Total Dissolved Solids	1120	mg/L	20.0	1		10/16/18 19:04			
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	7.2	Std. Units	0.10	1		10/12/18 15:42			H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	8.4	mg/L	1.0	1		10/13/18 11:24	16887-00-6		
Fluoride	ND	mg/L	0.10	1		10/13/18 11:24	16984-48-8		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6385CC General Waste

Pace Project No.: 12117329

Sample: Field Duplicate		Lab ID: 12117329005		Collected: 10/11/18 17:00		Received: 10/12/18 12:30		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Sulfate	461	mg/L	8.0	4		10/13/18 17:49	14808-79-8		

Sample: Field Blank		Lab ID: 12117329006		Collected: 10/11/18 16:35		Received: 10/12/18 12:30		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Boron	ND	ug/L	40.0	1	10/15/18 14:49	10/16/18 12:10	7440-42-8		
Calcium	ND	mg/L	0.10	1	10/15/18 14:49	10/16/18 12:10	7440-70-2		
2540C Total Dissolved Solids		Analytical Method: SM 2540C (1997)							
Total Dissolved Solids	ND	mg/L	10.0	1		10/16/18 19:06			
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	6.1	Std. Units	0.10	1		10/12/18 15:47		H6	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0							
Chloride	ND	mg/L	1.0	1		10/13/18 11:41	16887-00-6		
Fluoride	ND	mg/L	0.10	1		10/13/18 11:41	16984-48-8		
Sulfate	ND	mg/L	2.0	1		10/13/18 11:41	14808-79-8		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6385CC General Waste

Pace Project No.: 12117329

QC Batch: 154408 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

METHOD BLANK: 611084 Matrix: Water
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	ND	40.0	10/16/18 12:18	
Calcium	mg/L	ND	0.10	10/16/18 12:18	

LABORATORY CONTROL SAMPLE: 611085

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	248	99	85-115	
Calcium	mg/L	25	25.1	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 611086 611087

Parameter	Units	12117352001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	48.8	250	250	295	292	99	97	70-130	1	20	
Calcium	mg/L	48700 ug/L	25	25	75.3	75.8	106	109	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 611088 611089

Parameter	Units	12117329002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	70.8	250	250	296	305	90	94	70-130	3	20	
Calcium	mg/L	400	25	25	428	430	111	121	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6385CC General Waste

Pace Project No.: 12117329

QC Batch: 154544 Analysis Method: SM 2540C (1997)
QC Batch Method: SM 2540C (1997) Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

METHOD BLANK: 611542 Matrix: Water
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10/16/18 18:58	

METHOD BLANK: 611546 Matrix: Water
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	10/16/18 19:01	

LABORATORY CONTROL SAMPLE: 611543

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	255	228	89	80-120	

SAMPLE DUPLICATE: 611544

Parameter	Units	12117223003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	498	476	5	5	

SAMPLE DUPLICATE: 611545

Parameter	Units	12117081009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	878	876	0	5	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6385CC General Waste

Pace Project No.: 12117329

QC Batch: 154302 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

LABORATORY CONTROL SAMPLE: 610709

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH at 25 Degrees C	Std. Units	7	7.1	101	98-102	H6

SAMPLE DUPLICATE: 610710

Parameter	Units	12117317001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.4	8.5	1	10	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 6385CC General Waste

Pace Project No.: 12117329

QC Batch: 154317 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

METHOD BLANK: 610736 Matrix: Water
Associated Lab Samples: 12117329001, 12117329002, 12117329003, 12117329004, 12117329005, 12117329006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	10/13/18 02:23	
Fluoride	mg/L	ND	0.10	10/13/18 02:23	
Sulfate	mg/L	ND	2.0	10/13/18 02:23	

LABORATORY CONTROL SAMPLE: 610737

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	51.0	102	90-110	
Fluoride	mg/L	5	5.2	104	90-110	
Sulfate	mg/L	50	50.7	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 610738 610739

Parameter	Units	12117286001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	60.6	50	50	113	113	105	106	90-110	0	20	
Fluoride	mg/L	0.14	5	5	5.6	5.6	108	109	90-110	1	20	
Sulfate	mg/L	25.6	50	50	79.7	80.0	108	109	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 610740 610741

Parameter	Units	12117305004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	14.7	50	50	68.3	68.7	107	108	90-110	1	20	
Fluoride	mg/L	<0.10	5	5	5.4	5.5	107	108	90-110	1	20	
Sulfate	mg/L	4.2	50	50	58.7	59.1	109	110	90-110	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 6385CC General Waste

Pace Project No.: 12117329

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-V Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

H6 Analysis initiated outside of the 15 minute EPA required holding time.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 6385CC General Waste

Pace Project No.: 12117329

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
12117329001	MW3R	EPA 200.8	154408	EPA 200.8	154431
12117329002	MW7	EPA 200.8	154408	EPA 200.8	154431
12117329003	MW8	EPA 200.8	154408	EPA 200.8	154431
12117329004	MW9	EPA 200.8	154408	EPA 200.8	154431
12117329005	Field Duplicate	EPA 200.8	154408	EPA 200.8	154431
12117329006	Field Blank	EPA 200.8	154408	EPA 200.8	154431
12117329001	MW3R	SM 2540C (1997)	154544		
12117329002	MW7	SM 2540C (1997)	154544		
12117329003	MW8	SM 2540C (1997)	154544		
12117329004	MW9	SM 2540C (1997)	154544		
12117329005	Field Duplicate	SM 2540C (1997)	154544		
12117329006	Field Blank	SM 2540C (1997)	154544		
12117329001	MW3R	SM 4500-H+B	154302		
12117329002	MW7	SM 4500-H+B	154302		
12117329003	MW8	SM 4500-H+B	154302		
12117329004	MW9	SM 4500-H+B	154302		
12117329005	Field Duplicate	SM 4500-H+B	154302		
12117329006	Field Blank	SM 4500-H+B	154302		
12117329001	MW3R	EPA 300.0	154317		
12117329002	MW7	EPA 300.0	154317		
12117329003	MW8	EPA 300.0	154317		
12117329004	MW9	EPA 300.0	154317		
12117329005	Field Duplicate	EPA 300.0	154317		
12117329006	Field Blank	EPA 300.0	154317		


REPORT OF LABORATORY ANALYSIS

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CLIENT NAME/ADDRESS/PHONE: GENERAL WASTE and RECYCLING LLC DEMOLITION & INDUSTRIAL LANDFILL ITASCA COUNTY, MINNESOTA		REPORT TO: ERIN CHAMBERLAIN, DENNIS SCHUBBE, RICK CRUM & SCOTT SEELEY		TYPE & # CONTAINERS		SPECIAL INSTRUCTIONS: SEE ATTACHED LIST WITH METHODS	
SAMPLER: <i>Cory Andrews</i>		PERMIT REQ.: SW-620					
PROJECT: GENERAL WASTE DISPOSAL and RECYCLING, LLC.		Oct-18					
PROJECT NUMBER: 6385CC		CCR Monitoring					
LOG-IN #:	SAMPLE #	DESCRIPTION:	DATE:	TIME:	MATRIX LIQ. SOL.	filtered	
	MW3R	GW WELL	10/11/18	1335	X	N	1
	MW7	GW WELL	10/11/18	0950	X	N	1
	MW8	GW WELL	10/11/18	1615	X	N	1
	MW9	GW WELL	10/11/18	1656	X	N	1
	Field Duplicate	GW WELL	10/11/18	1700	X	N	1
	Field Blank	Field Blank	10/11/18	1635	X	N	1
RELINQUISHED BY: <i>de stat</i>		DATE: 10/11/18	RECEIVED BY:	DATE: 10/11/18	TIME: 12:30		
RELINQUISHED TO NTS SAMPLE LOOK-UP BY:		DATE:	RECEIVED FROM NTS SAMPLE LOOKUP BY:	DATE:	TIME:		
RECEIVED FOR LAB BY: <i>P. Mathias</i>		TEMP AT ARRIVAL: <i>0.7</i>					
DATE: 10/12/18	TIME: 1230						

GENERAL WASTE CCR METHODS

PARAMETER	SYMBOL	EPA Method
Boron	B	200.8
Calcium	Ca	200.7
Chloride	Chloride	300.0
Fluoride	Flouride	300.0
pH	pH	SM 4500 H+B
Sulfate	SO ₄	300.0
TDS	TDS	SM 2540C

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

**Sample Condition
Upon Receipt**

Client Name:

NTS

Project #:

WO#: 12117329

PM: CLJ

Due Date: 10/26/18

CLIENT: NTS-Dennis

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client
☐ Commercial ☐ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No Seals Intact? ☐ Yes ☐ No Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other: _____ Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 1.4 Cooler Temp Corrected °C: 1.7 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA
Temp should be above freezing to 6°C Correction Factor: 10.3 Date and Initials of Person Examining Contents: Bm 10/12/18

Comments:

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5. If Fecal: <input type="checkbox"/> <8 hours <input type="checkbox"/> >8, <24 hours <input type="checkbox"/> >24 hours
Short Hold Time Analysis (<72 hr)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <i>pH</i>
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <i>Wt</i>		
All containers needing acid/base preservation will be checked and documented in the pH logbook.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____

Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N

TEMPERATURE WAIVER ON FILE Y N

Project Manager Review:

Cavin

Date: 10/13/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)



Field Report Cover Sheet

NORTHEAST TECHNICAL SERVICES, INC.
526 CHESTNUT STREET P.O. BOX 1142
VIRGINIA, MINNESOTA 55792
218-741-4290 FAX 218-741-4291
E-mail: nts@netechnical.com

Project: October 2018 CLR Monitoring

Client: General Waste

Location: Keewatin

Prep/Unload/Report Time: 0.5 1.0 Total 1.5
Prep Unload/Report

Site Time: various times Total 4.5
Arrive Depart

Travel Time: — 0.75 — Total 0.75
To From

Total Field Time Entered to Stoneware: 6.75

Project Number: 6385CC

Project Manager: Dennis Schubb

Date: 2018-10-11
(yyyy-mm-dd)

Weather/Temp: 40°F/Overcast

COC#: 12117329

Vehicle #: 60 35 Miles Driven

Summary of Technical and/or Engineering Services Performed

Prepped & went to Gen. Waste to conduct the Fall 2018 CLR well monitoring project. Samples & field parameters obtained after stabilization at GW wells MW-3R, MW-7, MW-8, & MW-9. Samples ceded to PACT Analytical. For add'l details see field sheets, field notes, & COC.

Site Sketch

Please Indicate North

Field Test Data is Estimated Pending Final Laboratory Results.

Attach other documents as defined by the Project Manager.

Field Scientist: Carey [Signature]

Approved by: [Signature]

Date: 10/11/2018

Page 1 of 11

Fill out and hand in field sheet on a real-time basis, any questions or comments, contact your project manager.

6385 CC Gen Waste Fall CCR Monitoring

10/10/18

Corey Andrews

High 40°F / Overcast / winds 15 mph WNW

0630-0745 Prep / Cal / Load

0745 Depart NTS

0830 Arrive at Gen Waste

0836 MW7 0950 Sample

SWL	TWD	WC	Vol	Pump Rate
21.65'	26.7'	5.05'	.82 gal	0.25 GPM

0853 begin pumping @ 0.25 GPM

H₂O Very Turbid

1300 MW3R 1335 Sample

SWL	TWD	WC	Vol	Pump Rate
65.65	77.40	11.75	2 gal	0.5 GPM

Super purger used for stabilization of well.

1510 MW8 1615 Sample

SWL	TWD	WC	Vol	Pump Rate
34.57	41.25	6.68	1 gal	0.25

1624 MW9 1656 Sample 1700 Dup 1635 FB

SWL	TWD	WC	Vol	Pump Rate
10.97	18.91	7.94	1.3	0.5 GPM

1730 Depart Gen Waste

1815 Arrive back at NTS office. Unload / Postcheck

Corey Andrews

10/11/2018

STABILIZATION/RECOVERY TEST FORM

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.				CALIBRATION:				NTS	
DATE: 10/11/2018				NO:					
TIME: 1300				YES:		<input checked="" type="checkbox"/>		MANUAL: <input checked="" type="checkbox"/>	
SAMPLE DESIG.: MW-3R (Unique Well # 797239)				TIME:		0645		AUTO: <input type="checkbox"/>	
WEATHER: 32°F/ Mostly Cloudy/ winds WNW 15 mph				PARAMETERS:					
PERSONNEL: Corey Andrews				PH:		<input checked="" type="checkbox"/>		COND: <input checked="" type="checkbox"/>	
PUMP RATE (GPM): 0.5 GPM				NTU:		<input checked="" type="checkbox"/>		D.O.: <input checked="" type="checkbox"/>	
WELL DEPTH: 77.40				FIELD DUPLICATE: <input type="checkbox"/> No					
STATIC LEVEL: 65.65				EXCEPTIONS TO PROTOCOL:					
WELL VOL. (GAL): 2 gal				NONE:		<input type="checkbox"/>		FLOW CELL USED: <input checked="" type="checkbox"/>	
STATIC LEVEL AFTER: 65.65									
RECOVERY METHOD: <input type="checkbox"/>				PURGE METHOD: Super purger					
STABILIZATION METHOD: <input checked="" type="checkbox"/>									
APPEARANCE: clear									
TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5% +/- >10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	ORP mV	VOL. REMOVED: Gallons		
1314	6.49	3059	37.5	0.11	7.26	109	1		
1318	6.30	3143	19.4	0.11	7.23	128	2		
1322	6.29	3152	9.2	0.08	7.18	129	3		
1326	6.27	3136	6.0	0.08	7.10	128	4		
1330	6.27	3132	5.4	0.08	7.18	127	5		
1334	6.27	3128	4.9	0.07	7.20	125	6		
INITIAL:									
2ND									
RECHAR.									
3RD									
RECH.:									
COMMENTS:									
COMMENTS: Key #3212. Slow recharge rate. 1310 Begin pumping @ 0.5 GPM									
1335 Sample									

123 of 11

STABILIZATION/RECOVERY TEST FORM

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.		CALIBRATION:		NTS	
DATE: 10/11/2018		NO:			
TIME: 0836		YES: X		MANUAL: X	
SAMPLE DESIG.: MW-7 (Unique Well #817979)		TIME: 0645		AUTO:	
WEATHER CONDITIONS: 28°F / Light Snow / wind WNW 15mph		PARAMETERS:			
PERSONNEL: Corey Andrews		PH: X COND: X NTU: X D.O.: X			
PUMP RATE (GPM): 0.25 GPM		FIELD DUPLICATE: No			
WELL DEPTH: 26.7		EXCEPTIONS TO PROTOCOL:			
STATIC LEVEL: 21.65		NONE: FLOW CELL USED: X			
WELL VOL. (GAL.): 0.82					
STATIC LEVEL AFTER: 22.31'					
RECOVERY METHOD: PURGE METHOD: Whate pump					
STABILIZATION METHOD: X					

APPEARANCE: Reddish / cloudy

TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5% +/- >10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	PH mV	VOL. REMOVED: Gallons
0857	6.16	1102	637.0	0.14	7.34	485	1
0901	6.19	1096	975	0.56	6.78	380	2
0905	6.24	2098	1939	0.64	5.19	369	3
0909	6.24	2108	1421	0.71	5.14	372	4
0913	6.24	2107	1647	0.80	5.21	366	5
0917	6.25	2111	1201	0.88	5.28	357	6
0921	6.25	2110	918	0.93	5.32	353	7
0925	6.26	2114	794	0.97	5.41	351	8
0929	6.27	2114	554	0.99	5.44	346	9
0933	6.27	2118	419	1.01	5.48	346	10
0937	6.28	2117	228.1	1.03	5.42	344	11

COMMENTS: Key #0410. Good Recharge.

0853 Begin pumping @ 0.25 GPM 0950 sample

Well very turbid throughout stabilization. Unable to get water to clear. Adjusted pump several times.

* Needs new lock

0941	6.28	1436	172.5	1.05	5.51	346	12 *Cleaned sensor
0945	6.29	1429	279	1.07	5.44	340	13
0949	6.29	1428	321	1.07	5.47	339	14

10/4/11

STABILIZATION/RECOVERY TEST FORM

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.					CALIBRATION:			NTS	
DATE: 10/11/2008					NO:				
TIME: 1510					YES: <input checked="" type="checkbox"/>			MANUAL: <input checked="" type="checkbox"/>	
SAMPLE DESIG.: MW-8 (Unique Well #817978)					TIME: 0645			AUTO: <input type="checkbox"/>	
WEATHER CONDITIONS: 32°F / Overcast / winds WNW 15					PARAMETERS:				
PERSONNEL:					PH: <input checked="" type="checkbox"/> COND: <input checked="" type="checkbox"/> NTU: <input checked="" type="checkbox"/> D.O.: <input checked="" type="checkbox"/>				
PUMP RATE (GPM): 0.25 GPM					FIELD DUPLICATE: <input checked="" type="checkbox"/> No				
WELL DEPTH: 241.25					EXCEPTIONS TO PROTOCOL:				
STATIC LEVEL: 34.57					NONE: <input type="checkbox"/> FLOW CELL USED: <input checked="" type="checkbox"/>				
WELL VOL. (GAL.): 1 gal									
STATIC LEVEL AFTER: 35.15									
RECOVERY METHOD: <input type="checkbox"/>					PURGE METHOD: <input checked="" type="checkbox"/> Whale Pump				
STABILIZATION METHOD: <input checked="" type="checkbox"/>									
APPEARANCE: slightly cloudy									
TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5% +/- >10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	ORP mV	VOL. REMOVED: Gallons		
1534	6.29	1833	1735	0.38	5.73	264	1		
1538	6.30	1836	834	0.30	5.90	251	2		
1542	6.32	1831	540	0.19	5.86	247	3		
1546	6.32	1821	237.5	0.15	5.80	243	4		
1550	6.32	1812	176.2	0.11	5.71	239	5		
1554	6.33	1808	92.3	0.10	5.60	237	6		
1558	6.33	1805	70.8	0.08	5.60	235	7		
1602	6.33	1800	47.5	0.09	5.64	233	8		
1606 INITIAL:	6.33	1803	40.1	0.08	5.70	231	9		
1610 2ND RECHARGE:	6.34	1798	39.8	0.06	5.74	230	10		
1614 3RD RECHARGE:	6.34	1793	39.0	0.06	5.80	229	11		
COMMENTS: Key #0410. Good Recharge.									
1530 Begin pumping @ 0.25 GPM									
1615 Sample									

STABILIZATION/RECOVERY TEST FORM

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.				CALIBRATION:				NTS	
DATE: 10/4/2018				NO: <input type="checkbox"/>		YES: <input checked="" type="checkbox"/>		MANUAL: <input checked="" type="checkbox"/>	
TIME: 1624				TIME: 0645		AUTO: <input type="checkbox"/>			
SAMPLE DESIG.: MW-9 (Unique Well #817980)				PARAMETERS:					
WEATHER: 32°F / Overcast / winds WNW 15				PH: <input checked="" type="checkbox"/>		COND: <input checked="" type="checkbox"/>		NTU: <input checked="" type="checkbox"/>	
PERSONNEL: Corey Andrews				D.O.: <input checked="" type="checkbox"/>					
PUMP RATE (GPM): 0.56 GPM				FIELD DUPLICATE: <input checked="" type="checkbox"/>					
WELL DEPTH: 18.91				EXCEPTIONS TO PROTOCOL:					
STATIC LEVEL: 10.97'				NONE: <input type="checkbox"/> FLOW CELL USED: <input checked="" type="checkbox"/>					
WELL VOL. (GAL.): 1.3									
STATIC LEVEL AFTER: 10.97'									
RECOVERY METHOD: <input type="checkbox"/>				PURGE METHOD: <input checked="" type="checkbox"/> Whisk pump					
STABILIZATION METHOD: <input checked="" type="checkbox"/>									
APPEARANCE: clear									
TIME	pH SU	Specific Conductance 5% +/- umhos/cm	Turbidity NTU 5% +/- >10	Dissolved Oxygen (mg/L)	TEMP. Centigrade (+/-0.1)	mV ORP	VOL. REMOVED: Gallons		
1643	6.55	1538	10.1	0.10	7.61	126	1		
1646	6.53	1542	3.1	0.05	7.65	128	2		
1649	6.53	1545	2.9	0.04	7.62	127	3		
1652	6.52	1537	2.9	0.04	7.59	127	4		
1655	6.52	1526	2.8	0.04	7.61	126	5		
INITIAL:									
2ND									
RECHARGE:									
3RD									
RECHARGE:									
COMMENTS: Key #0410. Good Recharge.									
1648 Begin pumping well @ 0.5 GPM									
1656 sample									



NTS FIELD INSTRUMENT CALIBRATION LOG

Instrument used:	M55	
Instrument I.D.	#6	
Required Parameters:	<p> <u>pH (SU)</u>, <u>Spec. Cond. ($\mu\text{S}/\text{cm}$)</u>, <u>Diss. Oxyg. (100% Saturation)</u>, <u>Turbidity (NTU)</u>, <u>ORP (mV)</u> </p>	
Date / Initials:	2018-10-11 CA	

	<u>Standard</u>	<u>Before Field Event</u>	<u>After Field Event</u>
<u>pH (SU)</u>	4.0	4.0	3.82
	7.0	7.0	6.92
	10.0	10.0	9.9
		Temp. (°C)= 17.68	Temp. (°C)= 18.92
<u>Specific Conductance (µS / cm)</u>	1000	0.0/1000 Temp. (°C)= 18.00	0.0/1000 Temp. (°C)= 18.50
<u>ORP (mV)</u>	430 24.0°C	430 Temp. (°C)= 24.03	441 Temp. (°C)= 18.09
<u>Turbidity (NTU)</u>	0.0/93	0.0/93.0 Temp. (°C)= 18.93	0.0/94.2 Temp. (°C)= 16.85
<u>Calibrate D.O. to 100% Saturation (Yes / No)</u>		28.22 in Hg	
		B.P. (mm Hg)= 717	
		Temp. (°C)= 19.31	
	<u>Time</u>	0635	1820
	<u>Initials</u>	CA	CA

NOTES:

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Daily Tailgate Safety

Project: 6385CC 6385C Date: 10/11/2018

Work Site Hazard Assessment Worksheet

- ☐ PPE Required (List): High Vis. Level* D
- ☐ Weather Conditions (List): _____
- ☐ Vehicular Traffic ☐ Communications
- ☐ Noise ☐ Equipment/Tools
- ☐ Housekeeping ☐ Other Site Hazards**

- ☐ I have examined the work place named and found no hazards
- ☐ I have examined the work place named and hazards found are listed below with corrective action taken

Hazards Identified/Safety Items Discussed:

Slips trips & falls

Preservatives in sample containers

Corrective Actions Taken:

walk cautiously

wear nitrile gloves

Participants in Safety Discussion:

- | Print Name | Signature |
|-------------------------|--------------------|
| 1. <u>Corey Andrews</u> | <u>[Signature]</u> |
| 2. _____ | _____ |
| 3. _____ | _____ |
| 4. _____ | _____ |
| 5. _____ | _____ |

Signature of Site Supervisor/Examiner: [Signature] Date: 10/11/2018

*Level D, C, B or A

**Examples: Heavy Equipment, Air Quality, Flammable materials, Wildlife, Work Site Security, Confined Space

Northeast Technical Services, Inc.
Daily Vehicle Inspection

Driver's Name: C. Andrews Date: 10/30/2018 Time: 0735
Odometer Reading: _____ Vehicle #: 60

Place a √ (check) next to each item inspected

Driver/Passenger Side

External Side Mirrors (Right and Left): ✓
Tires (Properly inflated, adequate tread): ✓ Windows: (Clean, free of cracks): ✓

COMMENTS: _____

Inside of Vehicle

Truck is clean inside: ✓ Gauges: ✓
Windshield wipers and fluid: ✓ Seatbelts: (working condition) ✓
Check horn: ✓ Check parking brake reset/release: ✓ Oil change current: ✓
Brakes: ✓ Check inside mirrors, rearview: ✓ Check oil level weekly ✓

COMMENTS: _____

Front and Rear of Vehicle

Tail lights: ✓ Head Lights: ✓ Bumpers: ✓ Fluid leaks: No
License plates (Tags Current): ✓ Exterior damage to body: No Turn signals: ✓

COMMENTS: _____

General/Safety

Insurance Card/Operator's Manual: ✓ Wheel chocks: ✓ First Aid Kit: ✓
Strobe light: ✓ Buggy whip ✓ (If needed)

COMMENTS: _____

Deficiencies Corrected: _____

Signature: Cory Andrews Date: 10/11/2018

PARAMETER	SYMBOL	EPA Method
Boron	B	200.8
Calcium	Ca	200.7
Chloride	Chloride	300.0
Fluoride	Fluoride	300.0
pH	pH	SM 4500 H+B
Sulfate	SO ₄	300.0
TDS	TDS	SM 2540C

Appendix B

Statistical Analysis Plan

**GENERAL WASTE & RECYCLING, LLC SW-620
INDUSTRIAL WASTE LANDFILL**

Statistical Analysis Plan for Groundwater Monitoring Data

Prepared For:

GENERAL WASTE & RECYCLING, LLC

Prepared by:

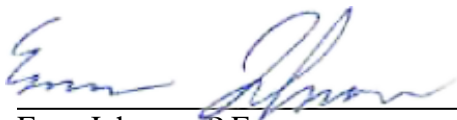
**Northeast Technical Services, Inc.
526 Chestnut Street
Virginia, Minnesota 55792**

(218) 741-4290

October 6, 2017

Project Number: 6385CC

"I certify under penalty of law that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete." I certify that this groundwater statistical analysis plan for the General Waste Industrial Waste Landfill described in this report meets all requirements put forth by 40 CFR §257.93 'Groundwater Sampling and Analysis Requirements.'



Evan Johnson, P.E.
Geotechnical Engineer
Minnesota License No. 53648

10-13-17

Date

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FIGURE 1: PROJECT LOCATION MAP

1.0 Purpose

Per 40 CFR 257.93 ‘Groundwater Sampling and Analysis Requirements’ (the rule), a statistical procedure for assessing collected groundwater data as to whether or not a release has occurred must be implemented at all CCR units. The rule outlines five (5) statistical methods that may be utilized for analyzing collected data. The statistical procedure utilized should account for spatial variance, temporal trends, and address the handling of non-detect data. This Statistical Analysis Plan has been prepared to meet the requirements of the rule and provide the framework for analyzing the collected groundwater data at the General Waste & Recycling, LLC facility (the facility) in Keewatin, Minnesota.

2.0 Initial Background Monitoring

2.1 Background Monitoring Parameters

The rule requires background monitoring of all CCR monitoring wells and eight (8) groundwater monitoring events must be completed prior to October 17, 2017. For this Statistical Analysis Plan, background monitoring includes monitoring for all parameters listed in Appendix III and Appendix IV of 40 CFR 257.93 (see Table 1 and Table 2, respectively).

2.2 Background Data Analysis

Per the rule, within 90 days of collecting the final background dataset, statistical analysis of the data is to be completed. Statistical analysis can be any of those allowed by the rule and should establish a means of determining if a Statistically Significant Increase (SSI) of a monitored parameter occurs during operation of the CCR unit to help determine if a leak or release has occurred from the CCR unit.

2.3 Establishing Background Dataset

2.3.1 Summary Statistics and Distribution

Once the final background dataset has been collected, summary statistics should be computed, including mean and variance. An analysis of the data set be conducted to see if data is parametric (normally distributed). A Shapiro-Wilk analysis should be completed to make this determination. This should be completed for each parameter at each well installation. If the data is skewed and does not pass the normality test, the data may be able to be transformed to a normal distribution via lognormal plotting.

If a normal distribution cannot be achieved naturally or by transformation, non-parametric statistics may be utilized.

2.3.2 Interwell and Intrawell Analysis

It is recommended that the primary method of determining if a SSI has occurred at the site utilize an interwell analysis. This analysis will look at the dataset of the upgradient well (background well) to determine the Upper Prediction Limit (UPL), for the downgradient well concentrations. However, if spatial variation is present in the monitoring system, it may be necessary to assess data from an intrawell analysis. This analysis looks at the background dataset for a specific parameter in the same well to determine if a SSI has occurred. Both methods are viable and can be used for specific parameters. It is not necessary to have a single analysis type for all wells for all parameters at the facility.

Care should be taken when conducting an interwell analysis when the background dataset for downgradient wells may be affected by pre-existing CCR impacts. Given the timeframe of placed CCR materials at the facility, the estimated groundwater velocity, and the monitoring well locations, none of the existing monitoring wells would be expected to exhibit any signs of CCR impact. However, analysis should be completed for any future wells installed.

2.3.3 Upper Prediction Limit

Per the recommendation from the USEPA “Statistical Analysis of Groundwater Monitoring Data At RCRA Facilities Unified Guidance (2009)” (Unified Guidance) document, Upper Prediction Limits (UPL) will be utilized to assess for a SSI in the downgradient wells the facility. The UPL is calculated as follows:

$$UPL = \bar{x} + ks$$

Where:

\bar{x} = mean parameter concentration of background dataset

s = standard deviation of background dataset

k = site specific multiplier provided by the Unified Guidance Tables 19, depends on number of wells, number of parameters to be analyzed, size of background dataset

The UPL statistical method allows for both interwell and intrawell comparison.

2.4 Analyzing for Trends

Trends in data may occur due to natural temporal factors, but are not expected to be seen in the initial background dataset. Trend analysis should be completed for the background datasets. If a trend does exist, this should trigger an analysis to assess the potential cause of the trend (especially upward trends of monitored concentrations) and determination of the method to correct for the trend in the statistical approach.

Trend analysis to determine if a statistically significant trend exists can be completed by utilizing the Theil-Sen slope analysis with Mann-Kendall trend test ($\alpha = 0.05$) (non-parametric, more suitable for datasets with >20% non-detect results) or a Ordinary Least Squares (OLS) linear regression with Student’s t-test ($\alpha = 0.01$) (parametric dataset, <20% non-detect results).

2.5 Non-Detect Data

Datasets that have less than 20% non-detect data may substitute the reporting limit divided by 2 (RL/2 method) for non-detect results for statistical analysis.

Datasets that contain 20-50% non-detect data must utilize the Kaplan-Meier method to compute summary statistics for the dataset.

Datasets that contain more than 50% non-detect data will not be able to compute summary statistics data reliably. It is recommended that the UPL be set to the highest or second highest observed value.

If all background data are non-detect, then the UPL shall be set to the highest Reporting Limit (RL) (assuming a reasonable RL have been reported that are below MCL concentrations).

2.6 Outliers

The dataset should be analyzed for outlier datapoints. This can be done visually by examining a time series plot of the data or by a box-and-whisker plot. If a datapoint appears to be an outlier, field notes, lab reports, and analysis programs should be checked for indications of erroneous data or transcription errors.

Numerical methods of determining an outlier may include a 3-sigma analysis for parametric data (data point outside of 3 standard deviations) or the following for non-parametric data if the data point x is:

$$x > x'_{.75} + 3 * IQR$$

Where:

X = individual data point

$x'_{.75}$ = Third Quartile

$IQR = x'_{.75} - x'_{.25}$ (InterQuartile Range)

Datapoints determined to be outliers due to erroneous data collection may be removed from the dataset. Datapoints that appear to be representative data but are extreme may be excluded from the statistical analysis, but should remain in the data for future evaluation if the data set significantly changes.

2.7 Duplicate Samples

Duplicate samples collected for quality control means should not be included in the statistically analyzed dataset as they are not physically independent and will inappropriately skew the data.

3.0 Detection Monitoring

Following the completion of the background monitoring, detection monitoring will be initiated at the facility. Detection monitoring is to be conducted semiannually (preferably in the spring and

fall) and analyzed for Appendix III parameters only. Statistical analysis of the data must be completed within 90 days of receiving laboratory data.

3.1 Statically Significant Increase

3.1.1 Two Sample Test

Two sample testing indicates that if a UPL (either interwell or intrawell) is exceeded for a parameter, then a second sample should be collected and analyzed. If analysis of the second sample indicates a concentration below the UPL, then a SSI has not occurred. If the second sample indicates a value above the UPL, then a SSI has occurred.

Three Sample Testing which would require 3 consecutive samples to indicate concentrations above the UPL for a SSI to be indicated may be appropriate for specific situations. One situation would be if False Positive readings (Type II error) appears to be exceeding 10% of the total dataset.

3.1.2 Practical monitoring Practice

Downgradient constituents should be compared to the established UPL determined from the upgradient well data (for interwell comparisons) or compared to the UPL determined from the segregated background dataset for the individual well (intrawell comparison). If a parameter exceeds a UPL, a second sample should be collected from the well and analyzed. If the second sample indicates a value above the UPL, then it can be determined that a SSI has occurred and Assessment monitoring should be initiated.

3.1.3 Responding to an SSI

If the statistical evaluation indicates a SSI has occurred, the data should be further evaluated to determine if the SSI is likely caused by a CCR unit release and assessment monitoring should be initiated or if other factors of influence can be demonstrated to be taking effect. This demonstration must be certified by a qualified professional engineer within 90 days of completing the statistical evaluation (in addition to the 90 day requirement for conducting the statistical analysis).

4.0 Assessment Monitoring

Assessment monitoring occurs once evaluation of Detection Monitoring parameters (Appendix III) indicates a SSI and there is reason to believe that the SSI could indicate a release from a CCR unit. Assessment monitoring must begin within 90 days of determining that a SSI related to a potential release of the CCR unit has occurred.

4.1 Monitoring Parameters

The initial assessment monitoring event must include all parameters listed in Appendix III and Appendix IV of 40 CFR 257.93 at all monitoring well locations. Subsequent monitoring events may include Appendix III parameters and only the Appendix IV parameters that were detected in the initial monitoring event. Assessment monitoring will also be conducted on a semi-annual basis (e.g., spring and fall monitoring events).

4.2 Groundwater Protection Standard

A Groundwater Protection Standard (GWPS) must be established for each Appendix IV parameter. For parameters for which the USEPA has established a Maximum Contaminant Level (MCL), the MCL (shown on Tables 1 and 2) shall be used for the GWPS. For the parameters for which a MCL has not been established, then the Upper Tolerance Limit (UTL) ($\alpha = 0.05$, 95% coverage) of the parameter utilizing the upgradient (background) well(s) shall be utilized to establish a GWPS for the specific parameter. This determined UTL concentration shall be applied site-wide for all downgradient wells.

4.3 Move to Corrective Action

The UPL and UTL are useful to assess for a SSI or measurable increase above background. However, in order to assess if a dataset has stastically exceeded a set value (the GWPS), Confidence Limits would be the most appropriate. If the Lower Confidence Limit (LCL) of the Assessment Monitoring dataset exceeds the GWPS, then movement into Corrective Action is warranted.

This Statistical Analysis Plan does not address Corrective Action methods of monitoring. Corrective Action methods will be developed if required per the rule..

4.4 Return to Detection Monitoring

Assessment monitoring may cease and detection monitoring be re-initiated when all Appendix III and monitored Appendix IV parameters are below background (upgradient well) concentrations.

5.0 Updating Background Data

Background datasets should be updated every 2 years assuming that a SSI has not occurred. A Student t-test ($\alpha=0.01$, parametric) or Mann-Whitney ($\alpha = 0.05$, non-parametric) should be utilized to assess if the existing background dataset and the dataset to be added to the background dataset are statistically different. If the data is shown not to be significantly different, the dataset should be pooled and the background dataset updated. If analysis of the data using the t-test or Mann-Whitney test indicates a statistical difference, the data should be analyzed to determine a potential cause for the stastistically significant difference.

Appendix C

Appendix III Parameters

TABLE 1 Appendix III Parameters	
Parameter	MCL
Boron	NA
Calcium	NA
Chloride	NA
Fluoride	4.0 mg/L
pH	NA
Sulfate	NA
Total Dissolved Solids (TDS)	NA

TABLE 2 Appendix IV Parameters	
Parameter	MCL
Antimony	0.006 mg/L
Arsenic	0.01 mg/L
Barium	2.0 mg/L
Beryllium	0.004 mg/L
Cadmium	0.10 mg/L
Chromium	0.10 mg/L
Cobalt	NA
Fluoride	4.0 mg/L
Lead	0.015 mg/L
Lithium	NA
Mercury	0.002 mg/L
Molybdenum	NA
Selenium	0.05 mg/L
Thallium	0.002 mg/L
Radium 226 and 228 combined	5 pCi/L