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.

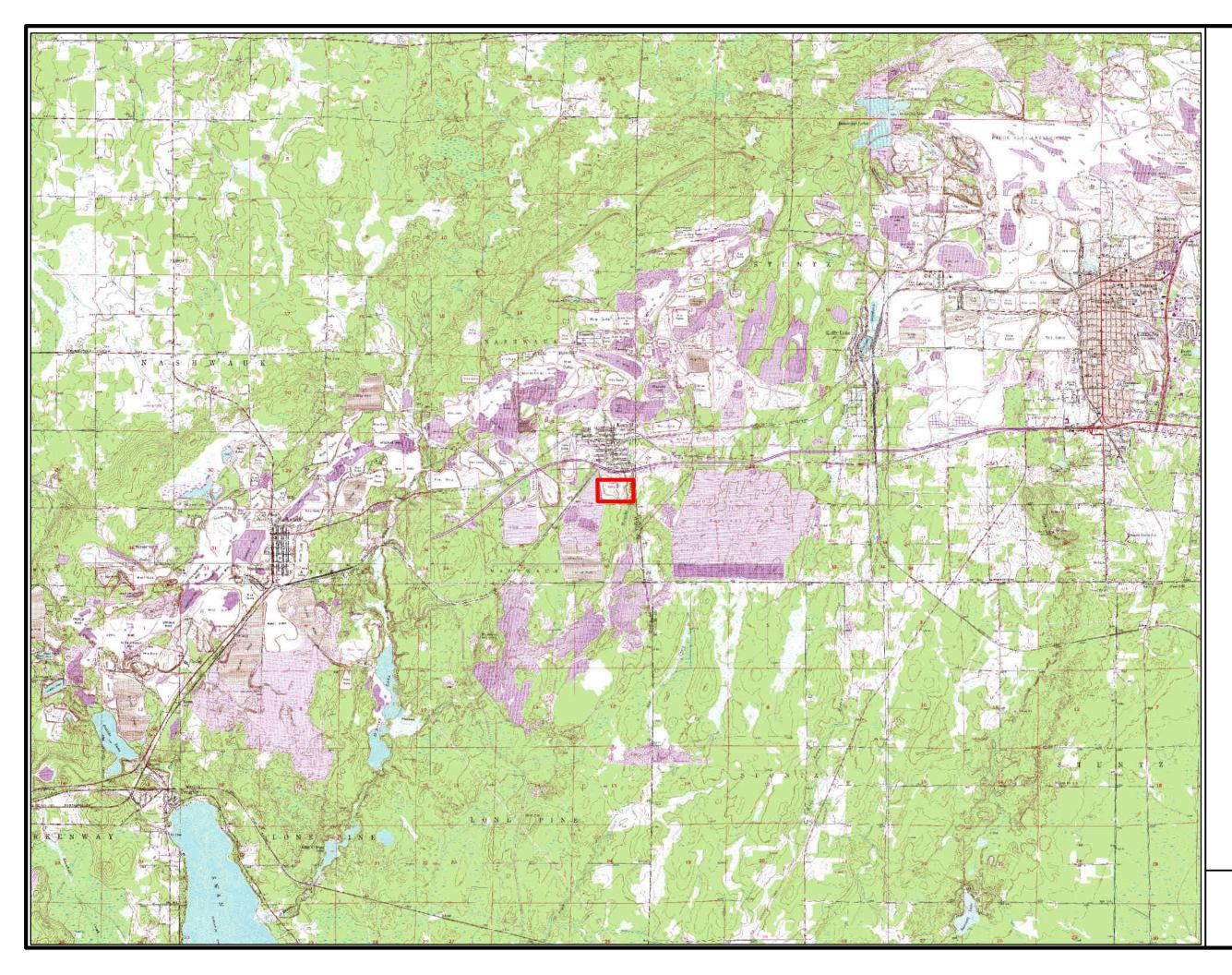
STATISTICAL ANALYSIS

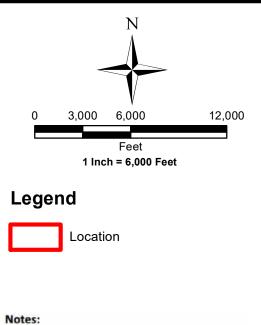
Statistical Analysis was performed using the laboratory analysis results of the April 23, 2018 to October 11, 2018 groundwater monitoring events based on the Statistical Analysis Plan (SAP) written for the facility. No SSIs were determined to have occurred based on the statistical evaluation of 2018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





-Background image has been provided by MNGEO Web Services

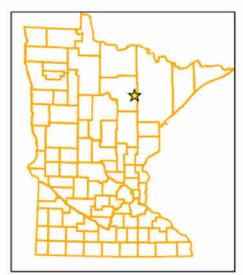


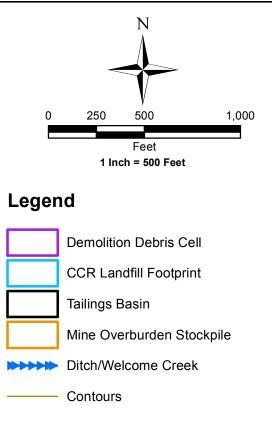
Figure 1 Site Vicinity Map

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



Date Drawn :	
January 16, 201	9
Drawn By :	
Alain Moll	
NTS Project #:	
6385CC	





Notes:

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

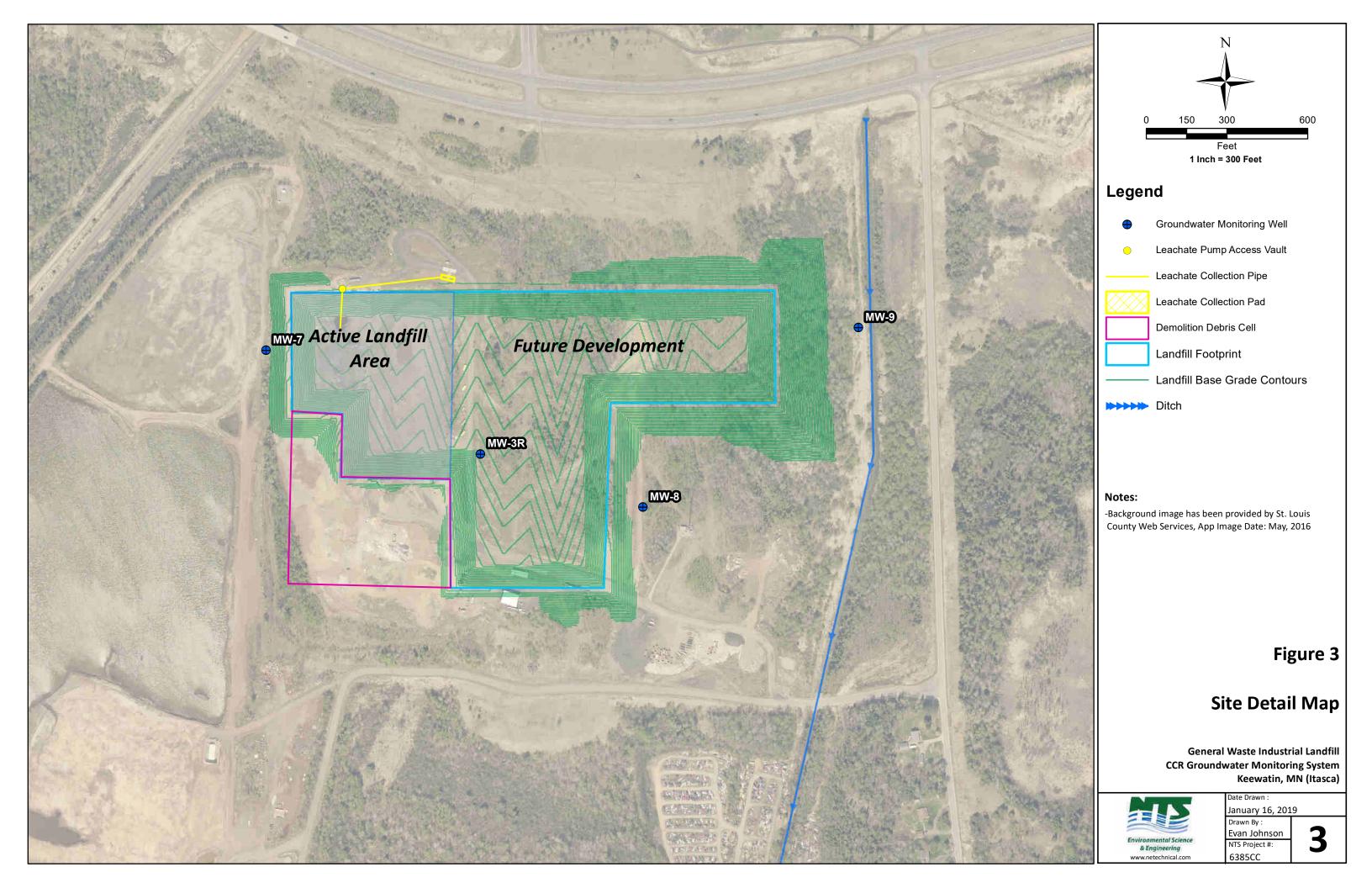
Figure 2 Site Location Map

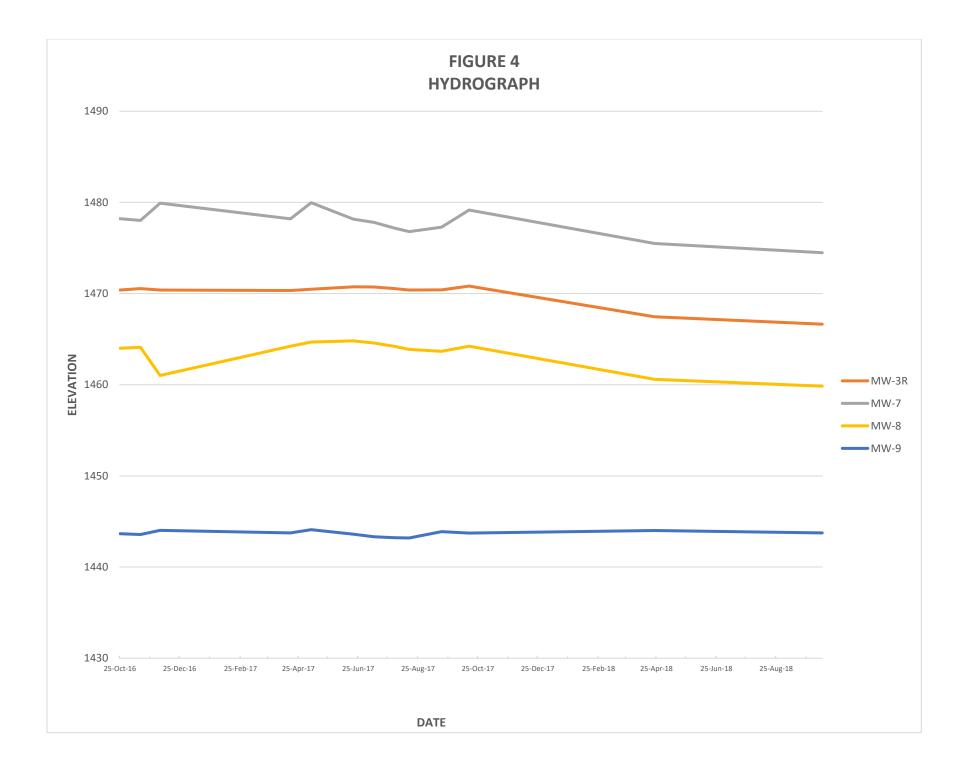
General Waste Industrial Landfill CCR Groundwater Monitoring System Keewatin, MN (Itasca)



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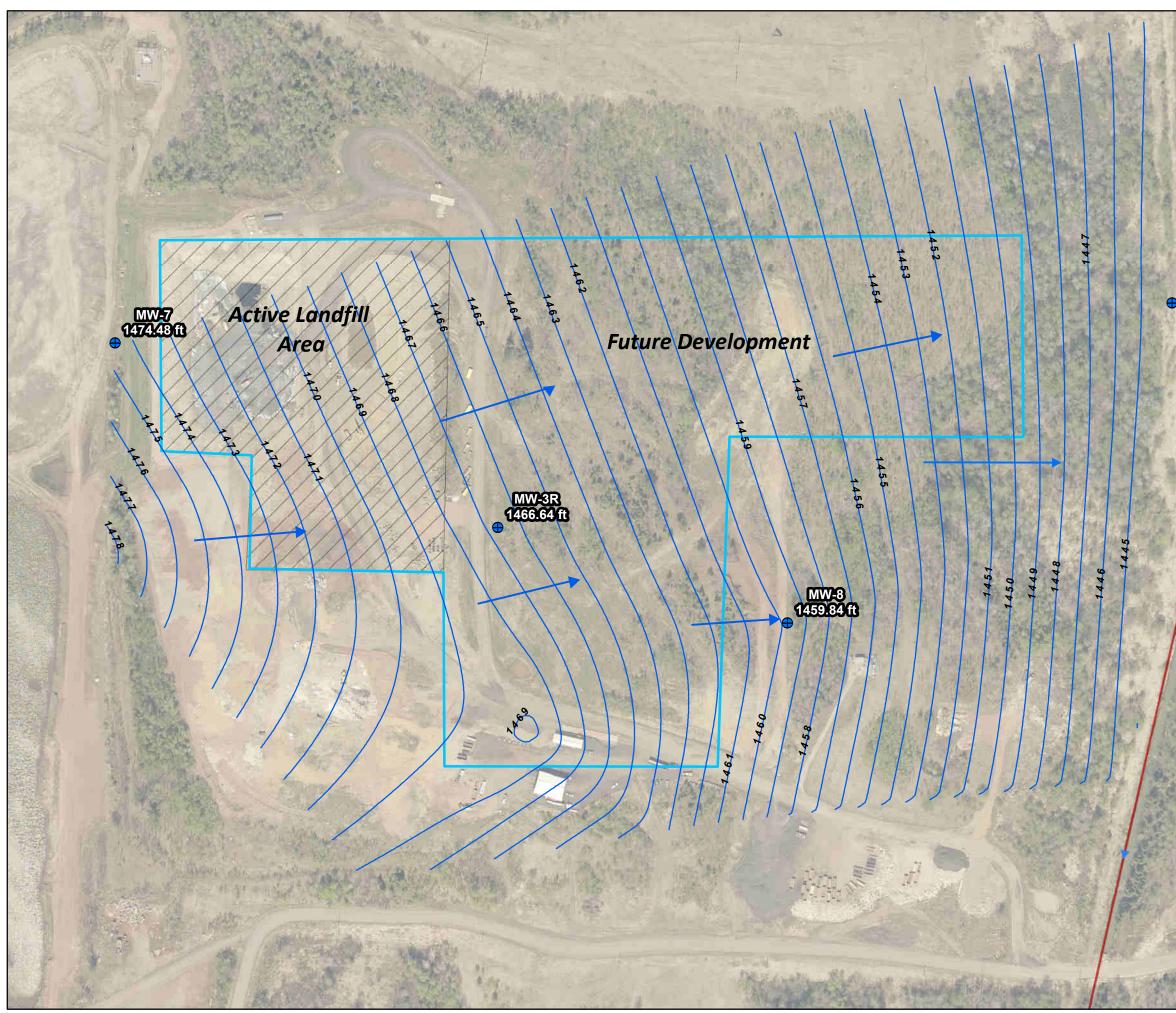




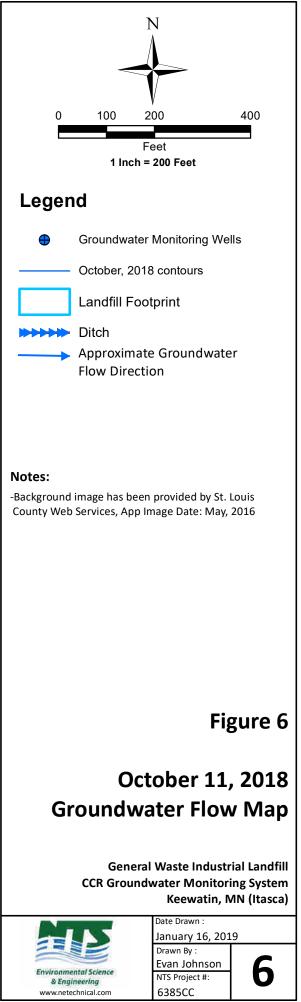




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TABLES

TABLE 1GROUNDWATER MONITORING WELL DETAILSGENERAL WASTE AND RECYCLING CCR LANDFILL

	MW-3R		MW-7		MW-8		MW-9	
MDH Unique Well #	797239		817979		817978		817980	
Northing (UTM NAD83)	52483	332.87	52484	49.356	52482	71.719	52484	74.904
Easting (Zone 15 Meters)	4942	67.27	49402	4.588	49445	1.676	49469	5.922
Installation Date	7/9	/15	9/30/	/2016	9/29/	/2016	9/30/	/2016
Ground Elev. (ft)	153	0.10	149	3.62	149	1.63	145	2.93
Riser Top Elev. (ft)	153	2.29	149	6.13	149	4.41	145	4.72
Total Depth (ft)	75	5.0	26	5.6	41	3	18	3.9
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.						
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 2CCR 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		

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

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

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

PARAMETER	UNITS	DATE	MW-3R	MW-7	MW-8	MW-9	Field Dup	Field Blank
Total Dissolved Solids	mg/L	25-Oct-16	3300	2070	1740	1070	1090	<10.0
(TDS)		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



Pace Analytical Services, LLC 1700 Elm Street - Suite 200 Minneapolis, MN 55414 (612)607-1700

May 08, 2018



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 ReportPace Project No.:10428289

Minnesota Certification IDs

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

Michigan Certification #: 9909 Minnesota Certification #: 027-053-137

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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

•		
•		



SAMPLE ANALYTE COUNT

ab ID	Sample ID	Method	Analysts	Analytes Reported	Laborator
		EDA 000 7			

REPORT OF LABORATORY ANALYSIS

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Project: Pace Project No.:	6385CC CCR M 10428289	onitoring-Revi	sed Report						
Sample: MW3R		Lab ID:	10428289001	Collected: 04/23/	18 10:33	Received: 04/	24/18 10:00 N	latrix: Water	
Paran	neters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
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2									
E									



	6385CC CCR Monitoring 10428289	-Revised	Report							
ample: MW7	La	b ID: 104	28289002	Collec	ted: 04/23/	18 09:37	Received:	04/24/18 10:00	Matrix: Water	
Parame	eters Res	ults	Units	R	eport Limit	DF	Prepared	Analyzed	CAS No.	Qua



Project: Pace Project No.:	6385CC CCR Mo 10428289	nitoring-Revi	sed Report						
ample: MW8		Lab ID:	10428289003	Collected: 04/23/	18 11:37	Received: 04	/24/18 10:00 M	atrix: Water	
Param	eters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua



ace Project No.: 10428289	Lab ID: 104	28289004	Collected: 04/23/	18 12:30	Received: 04	/24/18 10:00 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qu
T arameters		01113						



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. Qu Image: Collected: 04/24/18 10:00 Matrix: Units Report Limit DF Prepared Analyzed CAS No. Qu Image: Collected: 04/24/18 10:00 Matrix: Units Report Limit DF Prepared Analyzed CAS No. Qu Image: Collected: 04/24/18 10:00 Matrix: Units Report Limit DF Prepared Analyzed CAS No. Qu Image: Collected: 04/24/18 10:00 Matrix: Units Report Limit DF Prepared Analyzed CAS No. Qu Image: Collected: 04/24/18 10:00 Matrix: Image: Collected: Image: Collected:<	Project: Pace Project No.:	6385CC CCR Mo 10428289	nitoring-Revi	sed Report							
Parameters Results Units Report Limit DF Prepared Analyzed CAS No. Queen constraints	Sample: Field Du	plicate	Lab ID:	10428289005	Collected:	04/23/	18 12:35	Received: 04/	24/18 10:00	Matrix: Water	
	Paran	neters	Results	Units	Repor	t Limit	DF	Prepared	Analyzed	CAS No.	Qual
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Project: Pace Project No.:	6385CC CCR Mo 10428289	onitoring-Revis	ed Report						
Sample: Field Bla	nk	Lab ID: 1	0428289006	Collected: 04	4/23/18 12:20	Received: 04	/24/18 10:00 M	atrix: Water	
Param	neters	Results	Units	Report Li	mit DF	Prepared	Analyzed	CAS No.	Qual

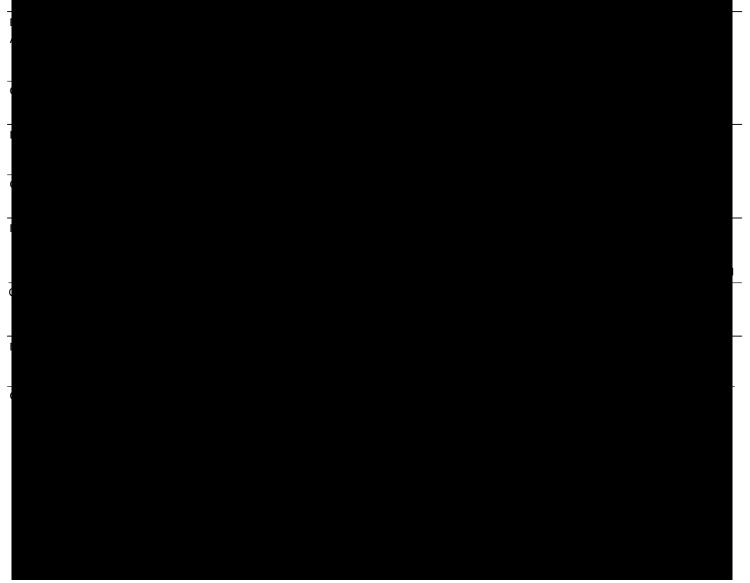


Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

QC Batch: 533927 QC Batch Method: EPA 200.7 Analysis Method:EPA 200.7Analysis 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.

REPORT OF LABORATORY ANALYSIS

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Project: 6385CC CCR Monitoring-Revised Report

EPA 200.8

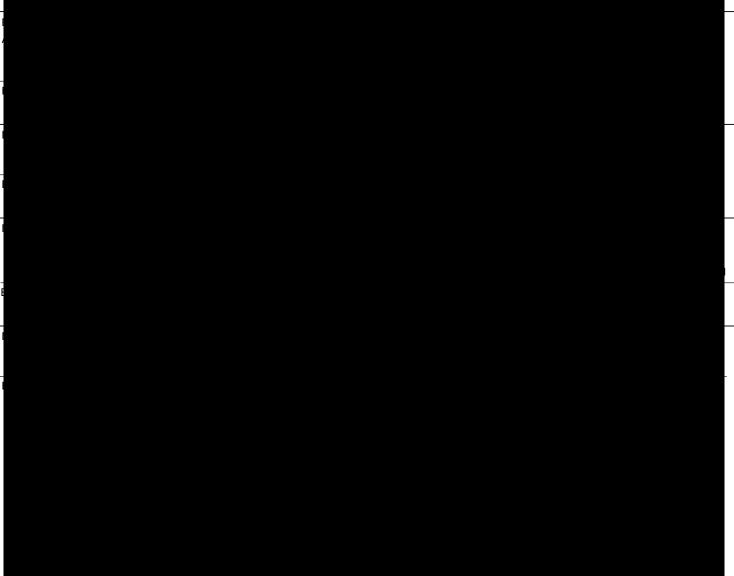
Pace Project No.: 10428289

QC Batch: 533928

QC Batch Method:

Analysis Method:EPA 200.8Analysis Description:200.8 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.

REPORT OF LABORATORY ANALYSIS

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Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

QC Batch: 534680 QC Batch Method: SM 2540C Analysis Method: Analysis Description: SM 2540C

2540C Total Dissolved Solids

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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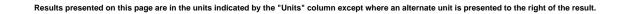
Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

QC Batch: 535049 QC Batch Method: SM 4500-H+B Analysis Method: SM 4500-H+B Analysis Description:

4500H+B pH

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



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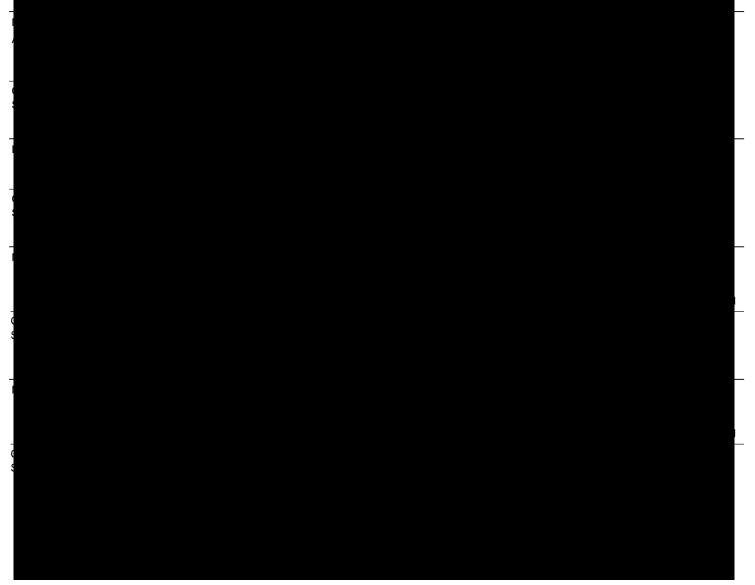


Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

QC Batch: 534208 QC Batch Method: EPA 300.0 Analysis Method:EPA 300.0Analysis 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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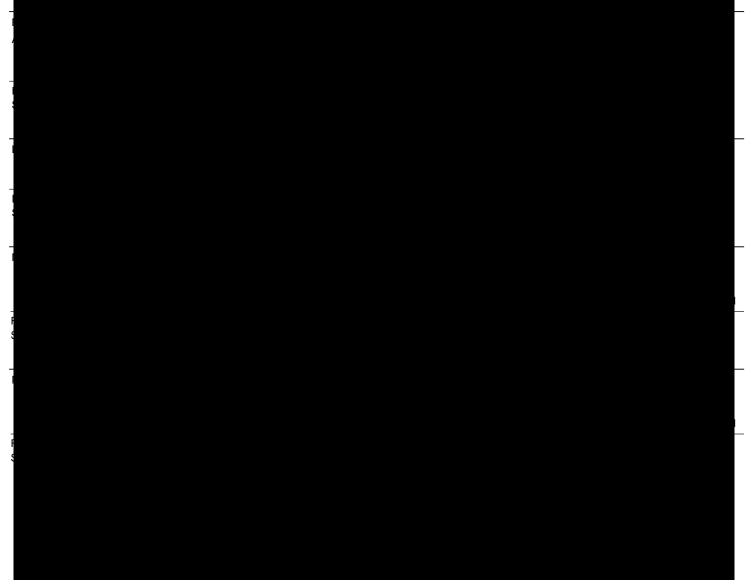


Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

QC Batch: 535414 QC Batch Method: EPA 300.0 Analysis Method:EPA 300.0Analysis 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 ReportPace Project No.:10428289

DEFINITIONS

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





QUALITY CONTROL DATA CROSS REFERENCE TABLE

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

ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
1428289001	MW3R	EPA 200 7	533927	EPA 200 7	534286
428289006	Field Blank	EPA 300.0	534208		
28289006	Field Blank	EPA 300.0	535414		

							4 28. - 7 1		<u></u>		ан тарана и на продоктивните и пости и Пости и пости и
Environmental Science & Engineering	•		NTS HESTNUT STF GINIA, MN 55 90 Fax: (21				R	EQUIF	RED T	URN-A	PAGE 1 OF 1 CHAIN OF CUSTODY RECORD AROUND TIME: 2 Weeks from submittal date
	TE and RECYLING I NDUSTRIAL LANDI NTY, MINNESOTA		REPORT TO: ERIN CHAMB CI	ERLAIN, DENNIS RUM & SCOTT SE	SCHUBI	BE, RIC		GENERAL CHEMISTRY (NO PRES)	1	6	ERE SPECIAL INSTRUCTIONS: SEE ATTACHED LIST WITH METHODS WO#::104:28:28:9
SAMPLER: Srey Hnd	OSAL and RECYCLIN		PERMIT REC					AL CH	TAL C	OLVEC	
PROJECT NUMBER: 6385CC	CCR Monitoirng		CO	Apr-18	MATRI	x	filtered	GENER		DISS	
LOG-IN#	SAMPLE #	DESCRIPTION	DATE	TIME: SA	LIQ		<u>.</u>		+		REQUIRED ANALYSIS:
	MW3R	GW WELL	4 23 18	1033	X		N	1	1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS
	MW7	GW WELL		0937	x		N	1	1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS
	MW8	GW WELL		1137	×	1	м	1	1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS
	MW9	GW WELL		1230	×		N	1	1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS
	Field Duplicate	GW WELL		1235	x		N	1	1		Boron, Calcium, Chioride, Flouride, pH, Sulfate & TDS
	Field Blank	Field Blank		1220	x		4	1	1		Boron, Calcium, Chioride, Flouride, pH, Sulfate & TDS
RELINQUISHED BY:	rawy	DATE: 4 23 18 TIME: 14/5 DATE:	Janzt	MINTS SAMPLE LOO						DATE:	4/24/18 10:00 Z.1°C
RECEIVED FOR LAB BY: T D Mather		ГІМЕ:	TEMP.AT ARRIV	AL:						TIME:	
$\frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{3} \frac{1}$	TIME: 1415	4/23/18 /	5:16		 						

and the second second

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35	Star and a star and a star a sta	De Sample Con	ocument		eipt Form Page 1 of 2
/	Pace Analytical	[Documer	nt No.:	Issuing Authority:
		F-1	VIN-L-21	3-rev.22	Pace Minnesota Quality Office
Sample Condition Upon Receipt Courier: Commercial Tracking Number	NTS Vertical Fed Ex UPS Pace Speed	USPS ee Other:Other:S		Project	WOH: 10428289 PM: AA1 Due Date: 04/30/18 CLIENT: DEM-CON CO.
Custody Seal on C	cooler/Box Present? Yes	No	Seals Int	act? 🗌	Yes Dytional: Proj. Due Date: Proj. Name:
Packing Material:	Bubble Wrap	e Bags 🗌 Non	e 🔲	Other:	Temp Blank?
	151401163 V G87A9155100842	Тур	e of Ice:	₩we	
Cooler Temp Read	- <u>-</u>	np Corrected (°C)	. Z.	١	
Temp should be abo		on Factor: Try			Biological Tissue Frozen? □Yes □No 1/1// Ite and Initials of Person Examining Contents: コスト 4/24
USDA Regulated So	oil (🛃 N/A, water sample)	******			- <u></u>
Did samples originate	e in a quarantine zone within the L	Jnited States: AL, A			
NC, NN, NT, OK, OK,	SC, TN, TX or VA (check maps)? If Yes to either guestion, fill ou	t a Regulated Soi	Y∐ I Checkii		No including Hawaii and Puerto Rico)? Yes N N-Q-338) and include with SCUR/COC paperwork.
			- Checkin	50 (1 -14114	COMMENTS:
Chain of Custody Pre	esent?	Yes	□No		1.
Chain of Custody Fill		<u>res</u>			· · · · · · · · · · · · · · · · · · ·
Chain of Custody Rel		Vres			2.
	or Signature on COC?	Yes			3
Samples Arrived with			No	□N/A	
A.		Myes	No ∕		5.
Short Hold Time Ana		Yes	Mo		6.
Rush Turn Around T	ime Requested?	Ures	No		7.
Sufficient Volume?	· · ·	Yes	No	•	8.
Correct Containers L		∆ ⁄/es	No		9.
-Pace Containers	Used?	Ves	No		
Containers Intact?		Yes	No		10.
Filtered Volume Reco	eived for Dissolved Tests?	Yes	□No	M/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match	n COC?	Yes	No		12.
-Includes Date/Tir	ne/ID/Analysis Matrix: 🛛 🖌	<u>n</u>		_	
checked? All containers needin	g acid/base preservation have been a preservation are found to be in	en Ves	□No	□n/a	13. HNO ₃ H ₂ SO ₄ NaOH Positive for Re Sample # 1 1 - 6 1
	NaOH >9 Sulfide, NaOH>12 Cyani iform, TOC/DOC Oil and Grease,	de) (Dyes	□No		Initial when Lot # of added
DRO/8015 (water) ar	nd Dioxin.	Yes	No	MN/A	completed: preservative:
Headspace in VOA Vi	als (>6mm)?	Yes	No		14.
Trip Blank Present?		☐ Yes	□No		15.
Trip Blank Custody Se		Yes	No	⊻ n/a	
Pace Trip Blank Lot #					
	NOTIFICATION/RESOLUTION				Field Data Required? 🔲 Yes 🛄 No
Person Contacted:	<u> </u>				Date/Time:
Comments/Resolution	on:				·
		- fit date			· · · · · · · · · · · · · · · · · · ·
	anager Review:(Coord	aha A ala	Steel	cr	Date: <u>4/24/18</u>
	is a discrepancy affecting ative, out of temp, incorrect containe	ers),		this	is form will be sent to the North Carolina DEHNR Certification Office (i.e. ou

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GENERAL WASTE CCR METHODS

PARAMETER	SYMBOL	EPA Method
Boron	В	200.8
Calcium	Са	200.7
Chloride	Chloride	300.0
Fluoride	Flouride	300.0
рН	рН	SM 4500 H+B
Sulfate	SO4	300.0
TDS	TDS	SM 2540C

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	ental Science lineering	Field Report C	over 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:	April 2018	CCR Monit	oring	Project Number: $6385(C)$
Client:	Gener	al Waste	2	Project Manager: Dennis Schubbe
Location:	K	ee watin		Date: (yyyy-mm-dd) <u>2018-64-23</u>
Prep/Unic	ad/Report Time: <u>/, 2.5</u>	1.2.5		Weather/Temp: <u>65°F/Sunny</u>
	Prep Site Time: 0845 Arrive	Unioad/Report 1315		COC#: 10428289
	Arrive Travel Time: <u>0,75</u>	Depart	Total 1.75	
	То	From		
		otal Field Time Entered to S	toneware: <u>8,75</u>	60 76 Ciriven
	A : 1 A	r Engineering Services Performed		
Preppe	ed i went to	ben- Waste	to conduct	- the April 2018
<	CCK well mon			d lite six d
Damp		-	red affer s	
5	<u>GW wells MW-</u>	<u>3R MW-7 N</u>	<u>1W-8, 5 Mu</u>	
Jamp	les ceded to f	HE Hnali	treel.	
tor a	add 1 details i	see field sike	ets, field ,	notes, ê (OC.
			د 	
	19 - 19 - 19 - 19 - 19 - 19 - 19 - 19 -			·····
			· · ····	
				Site Sketch
			_	Site Sketch
			_	
		<u></u>		Please Indicate North
Field Test D	ata is Estimated Pending Final Laboratory Re	Sults.	ach <u>other documents</u> as d	efined by the Project Manager.*
Field	Scientist:	and halme	Approved by:	
Date:	_4/	23/2018		Page of
	Fill out and hand in field	l sheet on a real-time basis, any que	stions or comments, contact yo	ur project manager.

856 9260 0645-0800 Prep 105 High yobs F 46 6385 C 6.34 Shal aler is 6.45 6.40 1894 - 112 * ve (needs! 1905 Brain ጠመ ያ NEED New lock ton 5wL; 64.84 MW 3A 1mw7 F 105 begin pruping @ 0.25 Gpm MW& 1137 Sample Swl: 33.8) Turci CW 0: 41.46 TwD: 77.58 WD: 26.7 SWL: 20,6 marcus Gen Wask 3131 Sec. 2008 1.1033 0937 andritian Ten Terp it samples the O. Well lowler pumping @ 0.2 GPM 11.4 8 Aumping Q. 0.5 GPM 14 CCP Manitorna 1/23/18 2. Sample <u> wc: 7.57</u> No! 1.2 gal Sx mp le -00-Cl 6 32.8 404 WC - 6.13 Sw .5-Vol: 190 lock 7.7 Tub ORP 101: 2-1galls Ę 57.1 201 0.00 Tarb ORP Well. 76 m SAP 12.74 63 \overline{e} 0.00 0.00 100 60 50 417 285CC 1415 T'ax 1315 154 6.60 1210 Depart 65°F throw きやせる Hudrews Celle T-40. / mw9 1230 sample 25 14.1 Gen waste CCR Man taring 4/23/18 Begin 1562 No So C 12931 6 Vo x 6st 1.6. 2 Ê 20 2 09#1 Chick 1 2 0.5 6 PM No. đ 11<06 100 0x0 Vol: 1.3 mc: 8.24 Waste affer 5-1-5-0 PACE らか ķ (235 D.0 Stable Fassel. 5W 5-10 Reter on Rain 0.00 1220 FB 150



Daily Tailgate Safety

& Engineering Date: 4/23/2018

Work Site Hazard Assessment Worksheet

Project: ____38500

PPE Required (List):	· · · · · · · · · · · · · · · · · · ·	Level* D
☐ Weather Conditions (List): <u>65°</u>	5/ 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:

Trips, & Falls bottles rive s sample

Corrective Actions Taken:

watch toothe wear loves

Participants in Safety Discussion:

1. Corey Andrews	Signature
2. ROBERT FOSSELL	Ma m 1050
3	
4	
5	0
Signature of Site Supervisor/Examiner:	orey (malrent Date: 4/23/2018
	$\langle \rangle$

*Level D, C, B or A

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

		L
	theast Technical Services, Inc. Daily Vehicle Inspection	i sui suiteg
Driver's Name: C. Andre	Daily Venicle Inspection ω S Date: $4/23$ Time: 0140	-
	Vehicle ## (
Place a	a √ (check) next to each item inspected	
Driver/Passenger Side		
External Side Mirrors (Right and Tres (Properly inflated, adequate	Left):Windows: (Clean, free of cracks):	.
OMMENTS:		
iside of Vehicle		
nuck is dean inside: <u>/</u> Indshield wipers and fluid: /	Sauges:Seatbelts: (working condition)	:
heck hom: Check parki akes: Check inside m	ing brake reset/release: Oil change current: irrors, rearview: Check oil level weekly	
Takes: Check inside m	ing brake reset/release: Oil change current: irrors, rearview: Check oil level weekly	_
Takes: Check inside m CMMENTS: Cont and Rear of Vehicle	irrors, rearview: Check oil level weekly	
Takes: Check inside m CHIMENTS: Cont and Rear of Vehicle Il lights: Head Lights:	irrors, rearview: Check oil level weekiy	
Takes: Check inside m CHIMENTS: ont and Rear of Vehicle il lights: Head Lights: ense plates (Tags Current):	irrors, rearview: Check oil level weekly	
Check inside m Chiments: Cont and Rear of Vehicle II lights: Head Lights:	irrors, rearview: Check oil level weekiy	
Check inside m Check	Bumpers: Fluid leaks: Exterior damage to body: Tum signals:	
Takes: Check inside m CMMENTS: Cont and Rear of Vehicle il lights: Head Lights: isense plates (Tags Current): MMENTS: neral/Safety urance Card/Operator's Manual	Bumpers: Fluid leaks: Ma Exterior damage to body: Ma Turn signals:	
Check inside m Check	Bumpers: Fluid leaks: Ma Exterior damage to body: Ma Turn signals:	
Takes: Check inside m CMMENTS: Cont and Rear of Vehicle il lights: Head Lights: isense plates (Tags Current): MMENTS: neral/Safety urance Card/Operator's Manual	Bumpers: Fluid leaks: Ma Exterior damage to body: Ma Turn signals:	
Check inside m Check	Bumpers: Fluid leaks: Ma Exterior damage to body: Ma Turn signals:	
Check inside m Check	Bumpers: Fluid leaks: <u>Ma</u> Exterior damage to body: <u>Ma</u> Tum signals:	:;;
Check inside m Check	Bumpers: Fluid leaks: <u>Ma</u> Exterior damage to body: <u>Ma</u> Tum signals:	· · · · · · · · · · · · · · · · · · ·
Check inside m Check	Bumpers: Fluid leaks: <u>Ma</u> Exterior damage to body: <u>Ma</u> Tum signals:	

New form 6/11/15

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		STABILIZATION/REC					
SITE:		WASTE DISPOSAL AND RECOVE	RY SERVICES, INC.	CALIBRA	TION:		NTS
DATE:	4/23/2	1018		NO:			
TIME: O	<u>8'56 '</u>			YES:	X ,	_	MANUAL:
SAMPLE I		MW-7 (Unique Well #817979)		Prior to		AUTO
WEATHER	ons: 48	orte 1 h	ELE IA	DADAME			
PERSONN		res Andrews	5~ 5-10		PH:		
PUMP RA		0.12 EPM		-		COND:	NTU: D.O.:
WELL DE		6.77'		-			
STATIC LI WELL VOI		20.64'			IPLICATE:	No	
STATIC LE		1 Gallon		EVCEDT	ONS TO PR		
AFTER:	21	1,9'		INONE:		FLOW CEI	
RECOVER	<u>τ</u>	PURGE METHOD:					
METHOD:		[Whale some					
STABILIZA		- part	I				
METHOD:		<u> </u>					
APPEARA	NCE:	slightly Turba	l				
	pН	Specific Conductance	Turbidity	Dissolved	TEMP.	Ett.	VOL. REMOVED:
	SU	5% +/- umhos/cm	NTU	- Oxygen	Centigrade	mV	Gattons-
TIME			5%+/->10	(mg/L)	(+/-0.1)	ORP	
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
							4
0925	6.34	2003		0.00		421	
० <u>९</u> ३० ७ <u>९</u> ३५	6.34	2005	33.6	0.00		413	<u> </u>
0940	<u>7,27</u>	2000	34.8	6.00	<u> u • 7</u>	404	¥
INITIAL:					1		
2ND					1		
RECHAR.	1						
3RD		· · · · · · · · · · · · · · · · · · ·	·				
RECH .:							
COMMEN	TS: Key #0	410. Good Recharge - 5/00 ~ Well newls new lock	echarge rate,				
	*	Well nearly new lock	- 093	7 <u>5</u> a	-mple		
			v		٦ ٣		
i							

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		STABILIZATION/REC						
SITE:		WASTE DISPOSAL AND RECOVE	RY SERVICES, INC.	CALIBRA	TION:			NTS
DATE:	4/23/1	8		NO:		1		
TIME:	1051			YES:	X	1	MANUAL:	X
SAMPLE I	DESIG.:	MW-8 (Unique Well #817978)		Aibrt		AUTO	· · · · ·
WEATHEI	R		·	1				·,
CONDITIC	DNS: 5 2	F/ Sunny/ winds S	5W 5-10	PARAMET	ERS:			
PERSON	NEL:	My Andrews	· · · · · · · · · · · · · · · · · · ·	1	PH:	COND:	NTŲ:	D.O.:
		0.25 6PM	· · · · · ·	-			T X	سيكر ا
WELL DE				1				<u> </u>
				┫ <u></u> . <u></u>		NO	1	
STATIC L		13.81		FIELD DU	PLICATE:	<u>NO</u>	J	
WELL VO		1.2 Cal		l				
STATIC LI	EVEL 7/	1 20			ONS TO PR			.
AFTER:		4.39		NONE:		JELOW CE	LL USED:	X
RECOVER		PURGE METHOD:						
METHOD:		Whale pump						
STABILIZ/		_· • • •						
METHOD:								
APPEARA	NCE:	slightly Turks	~					
	pH	Specific Conductance	Turbidity	Dissolved	TEMP.		VOL RE	MOVED:
	SU	5% +/- umhos/cm	NTU	Oxygen	Centigrade		Gal	
TIME			5%+/->10	(mg/L)	(+/-0.1)	ORP		
1110	6.37	1930	525	0.00	11.3	200		
1115		/925			11.2	196	2	
	6.38		180,3	0.00				
1120	6.39	/828	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	577	0.00	11.2	201	6	
	<u> <u></u></u>			<u> </u>			<u> </u>	
INITIAL:								
2ND	1							
RECHAR.								
		· · ·						
3RD								
RECH.:					<u> </u>		L	
		410. Good Recharge.	· · · · ·		,			
	<u>+</u>	well needs new lock	<u> </u>	Sample	*			
<u> </u>								
<u> </u>	-							
<u> </u>								

and the second sec

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STABILIZATION/RECOVERY TEST FORM	
SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.	CALIBRATION: NT
DATE: 4/23/18	NO:
TIME: OSS	YES: 🖌 MANUAL:
SAMPLE DESIG.: MW-3R (Unique Well # 797239)	TIME: Prisc to AUTO
WEATHER $U9*E/S$ / $S=10$	
CONDITIONS. TITS ANY WIND SW	PARAMETERS:
PERSONNEL: Corey Andrews	PH: COND: NTU: D.C
PUMP RATE(GPM): 0.5 GPM	
WELL DEPTH: -77.58	
STATIC LEVEL 64.84	FIELD DUPLICATE:
WELL VOL. (GAL.) 2.1 ga/s	
STATIC LEVEL	
AFTER: 65.03	NONE: FLOW CELL USED:
RECOVERY PURGE METHOD	
METHOD: Whale pump (mega)	
STABILIZATION	
METHOD: X	
	• · · · · · · · · · · · · · · · · · · ·
appearance: clear slight odor	
pH Specific Conductance Turbidity	Dissolved TEMP
SU 5% +/- umhos/cm NTU	Oxygen Centigrade mV Gations
TIME 5%+/->10	(mg/L) (+/-0.1) ORP
1010 6.59 3039 62.8	0.00 8.7 56 1
1015 6.49 3145 201	0.00 8.7 60 Z
1020 6.45 3156 9.8	0.00 8.7 61 3
1025 6.41 3140 8.3	
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 2	simple
i i i i i i i i i i i i i i i i i i i	dition
Well Lockel ? in your con	
i i i i i i i i i i i i i i i i i i i	

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STABILIZATION/RECOVERY TEST FORM	
SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.	CALIBRATION: NTS
DATE: 4/23/18	NO:
TIME: 1154	YES: X MANUAL: X
SAMPLE DESIG. MW-9 (Unique Well #817980)	TIME: Pres- fo AUTO
WEATHER LIGTLE I I THE CONTRACT	
CONDITIONS: 61°F/Sunny/winds 5W5-10	PARAMETERS:
PERSONNEL: Concy Andrews (PH: COND: NTU: D.O.:
PUMP RATE(GPM): 0.5 GPM	
WELL DEPTH: (S, 95	
STATIC LEVEL: 10.71	FIELD DUPLICATE: Yes
WELL VOL. (GAL.) 1.3 Gal	
ISTATIC EVEL	EXCEPTIONS TO PROTOCOL:
AFTER: 10.77	NONE: FLOW CELL USED:
RECOVERY PURGE METHOD	
METHOD: Whale orma	
STABILIZATION .	
METHOD:	
APPEARANCE: class up order	
pH Specific Collductance Turbidity SU 5% +/- umhos/cm NTU	Dissolved TEMP. Contract VOL. REMOVED:
	Oxygen Centigrade mV
	(mg/L) (+/-0.1) ORP
1213 6.57 1618 25.0	0.00 7.7 (13 (
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	0.008.6 114 6
INITIAL:	
2ND	
RECHAR.	
3RD	
RECH.:	
COMMENTS: Key #0410. Good Recharge.	
	ple
1235 Dug	2
	· · · · · · · · · · · · · · · · · · ·

•

Environmental Science & Engineering		NTS F	FIELD INSTRUMENT CALIBRA	TION LOG
Instrument used:	MS 5			
Instrument I.D.	-	4-F		
Required Parameters:	•	ec. Cond. JuS / a	cm), Diss. Oxyg. (100% Saturat	ion), Turbidity (NTU), ORP (mV)
Date / Initials:	2018-	04-23	сА	
		Idard	Before Field Event	After Field Event
	4	.0	4.0	3.9
-11 (01)	7	.0	7.0	6.9
<u>DH (SU) Ha</u>	10).0	10.0	9.9
			Temp. (°C)= 19.05.	Temp. (°C)= 19.43
Specific Conductance (µS / cm)	10	00	1080	1806
			Temp. (°C)= 18.87	Temp. (°C)= / 9 - 59
ORP (mV)	439		439	442
	20.	0	Temp. (°C)= 19.87	Temp. (°C)= 20,42
<u>Turbidity (NTU)</u>	0.0/1	66	0.0/106	0.0/104.3
	/ `	<u> </u>	Temp. (°C)= 18.89	Temp. (°C)= 20.05
Calibrate D	.O. to 100% Satu	ration (Yes No)	∑eS B.P. (mm Hg)= 🖓 728	_
		· · · · ·	Temp. (°c)= \8.91	
		<u>Time</u>	0645	1435
		<u>Initials</u>	CVA	CH
NOTES:			-	

.

			NTS CHESTNUT STREET GINIA, MN 55792			REQUIRED T		PAGE 1 OF 1 CHAIN OF CUSTODY RECORD REQUIRED TURN-AROUND TIME: 2 Weeks from submittal date					
Environmental Science & Engineering		(218) 741-42		IN 5579. IX: (218) 1									
LIENT NAME, ADDRESS, PHONE#:			REPORT				n da se		/PE.	8. # C	ONT	AINER	SPECIAL INSTRUCTIONS
	E and RECYLING L IDUSTRIAL LANDF NTY, MINNESOTA		ERIN CH		AIN, DENNIS (& SCOTT SEI		BE, RI	CK	GENERAL CHEMISTRY (NO PRES)	GENERAL CHEMISTRY (H2SO4)	TOTAL METALS (HN03)	DISSOLVED METALS (HN03)	SEE ATTACHED LIST WITH METHODS
AMPLER: Crew And	CP WS		PERMIT	T REQ.: 8					CHEN C	GHE	IL ME	VED	
ROJECT: GENERAL WASTE DISPO		G, LLC.			Apr-18				ERAL	JERAI	T01/	SSOL	
ROJECT NUMBER: 6385CC	CCR Monitoirng			COLLE		MATR	IX .	fittered	GENE			ö	
LOG-IN #	SAMPLE #	DESCRIPTION	DATE		TIME:	LIQ.		¥ 		<u> </u>			REQUIRED ANALYSIS
	MW3R	GW WELL	4/23	118	1033	×		N	1		1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS
	MW7	GW WELL			0937	×		N	1		1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS
· · · · · · · · · · · · · · · · · · ·	MW8	GW WELL			1137	×		N	1		1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS
	MW9	GW WELL			1230	x		N	1		1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS
	Field Duplicate	GW WELL			1235	x		N	1	1	1		Boron, Calcium, Chloride, Flouride, pH, Suifate & TDS
· .	Field Blank	Field Blank		,	1220	x		N	1	1	1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS
ELINQUISHED BY:		DATE: 4/23/18	RECEIVE	D BY:								ATE:	
ELINQUISHED TONTS SAMPLE LO	DCK-UP BY:	DATE: TIME:	RECEIVE	D FROM N	TS SAMPLE LO	CKUP B	Y:				C	ATE:	
B Mather	<u>~</u>	para (14) dan Manjari ya kung para waki seran da yakar wa	TEMP.AT		:								
4/23/18	TIME: 1415												
		,			12 ¹								

GENERAL WASTE CCR METHODS

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

.



Pace Analytical Services, LLC 315 Chestnut Street Virginia, MN 55792 (218) 742-1042

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,

Canin frem

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

Enclosures

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





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



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



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
2117329006	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



ANALYTICAL RESULTS

Project: 6385CC General Waste

Pace Project No.: 12117329

Sample: MW3R	Lab ID:	12117329001	Collected:	10/11/1	8 13:35	Received: 10)/12/18 12:30	Matrix: Water	
Parameters	Results	Units	Report	t Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.8 MET ICPMS	Analytical	Method: EPA 20	0.8 Prepara	tion Met	hod: EP	A 200.8			
Boron Calcium	103 532	0		40.0 1.0	1 10	10/15/18 14:49 10/15/18 14:49	10/16/18 13:00 10/16/18 14:00		
2540C Total Dissolved Solids	Analytical	Method: SM 254	40C (1997)						
Fotal Dissolved Solids	2850) mg/L		20.0	1		10/16/18 19:03	3	
1500H+ pH, Electrometric	Analytical	Method: SM 450	00-H+B						
oH at 25 Degrees C	7.2	2 Std. Units		0.10	1		10/12/18 15:28	3	H6
800.0 IC Anions 28 Days	Analytical	Method: EPA 30	0.0						
Chloride	2.0	0		1.0	1		10/13/18 10:1		
Fluoride Sulfate	NE 1550	0		0.10 28.0	1 14		10/13/18 10:1 10/13/18 16:4		
Sample: MW7	Lab ID:	12117329002	Collected:	10/11/1	8 09:50	Received: 10)/12/18 12:30	Matrix: Water	
Parameters	Results	Units	Report	t Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.8 MET ICPMS	Analytical	Method: EPA 20	0.8 Prepara	tion Met	hod: EP	A 200.8			
Boron Calcium	70.8 400	0		40.0 1.0	1 10		10/16/18 13:1 10/16/18 14:1		
2540C Total Dissolved Solids	Analytical	Method: SM 254	40C (1997)						
Fotal Dissolved Solids	1600) mg/L		20.0	1		10/16/18 19:02	2	
I500H+ pH, Electrometric	Analytical	Method: SM 450	00-H+B						
bH at 25 Degrees C	7.2	2 Std. Units		0.10	1		10/12/18 15:3	1	H6
800.0 IC Anions 28 Days	Analytical	Method: EPA 30	0.0						
Chloride	91.4	0		1.0	1		10/13/18 10:34		
Fluoride Sulfate	NE 69:	0		0.10	1 7		10/13/18 10:34 10/13/18 16:59		
Sunate	095	5 mg/L		14.0	1		10/13/16 10.3	9 14000-79-0	
Sample: MW8	Lab ID:	12117329003	Collected:	10/11/1	8 16:15	Received: 10)/12/18 12:30	Matrix: Water	
Parameters	Results	Units	Report	t Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.8 MET ICPMS	Analytical	Method: EPA 20	0.8 Prepara	tion Met	hod: EP	A 200.8	_		
Boron	64.7	7 ug/L		40.0	1	10/15/18 14:49	10/16/18 12:4	4 7440-42-8	
Calcium	337	l mg/L		1.0	10	10/15/18 14:49	10/16/18 14:03	3 7440-70-2	
2540C Total Dissolved Solids	Analytical	Method: SM 254	40C (1997)						
Total Dissolved Solids	1350) mg/L		20.0	1		10/16/18 19:08	3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 6385CC General Waste

Pace Project No.: 12117329

Sample: MW8	Lab ID: 121	17329003	Collected: 10/11/	18 16:15	Received: 10)/12/18 12:30 N	Aatrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
4500H+ pH, Electrometric	Analytical Met	thod: SM 450	00-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 Met	thod: EPA 30	0.0					
Chloride	1.4	mg/L	1.0	1		10/13/18 10:50		
Fluoride Sulfate	ND 589	mg/L mg/L	0.10 12.0	1 6		10/13/18 10:50 10/13/18 17:15		
		<u></u> g/ =		Ū				
Sample: MW9	Lab ID: 121	17329004	Collected: 10/11/	18 16:56	Received: 10)/12/18 12:30 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS	Analytical Met	thod: EPA 20	0.8 Preparation Me	thod: EP	A 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 Met	thod: SM 254	IOC (1997)					
Total Dissolved Solids	1100	mg/L	20.0	1		10/16/18 19:04		
4500H+ pH, Electrometric	Analytical Met	thod: SM 450)0-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 Met	thod: EPA 30	0.0					
Chloride	8.4	mg/L	1.0	1		10/13/18 11:07		
Fluoride Sulfate	ND 460	mg/L mg/L	0.10 8.0	1 4		10/13/18 11:07 10/13/18 17:32		
	100	ing, E	0.0	·		10,10,10,10		
Sample: Field Duplicate	Lab ID: 121	17329005	Collected: 10/11/	18 17:00	Received: 10)/12/18 12:30 N	Aatrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS	Analytical Met	thod: EPA 20	0.8 Preparation Me	thod: EP	A 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 Met	thod: SM 254	IOC (1997)					
Total Dissolved Solids	1120	mg/L	20.0	1		10/16/18 19:04		
4500H+ pH, Electrometric	Analytical Met	thod: SM 450)0-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 Met	thod: EPA 30	0.0					
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	

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ANALYTICAL RESULTS

Project: 6385CC General Waste

Pace Project No.: 12117329

Results	Units	Bonert						
		Report L	.imit	DF	Prepared	Analyzed	CAS No.	Qual
Analytical Met	hod: EPA 30	0.0						
461	mg/L		8.0	4		10/13/18 17:49	14808-79-8	
Lab ID: 121	17329006	Collected: 1	0/11/18	8 16:35	Received: 10	/12/18 12:30	Aatrix: Water	
Results	Units	Report L	.imit	DF	Prepared	Analyzed	CAS No.	Qual
Analytical Met	hod: EPA 20	0.8 Preparatic	on Meth	od: EP/	A 200.8			
ND	ug/L		40.0	1	10/15/18 14:49	10/16/18 12:10	7440-42-8	
ND	mg/L		0.10	1	10/15/18 14:49	10/16/18 12:10	7440-70-2	
Analytical Met	hod: SM 254	OC (1997)						
ND	mg/L		10.0	1		10/16/18 19:06		
Analytical Met	hod: SM 450	00-H+B						
6.1	Std. Units		0.10	1		10/12/18 15:47		H6
Analytical Met	hod: EPA 30	0.0						
ND	mg/L		1.0	1		10/13/18 11:41	16887-00-6	
ND	mg/L		0.10	1		10/13/18 11:41	16984-48-8	
	461 Lab ID: 121 Results Analytical Met ND Analytical Met 6.1 Analytical Met ND	461 mg/L Lab ID: 12117329006 Results Units Analytical Method: EPA 20 ND ug/L ND mg/L Analytical Method: SM 254 ND mg/L Analytical Method: SM 450 6.1 Std. Units Analytical Method: EPA 30 ND mg/L ND mg/L	Lab ID: 12117329006 Collected: 1 Results Units Report L Analytical Method: EPA 200.8 Preparation ND ug/L ND mg/L Analytical Method: SM 2540C (1997) ND mg/L Analytical Method: SM 4500-H+B 6.1 Std. Units Analytical Method: EPA 300.0 ND mg/L ND mg/L	461 mg/L 8.0 Lab ID: 12117329006 Collected: 10/11/18 Results Units Report Limit 10.0 Analytical Method: EPA 200.8 Preparation Method ND ug/L 40.0 ND ug/L 40.0 ND mg/L 0.10 Analytical Method: SM 2540C (1997) 10.0 ND mg/L 10.0 Analytical Method: SM 4500-H+B 0.10 Analytical Method: EPA 300.0 1.0 ND mg/L 1.0 ND mg/L 1.0 ND mg/L 1.0 MD mg/L 0.10	461 mg/L 8.0 4 Lab ID: 12117329006 Collected: 10/11/18 16:35 Results Units Report Limit DF Analytical Method: EPA 200.8 Preparation Method: EPA ND ug/L 40.0 1 ND ug/L 0.10 1 Analytical Method: SM 2540C (1997) ND 10.0 1 Analytical Method: SM 4500-H+B 0.10 1 Analytical Method: SM 4500-H+B 0.10 1 Analytical Method: EPA 300.0 1.0 1 ND mg/L 1.0 1 ND mg/L 1.0 1 Analytical Method: EPA 300.0 1 1 ND mg/L 1.0 1 ND mg/L 1.0 1 ND mg/L 1.0 1 ND mg/L 1.0 1 MD mg/L 1.0 1 ND mg/L 0.10 1	461 mg/L 8.0 4 Lab ID: 12117329006 Collected: 10/11/18 16:35 Received: 10 Results Units Report Limit DF Prepared Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 ND ug/L 40.0 1 10/15/18 14:49 ND mg/L 0.10 1 10/15/18 14:49 Analytical Method: SM 2540C (1997) ND mg/L 10.0 1 Analytical Method: SM 4500-H+B 6.1 Std. Units 0.10 1 Analytical Method: EPA 300.0 ND mg/L 1.0 1 1.0 1 1.0 1 ND mg/L 0.10 1 1.0 1 1.0 1	461 mg/L 8.0 4 10/13/18 17:49 Lab ID: 12117329006 Collected: 10/11/18 16:35 Received: 10/12/18 12:30 M Results Units Report Limit DF Prepared Analyzed Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Prepared Analyzed ND ug/L 40.0 1 10/15/18 14:49 10/16/18 12:10 ND mg/L 0.10 1 10/15/18 14:49 10/16/18 12:10 Analytical Method: SM 2540C (1997) ND mg/L 10.0 1 10/16/18 19:06 Analytical Method: SM 4500-H+B 6.1 Std. Units 0.10 1 10/12/18 15:47 Analytical Method: EPA 300.0 10.0 1 10/13/18 11:41 ND mg/L 1.0 1 10/13/18 11:41 ND mg/L 1.0 1 10/13/18 11:41	461 mg/L 8.0 4 10/13/18 17:49 14808-79-8 Lab ID: 12117329006 Collected: 10/11/18 16:35 Received: 10/12/18 12:30 Matrix: Water Results Units Report Limit DF Prepared Analyzed CAS No. Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Prepared Analyzed CAS No. ND ug/L 40.0 1 10/15/18 14:49 10/16/18 12:10 7440-42-8 ND mg/L 0.10 1 10/15/18 14:49 10/16/18 12:10 7440-70-2 Analytical Method: SM 2540C (1997) 10.0 1 10/16/18 19:06 Analytical Method: SM 4500-H+B 6.1 Std. Units 0.10 1 10/12/18 15:47 Analytical Method: EPA 300.0 ND mg/L 1.0 1 10/13/18 11:41 16887-00-6 10/13/18 11:41 16887-00-6 ND mg/L 1.0 1 10/13/18 11:41 16887-00-6 10/13/18 11:41 16984-48-8



Project: Pace Project No.:		CC General W	aste										
				A I	·		BA 000 0						
QC Batch:	1544				is Method:		PA 200.8						
QC Batch Method		200.8			is Descript		0.8 MET						
Associated Lab S	amples:	121173290	01, 12117329002	, 121173290	003, 12117	329004, 12	2117329005	, 12117329	006				
METHOD BLANK	: 61108	4		Ν	Aatrix: Wa	ter							
Associated Lab S	amples:	121173290	01, 12117329002				117329005	, 12117329	006				
Do	ameter		Units	Blank Resul		eporting Limit	Analyz	vod	Qualifiers				
	ameter			Resul					Quaimers	_			
Boron			ug/L		ND	40.0							
Calcium			mg/L		ND	0.10	10/16/18	12:18					
LABORATORY C	ONTROL	SAMPLE:	611085										
				Spike	LCS	5	LCS	% Rec	;				
Par	ameter		Units	Conc.	Resu	lt	% Rec	Limits	Qı	alifiers			
Boron			ug/L	250		248	99	85	-115		-		
Calcium			mg/L	25		25.1	100	85	-115				
MATRIX SPIKE 8	MATDIY		ICATE: 61108			611087							
MATRIX SFIRE 0		SFIRE DUFE	ICATE. 01100	MS	MSD	011007							
			12117352001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parame	eter	Units	s Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Boron		ug/L	48.8	250	250	295	292	99	97	70-130	1	20	
Calcium		mg/L		25	25	75.3	75.8	106	109	70-130	1	20	
MATRIX SPIKE 8			ICATE: 61108	8		611089							
				MS	MSD								
			12117329002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parame	eter	Units	s Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
			70.8	250	250	296	305	90	94	70-130	3	20	
Boron		ug/L	70.8	200	200	290	303	50	54	10 100	0	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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Project: 6385CC Genera Pace Project No.: 12117329	al Waste					
OC Batch: 154544		Analysis Me	athod: S	M 2540C (199	17)	
QC Batch Method: SM 2540C (19	197)	Analysis De		,	solved Solids	
	29001, 12117329002	-	•			
METHOD BLANK: 611542		Matrix	: Water			
Associated Lab Samples: 1211732	29001, 12117329002	2, 12117329003, ⁻ Blank	12117329004, 12 Reporting	2117329005, 1	2117329006	
Parameter	Units	Result	Limit	Analyzed	d Qualif	iers
Total Dissolved Solids	mg/L	ND	10.0	10/16/18 18	:58	
METHOD BLANK: 611546		Matrix	:: Water			
Associated Lab Samples: 1211732	29001, 12117329002	2, 12117329003, ⁻ Blank	12117329004, 12 Reporting	2117329005, 1	2117329006	
Parameter	Units	Result	Limit	Analyzed	d Qualif	iers
Total Dissolved Solids	mg/L	ND	10.0	10/16/18 19	0:01	
LABORATORY CONTROL SAMPLE:	: 611543					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Total Dissolved Solids	mg/L	255	228	89	80-120	
SAMPLE DUPLICATE: 611544						
D		12117223003	Dup		Max	0
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Total Dissolved Solids	mg/L	498	476		5	5
	Ũ					
SAMPLE DUPLICATE: 611545 Parameter	Units	12117081009 Result	Dup Result	RPD	Max RPD	Qualifiers

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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Project:	6385CC General	Waste					
Pace Project No.:	12117329						
QC Batch:	154302		Analysis M	ethod:	SM 4500-H+B		
QC Batch Method:	SM 4500-H+B		Analysis D	escription:	4500H+B pH		
Associated Lab San	nples: 12117329	001, 12117329002	2, 12117329003,	12117329004	, 12117329005, <i>1</i>	12117329006	
LABORATORY COM	NTROL SAMPLE:	610709					
			Spike	LCS	LCS	% Rec	
Paran	neter	Units	Conc.	Result	% Rec	Limits	Qualifiers
pH at 25 Degrees C	:	Std. Units	7	7.1	101	98-102	H6
SAMPLE DUPLICA	TE: 610710						
			12117317001	Dup		Max	
Paran	neter	Units	Result	Result	RPD	RPD	Qualifiers
pH at 25 Degrees C	;	Std. Units	8.4	4	8.5	1	10 H6

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.



QC Batch: QC Batch Method:	154317 EPA 300.0		-	s Method: s Descriptio		PA 300.0 00.0 IC Anio	ns					
Associated Lab Samp		01, 12117329002		•				006				
METHOD BLANK: 6	10736		М	atrix: Wate	er							
Associated Lab Samp	les: 121173290	01, 12117329002	, 121173290 Blank		329004, 12 porting	2117329005	, 12117329	006				
Parame	ter	Units	Result		Limit	Analyz	ed	Qualifiers				
Chloride		mg/L		ND	1.0							
Fluoride		mg/L		ND	0.10							
Sulfate		mg/L		ND	2.0	10/13/18	02:23					
LABORATORY CONT	ROL SAMPLE:	610737										
			Spike	LCS		LCS	% Rec					
					ł	% Rec	Limits	Qu	alifiers			
Parame	ter	Units	Conc.	Result	۱ 	70 Kec	Linito					
	ter	Units mg/L	Conc. 50	-	51.0	102		-110				
Chloride Fluoride	ter		·				90 90					
Chloride Fluoride Sulfate		mg/L mg/L mg/L	50 5 50		51.0 5.2 50.7	102 104	90 90	-110 -110				
Chloride Fluoride Sulfate		mg/L mg/L mg/L	50 5 50		51.0 5.2	102 104	90 90	-110 -110				
Chloride Fluoride Sulfate		mg/L mg/L mg/L ICATE: 61073 12117286001	50 5 50 8		51.0 5.2 50.7 610739 MS	102 104	90 90 90	-110 -110 -110 MSD	% Rec		Мах	
Chloride Fluoride Sulfate		mg/L mg/L mg/L ICATE: 61073 12117286001	50 5 50 8 MS	MSD	51.0 5.2 50.7 610739	102 104 101	90 90 90	-110 -110 -110		RPD		Qua
Chloride Fluoride Sulfate MATRIX SPIKE & MA Parameter	TRIX SPIKE DUPL	mg/L mg/L mg/L ICATE: 61073 12117286001 Result	50 5 50 8 MS Spike	MSD Spike	51.0 5.2 50.7 610739 MS	102 104 101 MSD	90 90 90	-110 -110 -110 MSD	% Rec	RPD 0	RPD	Qua
Chloride Fluoride Sulfate MATRIX SPIKE & MA Parameter Chloride Fluoride	FRIX SPIKE DUPL	mg/L mg/L mg/L ICATE: 61073 12117286001 	50 5 50 8 MS Spike Conc.	MSD Spike Conc. 50 5	51.0 5.2 50.7 610739 MS Result 113 5.6	102 104 101 MSD Result	90 90 90 % Rec	-110 -110 -110 MSD % Rec	% Rec Limits 90-110 90-110	0 1	RPD 20 20	Qua
Chloride Fluoride Sulfate MATRIX SPIKE & MA	TRIX SPIKE DUPL	mg/L mg/L mg/L ICATE: 61073 12117286001 	50 5 50 8 MS Spike Conc. 50	MSD Spike Conc. 50	51.0 5.2 50.7 610739 MS Result 113	102 104 101 MSD Result 113	90 90 90 90 90 90	-110 -110 -110 MSD % Rec 106	% Rec Limits 90-110	0	RPD 20 20	Qua
Chloride Fluoride Sulfate MATRIX SPIKE & MA Parameter Chloride Fluoride Sulfate	FRIX SPIKE DUPL	mg/L mg/L mg/L ICATE: 61073 12117286001 <u>Result</u> 60.6 0.14 25.6	50 5 50 8 MS Spike Conc. 50 5 50	MSD Spike Conc. 50 5 50	51.0 5.2 50.7 610739 MS Result 113 5.6	102 104 101 MSD Result 113 5.6	90 90 90 90 90 90 90 90 90 90 90 90 90 9	-110 -110 -110 MSD % Rec 106 109	% Rec Limits 90-110 90-110	0 1	RPD 20 20	Qua
Chloride Fluoride Sulfate MATRIX SPIKE & MA Parameter Chloride Fluoride	FRIX SPIKE DUPL	mg/L mg/L mg/L ICATE: 61073 12117286001 <u>Result</u> 60.6 0.14 25.6	50 5 50 8 MS Spike Conc. 50 5 50	MSD Spike Conc. 50 5 50	51.0 5.2 50.7 610739 MS Result 113 5.6 79.7	102 104 101 MSD Result 113 5.6 80.0	90 90 90 90 90 90 90 90 90 90 90 90 90 9	-110 -110 -110 MSD % Rec 106 109 109	% Rec Limits 90-110 90-110 90-110	0 1	RPD 20 20	Qua
Chloride Fluoride Sulfate MATRIX SPIKE & MA Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MA	TRIX SPIKE DUPL Units mg/L mg/L TRIX SPIKE DUPL	mg/L mg/L mg/L ICATE: 61073 12117286001 Result 60.6 0.14 25.6 ICATE: 61074 12117305004	50 55 50 8 MS Spike Conc. 50 5 50 0 MS Spike	MSD Spike Conc. 50 5 50 MSD Spike	51.0 5.2 50.7 610739 MS Result 113 5.6 79.7 610741 MS	102 104 101 MSD Result 113 5.6 80.0	90 90 90 90 90 90 90 90 90 90 90 90 90 9	-110 -110 -110 -110 <u>MSD</u> % Rec 106 109 109	% Rec Limits 90-110 90-110 90-110 % Rec	0 1 0	RPD 20 20 20 20	
Chloride Fluoride Sulfate MATRIX SPIKE & MA Parameter Chloride Fluoride Sulfate	FRIX SPIKE DUPL	mg/L mg/L mg/L ICATE: 61073 12117286001 Result 60.6 0.14 25.6 ICATE: 61074 12117305004	50 5 50 8 MS Spike Conc. 50 5 50 0 MS	MSD Spike Conc. 50 5 50 MSD	51.0 5.2 50.7 610739 MS Result 113 5.6 79.7 610741	102 104 101 MSD Result 113 5.6 80.0	90 90 90 90 90 90 90 90 90 90 90 90 90 9	-110 -110 -110 MSD % Rec 106 109 109	% Rec Limits 90-110 90-110 90-110 % Rec	0 1	RPD 20 20 20 20	Qua
Chloride Fluoride Sulfate MATRIX SPIKE & MA Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MA Parameter Chloride	TRIX SPIKE DUPL Units mg/L mg/L TRIX SPIKE DUPL Units mg/L	mg/L mg/L mg/L ICATE: 61073 12117286001 Result 60.6 0.14 25.6 ICATE: 61074 12117305004 Result 14.7	50 5 50 8 MS Spike Conc. 5 50 0 MS Spike Conc. 5 50	MSD Spike Conc. 50 5 50 MSD Spike Conc. 50	51.0 5.2 50.7 610739 MS Result 113 5.6 79.7 610741 MS Result 68.3	102 104 101 MSD Result 113 5.6 80.0 MSD Result 68.7	90 90 90 90 90 90 90 90 90 90 90 90 90 9	-110 -110 -110 -110 % Rec 106 109 109 109 % Rec % Rec 108	% Rec Limits 90-110 90-110 90-110 % Rec Limits 90-110	0 1 0 <u>RPD</u> 1	RPD 20 20 20 20 Max RPD 20	
Chloride Fluoride Sulfate MATRIX SPIKE & MA Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MA Parameter	TRIX SPIKE DUPL Units mg/L mg/L TRIX SPIKE DUPL Units	mg/L mg/L mg/L ICATE: 61073 12117286001 Result 60.6 0.14 25.6 ICATE: 61074 12117305004 Result 12117305004 Result 14.7 <0.10	50 5 50 8 MS Spike Conc. 5 50 0 MS Spike Conc. 5 50 5 50 5 50 5 50 5 50 5 50 5 50 5	MSD Spike Conc. 50 5 50 MSD Spike Conc. 50	51.0 5.2 50.7 610739 MS Result 113 5.6 79.7 610741 MS Result	102 104 101 MSD Result 113 5.6 80.0 MSD Result 68.7 5.5	90 90 90 90 90 90 90 90 90 90 90 90 90 9	-110 -110 -110 -110 % Rec 106 109 109 109 % Rec 108 108	% Rec Limits 90-110 90-110 90-110 % Rec Limits	0 1 0 RPD 1 1	RPD 20 20 20 20 20 20 20 20 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.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:6385CC General WastePace 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		

DATE 1/1/18 TIME 1/230	RECEIVED FOR LAB BY: TEMP AT ARRIVAL	TIME	RELINQUISHED TO NTS SAMPLE LOCK-UP BY: DATE: RECEIVED FROM NTS SAMPLE LOCKUP BY:	dr Shall TIME 12,30	RELINQUISHED BY	Field Blank Field Blank 10 118 635	Field Duplicate GW WELL 6/11/15 (7)	MW9 GW WELL [6	MWB GW WELL [2 [1] [2 [1]	MW7 GW WELL 10/11/18 0950	MW3R GW WELL (0/118 13)	SAMPLE # DESCRIPTION: DATE:	PROJECT NUMBER: 6385CC CCR Monitoiring COLLECTION:	PROJECT: GENERAL WASTE DISPOSAL and RECYCLING, LLC. OC	SAMPLER (Is rey Hadrews PERMIT REQ. SW-520	DEMOLITION & INDUSTRIAL LANDFILL ITASCA COUNTY, MINNESOTA		NTS 526 CHESTNUT STREET VIRGINIA, MN 55792 & Englineering (218) 741-4290 Fax: (218) 741-4291
		TIME:		TIME	DATE	X 2 1	TCO X N 1 1 Boron, Calcium	1656 × N 1 1 Beron, Calcium	le 15 × N 1 1 Boron, Calcium	X Z	1335 × N 1 1 Boron, Calcium	ME: LIQ. SOL.	MATRIX GEN GEI	ERAI NER/ TOT	OC M. CHE AL CH	ERIN CHAMBERLAIN, DENNIS SCHUBBE, RICK CRUM & SCOTT SEELEY RICK 8260 (HCL) MISTRY (NO PRES) EMISTRY (H2SO4), ETALS (HN03) METALS (HN03)	TYPE & # CONTAINERS	REQUIRED TURN-AROUND T
						Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	ALYSIS:				SEE ATTACHED LIST WITH METHODS	SPECIAL INSTRUCTIONS:	CHAIN OF THE 2 Weeks from the 12117329

GENERAL WASTE CCR METHODS

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

Pace Analytical*		ondition Docum	nt Name: Upon Reco ent No.: 01-Rev.10	Document Revised: 15Mar2016 eipt Form Page 1 of 1 Issuing Authority: Pace Virginia, Minnesota Quality Office
Sample Condition Upon Receipt Courier: Fed Ex UPS Commercial Pace	USPS	12000	Project (#: WO#:12117329 PM: CLJ Due Date: 10/26/18 CLIENT: NTS-Dennis
Tracking Number:				Optional: Proj. Due Date: Proj. Name:
Custody Seal on Cooler/Box Present? Yes	No	Seals I	ntact?	Yes No
Packing Material: Bubble Wrap Bubble	Bags 🖉 N	one [Other:	Temp Blank? Yes No
Thermometer Used: 140792808	Type of	Ice: 🖊	Wet [Blue None Samples on ice, cooling process has be
Cooler Temp Read °C: Temp should be above freezing to 6°C Correction F	• Corrected • actor:	: <u> </u>	7 Date and	Biological Tissue Frozen? Yes No Initials of Person Examining Contents: JS M 19/12 Comments:
Chain of Custody Present?	N Yes	Nc	□n/A	1
Chain of Custody Filled Out?	Ves	Nc	∏n/A	2.
Chain of Custody Relinquished?	Ves	No	□n/A	3.
Sampler Name and Signature on COC?	Yes	No	□N/A	4
Samples Arrived within Hold Time?	Yes	No	□n/a	5. If Fecal: <pre><8 hours </pre> >8, <24 hours <pre>>24 hours</pre>
Short Hold Time Analysis (<72 hr)?	E Yes			aik
Rush Turn Around Time Requested?	Yes	-No		7.
Sufficient Volume?	Nes.	No		8.
Correct Containers Used?	Ves		N/A	9.
-Pace Containers Used?	Ves	No		
Containers Intact?	Yes	No		10.
Filtered Volume Received for Dissolved Tests?	□ Yes			 Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	Elyes			12. Hore water with a value with disjoned containers.
	NT	1-625	<u></u> ,,,,,,,	
All containers needing acid/base preservation will be checked and documented in the pH logbook.	Tyes	No	∏n/A	See pH log for results and additional preservatio documentation
Headspace in Methyl Mercury Container	Yes	No	ØN/∧	13.
Headspace in VOA Vials (>6mm)?	Yes	No	EN/A	14.
Trip Blank Present?	[]Yes	No	ZN/A	15.
Trip Blank Custody Seals Present?	□Yes	No	N/A	
Pace Trip Blank Lot # (if purchased): CLIENT NOTIFICATION/RESOLUTION Person Contacted: Comments/Resolution:				Field Data Required? Yes No Date/Time:
FECAL WAIVER ON FILE Y N Project Manager Review: Note: Whenever there is a discrepancy affecting North Coro old, incorrect preservative, out of temp, incorrect contained				IRE WAIVER ON FILE Y NDate:10/13/18his form will be sent to the North Carolina DEHNR Certification Office ().e Page 16

	ental Science sineering	Field Repor	t 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 CCR Mo	nitoring	Project Number: $6385(C$
Client:	(Seneral Waste		Project Manager: Dennis Schubble
Location:		Keewaton		Date: (yyyy-mm-dd) <u>2018-10-11</u>
Prep/Unlo	ad/Report Time: Prep	5 /, O Unload/Report	Total 1,5	Weather/Temp: <u>40°F/Overca</u> st
	Site Time:	Various trues	Total 4.5	coc#: 12117329
	Travel Time:	0.75		
	То	From Total Field Time Entered	to Stoneware: 6,75	Vehicle #:→ 60 35 ← Miles
Pasaa	A 15	chnical and/or Engineering Services Perfor	, 1	
Prepp	2018 CL	a cicili co.	2	duct the Sall ect.
Sampl	5 5 1 1	0	tained after	stabilization at
\ 	GW well	<u>s MW-3R, n</u>	$\frac{1}{2} \frac{1}{2} \frac{1}$	-8, 7 MW-9.
Samp	les ceded	to WHCE	thalytical sheets fire	eld notes, 7 COC.
				Site Sketch
Field Test Da	ata is Estimated Pending Final L	aboratory Results.	Attach <u>other documents</u> as	Please Indicate North defined by the Project Manager.*
Field	Scientist:	(ney Cho	Approved by:	Alas
Date:		10/11/2018	: 	Page of

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

6385 CG Gen Waste Fall CCR Monitoring 10/11/18 High 400F/Overcast/ winds 15mph WNW thore 5 0032.0745 Prep /Eal/Load 0745 Depart NTS at Gen Weste Arrive 0830 0950 Sample Inw7 0836 Pump Rate 6.256pm Vol TWD WC 5.05' SWL 0853 begin pumping @ 0.25 Gpm H20 Very Turbid MW3R 1335 Sample 1300 Vol Romp Rate 0:5 6Pm JWL THO WC 11.75 2 gal 77.40 65.65 used, for stabilization of well. Purger used for 1615 Sample Juper 1510 MW8 Pomp Rate 0.25 1635 FB Pomp Rate 0.56PM TWO WC Vol JWL 6.68 41.25 341.57 1 gal 1656 Jample 1700 Dup 1624 mw91 SWG I TWD Vol WC 7.94 1.3 10,97 18.91 Depart Gen Waste 1730 Arme back at NTS of File, Unload / Postcheck 1815 19 hot 11

SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC. CALIBRATION: NTS DATE: (0) (1) 2 ° 1 ° NO: TIME: /300 SAMPLE DESIG.: MW-3R (Unique Well # 797239) WEATHER CONDITIONS: 32 F/Mostly Cloudy/winds (UNW 15 mole PARAMETERS:	
TIME: 7360 YES: YES: MANUAL: SAMPLE DESIG:: MW-3R (Unique Well # 797239) TIME: 0645 AUTO	
SAMPLE DESIG.: MW-3R (Unique Well # 797239) TIME: 0645 AUTO	-
WEATHER CALL ALL I	<
PERSONNEL: Condition of the second states of the se	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
STATIC LEVEL: 65.65 FIELD DUPLICATE: No	
WELL VOL. (GAL.) $2q^{(L)}$	
AFTER: 65.65 EXCEPTIONS TO PROTOCOL:	
STABILIZATION	
METHOD X	
APPEARANCE: Clear	
pH Specific Conductance Turbidity Dissolved TEMP. 44 VOL. REMOVE	ED:
SU 5% +/- umhos/cm NTU Oxygen Centigrade mV Gattens	
TIME 5%+/->10 (mg/L) (+/-0.1) ORP	
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	
2ND	
RECHAR.	
3RD	
COMMENTS:	
	I
COMMENTS: Key #3212. Slow recharge rate. 1310 Beach Aum Orner C. O. S. C. P.M.	
1335 Semple	
· · · · · · · · · · · · · · · · · · ·	

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12 308 -

		ECOVERY TEST FORM					
	L WASTE DISPOSAL AND RECO	VERY SERVICES, INC.	CALIBRA	TION:		,	NTS
DATE: 10/11/	2018		NO:				
SAMPLE DESIG.	MW-7 (Unique Well #8179	70)	YES:	X		MANUAL.	
MEATUED		79)		0645]	AUTO	L
CONDITIONS: 2	8°F/Light Snow/	wind WNW 15m	DOADAME-	LEDG.			
	rey Andrews	101,700 VOIVOU / 5mg		PH:	COND:	NTU:	D.Q.:
PUMP RATE(GPM):	0.25 6.PM		-				
	26.7		-	L_X	1 X		
STATIC LEVEL	21.65	· · · · · · · · · · ·	FIELD DU		No	1	
	0+82			PLICATE.	LINO]	
STATIC LEVEL			FXCEPTIC	ONS TO PR	οτοςοι		
AFTER: 2	.2.31'		NONE:		FLOW CE	LL USED	
RECOVERY	PURGE METHOD:		-		1		L_X
METHOD:	Whate pump					· · · · · · · · · · · · · · · · · · ·	
STABILIZATION	<u> </u>						
		····					
APPEARANCE:	Reddish / clor	7					
	Specific Conductance	Turbidity	Dissolved	TEMP.	Jack I		MOVED:
SU SU	5% +/- umhos/ci		Oxygen	Centigrade		Gel	
TIME		5%+/->10	(mg/L)	(+/-0.1)	ORP		
0857 6.16	1102	637.0	0.14	7 74	485	1	
0921 1 10	1096	975	0.56	1.57		2	
	2098			6.18	380		
0905 6,24		1101	0.64	2.17	369	3	
0909 6.24	2108	1421	0.71	5.14	372	4	
0913 6,24	2107	1647	0.80	5.21	366	5	
6917 6.25	2111	1201	0.88	5.28	357	6	
892 5 6.20	2110	918	0.93	5.32	353	7_	·
		794	0.97	5.41	351	8	
2 INTTAL: 6.27	2114	554	0,99	5.44	346	9	
2 2	1118	419	1	a sim	710		
ALCHAN, CIL	2118	711	1.01	5.48	346	(0	
7 3RD 6,28	2117	228.1	1.03	5.42	344		
	0410. Good Recharge.		12	U, 12	17	11	
50mm21110. 1(3)#1				50			
0853	Real Asmoind CO	1.25 GPM			mole		
	$\gamma r r \gamma =$				- ple		
		whou't stahi	lizatio	n. Uni	able.	to alt	
wait		ed pump serve	oral t	IMES,		<u> </u>	
- V - I	Jan Indust Law K	/ /					
XNee					<u> </u>		
4 6.25	1436	172.5	1.05	5.51	346	, 12	¥cleane.
•			()		- • -		sensc
+5 6,29	ular?	~~~~ ()	1 34	5 44	340	13	
er- /	1429	179	[,0]	5.44	JAC	5	
19 6.29	1478						
V. L	1428	321	1 87	5.47	33'	9 14	- -
			1	• •	20	1 I I	

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		STABILIZATION/RE	COVERY TEST FORM					
SITE:	GENERAI	WASTE DISPOSAL AND RECOV	ERY SERVICES, INC.	CALIBRA	TION:	_	NTS	
DATE:	10/11/2	2018		NO:				
TIME:			YES:	X				
WEAT	E DESIG.:	MW-8 (Unique Well #817,97	TIME:	0645	J	AUTO		
	TIONS: 32	* F Overcast w.	a de isaciste					
	DNNEL:	- journers (with	105 1010015		PH:	COND:	NTŲ: D.O.:	
	RATE(GPM):	0.25 6PM		-				
		71.25				$\Box \Delta I$	<u> </u>	
		4.57		FIELD DU		NO		
	VOL. (GAL.)	i dal			PLICATE.			
				FXCEPTIC				
AFTEF	3	5.15		NONE:		FLOW CEL	LUSED:	
RECO	VERY	PURGE METHOD:	· · · · · · · · · · · · · · · · · · ·	1	L	1		
METH		Whate Pomp	2					
		/						
METH	DD:							
APPE	RANCE:	straktly cloud	Ac					
	Hq	Specific Conductance	Turbidity	Dissolved	TEMP.	-5	VOL. REMOVED:	
	SU	5% +/- umhos/cm			Centigrade	mV	Gallens	
TIM	E		5%+/->10	(mg/L)	(+/-0.1)	ORP		
153	- former and the second s	1833	1735	0.38	5.73	264	1	
153	8 6.30	1836	834	0,30	5.90	251	Z	
1540	2 6.32	1831	540	0.19	5.86	247	3	
1540	6,32	1821	237.5	0.15	5.80	243	3 4	
	0 6.32	18 12	176.2	0.11	5.71	239	5	
154	4 6.33	1808	92.3	0.10	5.66	237	6	
155		1.805	70.8	0.08	5,60	235	7	
160	2 6.33	1800	47.5	0.09	5.64	233	8	
CONITIA	: 6.33	1803	40.1	0.08	5.70	231	9	
2ND RECH	AR. 6.34	1798	39.8	0.06	5.74	230	61	
	,							
7 RECH.		1793	39.0	0.06	5.80	229	1/	
COMM	ENTS: Key #0	0410. Good Recharge.	·····					
	15 30	Provide All	<u></u>	A				
	1.3 30	Begin pumpiny	@ 0.25 61	R	· · · · · ·			
	1615 Sample							
			pret-					
		· · · · · · · · · · · · · · · · · · ·						
			· · · · · · · · · · · · · · · · · · ·					

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13 50h !!

		STABIL	IZATION/RECO	VERY TEST FORM				
SITE:	GENERAL	WASTE DISPOSAL	AND RECOVER	RY SERVICES, INC.	CALIBRA	TION:		NTS
DATE:	10/11	2018		· · · · · · · · · · · · · · · · · · ·	NO:			
TIME:	1624		YES:	X		MANUAL:		
SAMPLE I		MW-9 (Unique	TIME:	0645	İ	AUTO		
WEATHEI		A			•			
CONDITIC		°F/Qverca:	st/wird	5 WNW 15	PARAMET	ERS:		
PERSON	VEL Ora		1			PH:	COND:	NTU: D.O.:
PUMP RA	TE(GPM):	8.56pm						XX
WELL DE			<u></u>		-			
STATIC LI	EVEL: 10	.97'			FIELD DU	PLICATE:	Yes	
WELL VO	L. (GAL.)	1.3			1			
STATIC LI	EVEL	1. on!			EXCEPTIC	NS TO PR		
AFTER:		10.97'			NONE:		FLOW CEI	LUSED: X
RECOVEF			METHOD:				-	
METHOD:		What	c pump					
STABILIZA			1 1					
METHOD:								
APPEARA	NCE:	cle	cat					
	pН	Specific Condu	uctance	Turbidity	Dissolved		愿我	VOL. REMOVED:
	SU	5% +/-	umhos/cm	NTU	Oxygen	Centigrade	mV	- Calle es
TIME				5%+/->10	(mg/L)	(+/-0.1)	ORP	
1643	6.55	1538		10.1	0.10	7.61	ē126	<u>(</u>
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.:								
COMMEN	TS: Key #0	410. Good Recharge	-			.		· · · · · · · · · · · · · · · · · · ·
	· ·							
	164	6 Brenn	pemping	velle C	15 6	6pm		
		/ /	_ / /					
	1656 Sample							
			<u></u>					
				· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·
				-				

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pg 6 st 11

Environmental Science & Engineering	NTS FIELD INSTRUMENT CALIBRATION LOG								
Instrument used:	M 55								
Instrument I.D.	46								
Required Parameters:	pH/(SU), Spec. Cond. (µS/	cm), Diss. Øxyg. (100% Saturation	Turbidity (NTU) ORP (mV)						
Date / Initials:	2018-10-	11 CA							
	Standard	Before Field Event	After Field Event						
	4.0	4.0	3.82						
	7.0	7.0	6.97						
<u>(U2) Ha</u>	10.0	10.0	9.9						
		Temp. (°C)= 17.68	Temp. (°C)= 18,72						
Specific Conductance (µS / cm)	1000 Ø.	0 / 1 5 0 0 Temp. (°C)= (3, 00	0.0/1000 Temp. (°C)= (8, 50						
<u>ORP (mV)</u>	43024.00	430 Temp. (°C)= 24.03	441 Temp. (°C)= (8.09						
<u>Turbidity (NTU)</u>	0.0/93	0.0/93.0 Temp. (°C)= [5,93	0,0/94.2 Temp. (°C)= 16.85						
<u>Calibrate D</u>	0.0. to 100% Saturation (Yes / No)	28.22 in Hg							
	Time	0635	1820						
	Initials		1820 CA						

NOTES:

12 Tof 11



Daily Tailgate Safety

Project: <u>6385</u> CC	63850	Date: 10/11/2018	<u>}</u>
Work Site Hazard Asses		,	
Weather Condi	List): <u>High Vis</u>		Level*
Vehicular Traff			
	C	Equipment/Tools	
Housekeeping		Other Site Hazards**	
	k place named and found n k place named and hazards	o hazards found are listed below with co	rrective action
Hazards Identified/Safe			
Slips trips	,		
Trescruatives	h Sample	contachers	
Corrective Actions Taker Walk caution wear nitrile	1		
Participants in Safety Di	scussion:		
1. orey H	drews (signature usef me	2
2/		V	_
3			
4		/	_
5	/	<u> </u>	
Signature of Site Superv	isor/Examiner:	Date: _	10/11/2018
*Level D, C, B or A	(/	(

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

02/20/2015 13 8 of 11

^{*}Level D, C, B or A

Environmental Science & Engineering
Northeast Technical Services, Inc.
Daily Vehicle Inspection
Driver's Name: ("Andrews Date: 10/30/2018Time: 0735
Odometer Reading: Vehicle #: <u>60</u>
Place a $$ (check) next to each item inspected
Driver/Passenger Side
External Side Mirrors (Right and Left):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:
COMMENTS:
General/Safety
Insurance Card/Operator's Manual:Wheel chocks: First Aid Kit: Strobe light: Buggy whip (If needed)
COMMENTS:
Deficiencies Corrected:
Signature: 0000 Date: 10/11/2008
O
New form 6/11/15

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pg 9sfill

PAGE 1 OF 1 CHAIN OF CUSTODY RECORD		(ниоз) к. (н5204) (ио ьвег) нсг)		דאאנ כ באאנ דסדאנ	GEN	N 1 1 Boron, Calcium, Chloride, Plouride, pH, Sulfate & TDS	N 1 1 Boron, Calcium, Chloride, Flouride, pH. Sulfate & TDS	N 1 1 Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	N 1 1 Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	N 1 1 Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	N 1 1 Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS		UALE: TIME:	DATE:	TIME	
NTS 526 CHESTNUT STREET	VIRGINIA, MN 55792 11-4290 Fax: (218) 741-4291	REPORT TO: ERIN CHAMBERLAIN, DENNIS SCHUBBE, RICK CRUM & SCOTT SEELEY		rekimi keu.: SW-920 Oct-18	MATRIX	18 (335 ×	(0/11/18 (450 ×	io/18 1615 ×	10/11/18 16 56 ×	10/11/18 1700 ×	10/11/18/635 ×			RECEIVED FROM NTS SAMPLE LOCKUP BY:	TEMP.AT ARRIVAL:	
526 CI	VIR (218) 741-4:	E and RECYLING LLC VDUSTRIAL LANDFILL NTY, MINNESOTA	l'union of the second of the s	POSAL and RECYCLING, LLC.	CCR Monitoimg		MW7 GW WELL	MW8 GW WELL	MW9 GW WELL	Field Duplicate GW WELL	Field Blank Field Blank	DATE (CA B) AN BECEWED BY	TIME: / J. J.		TIME	TIME: 533
	Environmental Science & Englineering	CLIENT NAME, ADDRESS, PHONE# GENERAL WAST DEMOLITION & I ITASCA COU	SAMPLER	GENER	PROJECT NUMBER: 6385CC LOG-IN#							RELINOLIISHED RY	de star	RELINQUISHED TO NTS SAMPLE LOCK-UP BY	RECEIVED FOR LAR BY	DATE: 1/1/1/5

13 10 11

GENERAL WASTE CCR METHODS

bonteM A93	JOBMYS	ЯЭТЭМАЯА Ч
8.002	В	Boron
2.002	еЭ	muioleO
300.0	Chloride	Chloride
300.0	Flouride	Fluoride
8+H 00S4 MS	Hq	Hq
300.0	[†] OS	Sulfate
2072540C	SQT	SQT

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 2Detection 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.

CCR Statistical Analysis for April, 2018 Event Dem-Con Companies Keewatin, MN Page **4** of **4**



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

Sincerely, Northeast Technical Services, Inc.

John 8-3-18 Even

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

	COLLECTION	COLLECTION		
LOCATION:	DATE:	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



Pace Analytical Services, LLC 1700 Elm Street - Suite 200 Minneapolis, MN 55414 (612)607-1700

May 08, 2018



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 ReportPace Project No.:10428289

Minnesota Certification IDs

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

Michigan Certification #: 9909 Minnesota Certification #: 027-053-137

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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

·		
•		



SAMPLE ANALYTE COUNT

ab ID	Sample ID	Method	Analysts	Analytes Reported	Laborator
40000000				4	

REPORT OF LABORATORY ANALYSIS

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Project: Pace Project No.:	6385CC CCR Mo 10428289	onitoring-Revi	sed Report						
Sample: MW3R		Lab ID:	10428289001	Collected: 04/23/	18 10:33	Received: 04/	24/18 10:00	Matrix: Water	
Param	eters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
		-	_				-		



	6385CC CCR Monitoring- 10428289	Revised Repor	t						
ample: MW7	Lab	ID: 10428289	002 Coll	ected: 04/23	/18 09:37	Received: 0	4/24/18 10:00 N	latrix: Water	
Parame	eters Res	ults U	nits	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua



	6385CC CCR Mon 10428289	iitoring-Revi	sed Report						
ample: MW8		Lab ID:	10428289003	Collected: 04/23/	18 11:37	Received: 04	/24/18 10:00 M	atrix: Water	
Paramet	ers	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua



ace Project No.: 10428289	Lab ID: 104	28289004	Collected: 04/23/	18 12:30	Received: 04	/24/18 10:00 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qu
T arameters		01113						



Pace Project No .:	10428289	intoning-Revi	sed Report							
Sample: Field Dup	licate	Lab ID:	10428289005	Collected:	04/23/	18 12:35	Received: 04/	24/18 10:00	Matrix: Water	
Parame	eters	Results	Units	Repor	t Limit	DF	Prepared	Analyzed	CAS No.	Qual
~										
2										
2										
E										
2										
1										
1										



Project: Pace Project No.:	6385CC CCR Mo 10428289	onitoring-Revis	ed Report						
Sample: Field Bla	nk	Lab ID: 1	0428289006	Collected: 0	4/23/18 12:20	Received: 04	/24/18 10:00 M	atrix: Water	
Param	neters	Results	Units	Report L	imit DF	Prepared	Analyzed	CAS No.	Qual

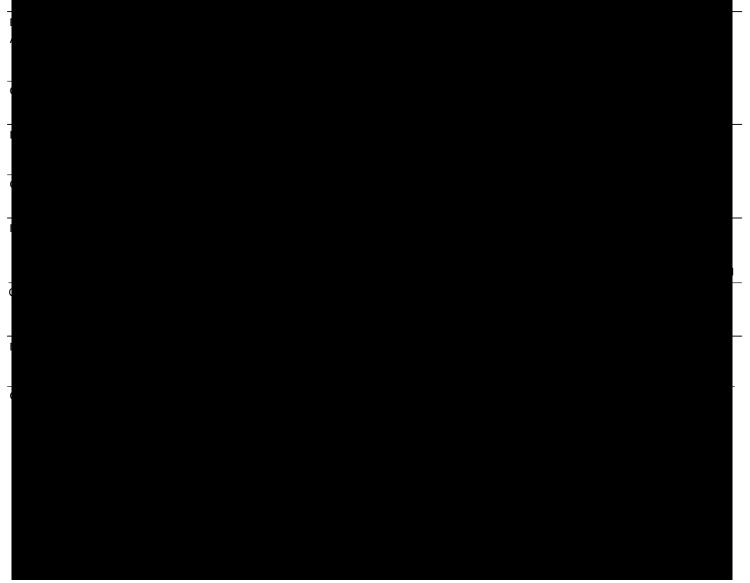


Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

QC Batch: 533927 QC Batch Method: EPA 200.7 Analysis Method:EPA 200.7Analysis 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.

REPORT OF LABORATORY ANALYSIS

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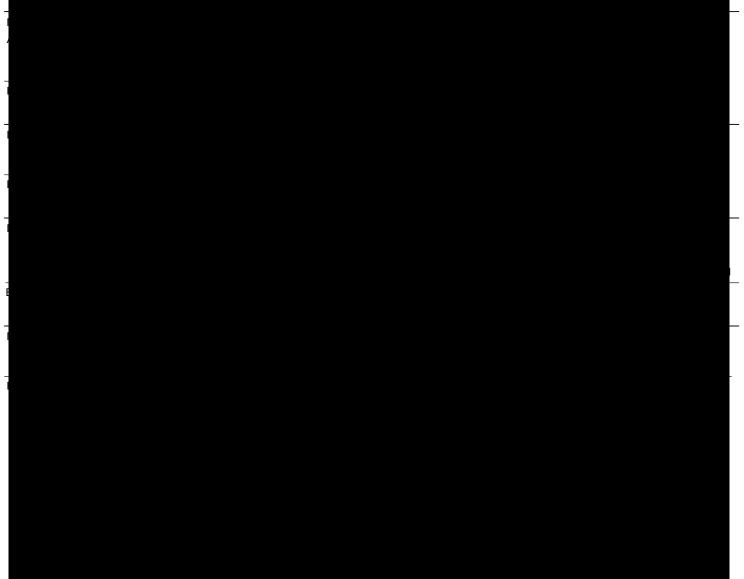


Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

QC Batch: 533928 QC Batch Method: EPA 200.8 Analysis Method:EPA 200.8Analysis Description:200.8 MET

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



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Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

QC Batch: 534680 QC Batch Method: SM 254 Analysis Method: Analysis Description: SM 2540C

 QC Batch Method:
 SM 2540C
 Analysis Description:
 2540C Total Dissolved Solids

 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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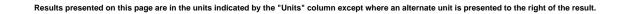
Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

QC Batch: 535049 QC Batch Method: SM 4500-H+B Analysis Method: SM 4500-H+B Analysis Description:

4500H+B pH

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



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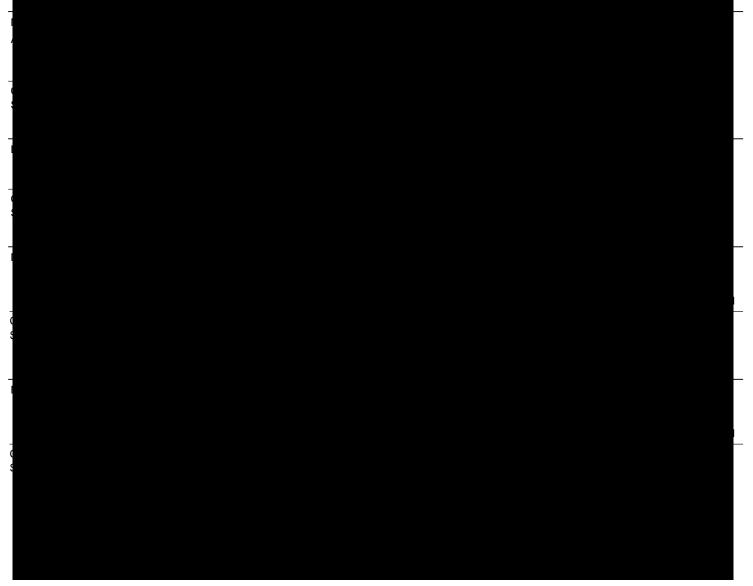


Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

QC Batch: 534208 QC Batch Method: EPA 300.0 Analysis Method:EPA 300.0Analysis 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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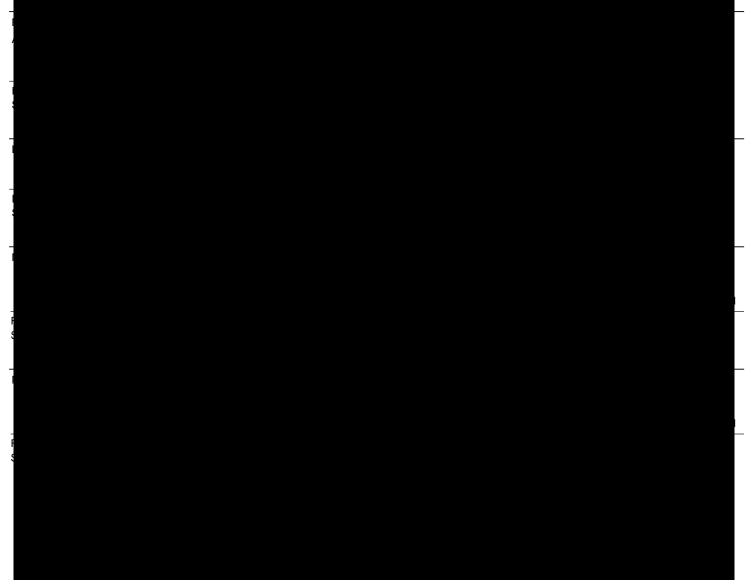


Project: 6385CC CCR Monitoring-Revised Report

Pace Project No.: 10428289

QC Batch: 535414 QC Batch Method: EPA 300.0 Analysis Method:EPA 300.0Analysis 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 ReportPace Project No.:10428289

DEFINITIONS

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





QUALITY CONTROL DATA CROSS REFERENCE TABLE

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

.ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
0428289001	MW3R	EPA 200 7	533927	EPA 200 7	534286
428289006	Field Blank	EPA 300.0	534208		
428289006	Field Blank	EPA 300.0	535414		

							4 28. - 7 1		<u> </u>		ан тарана и на продоктивните и пости и Пости и пости и		
		NTS CHESTNUT STREET GINIA, MN 55792 290 Fax: (218) 741-4291		R	PAGE 1 OF 1 CHAIN OF CUSTODY RECORD REQUIRED TURN-AROUND TIME: 2 Weeks from submittal date								
CLIENTINAME, ADDRESS, PHONE# GENERAL WASTE and RECYLING LLC DEMOLITION & INDUSTRIAL LANDFILL ITASCA COUNTY, MINNESOTA			REPORT TO: ERIN CHAMBERLAIN, DENNIS SCHUBBE, RICK CRUM & SCOTT SEELEY			ж	L) NO PRES (H2SO4) N03)		6	SEE ATTACHED LIST WITH METHODS			
PROJECT: GENERAL WASTE DISP	OSAL and RECYCLIN		PERMIT REQ.: SW-620					AL CH	TAL C	OLVEC	10428289		
PROJECT: GENERAL WASTE DISPOSAL and RECYCLING, LLC.			CO	Apr-18			iltered	GENER		DISS			
LOG-IN#	SAMPLE #	DESCRIPTION	DATE	TIME: SA	LIQ		<u>.</u>		+		REQUIRED ANALYSIS:		
	MW3R	GW WELL	4 23 18	1033	X		N	1	1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS		
	MW7	GW WELL		0937	x		N	1	1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS		
	MW8	GW WELL		1137	×	1	м	1	1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS		
	MW9	GW WELL		1230	×		N	1	1		Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS		
	Field Duplicate	GW WELL		1235	x		N	1	1		Boron, Calcium, Chioride, Flouride, pH, Sulfate & TDS		
	Field Blank	Field Blank		1220	x		4	1	1		Boron, Calcium, Chioride, Flouride, pH, Sulfate & TDS		
RELINQUISHED BY:	rawy	date: 4 23 18 time: 14/5 date:	Janzt	MINTS SAMPLE LOO				_		DATE:	4/24/18 10:00 Z.1°C		
RECEIVED FOR LAB BY: T D Mather		TIME:	TEMP.AT ARRIV	AL:						TIME:			
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'n	· · · · · · · · · · · · · · · · · · · ·	F-1	VIN-L-21	3-rev.22	Pace Minnesota Quality Office
Sample Conditio Upon Receipt Courier: Commercial Tracking Numbe	NTS VFed Ex UPS Pace Speed	USPS Jee Other:		Project	WOH: 10428289 PM: AA1 Due Date: 04/30/18 CLIENT: DEM-CON CO.
Custody Seal on	Cooler/Box Present? Yes	No	Seals Int	act? 🗌	Yes Diversional: Proj. Due Date: Proj. Name:
Packing Material	I: Bubble Wrap	e Bags 🗌 Non	e 🔲	Other:	Temp Blank?
Thermometer Used:	151401163 (V) G87A9155100842	Тур	e of Ice:	₩we	
Cooler Temp Rea		mp Corrected (°C)	. Z.	١	
		on Factor: Try			Biological Tissue Frozen? □Yes □No 1/1// Ite and Initials of Person Examining Contents: コスト 4/24/
USDA Regulated S	ioil (🛃 N/A, water sample)				- <u></u>
Did samples origina	ite in a quarantine zone within the l	Jnited States: AL, A			
NC, NW, NT, OK, OF	R, SC, TN, TX or VA (check maps)? If Yes to either question, fill ou	it a Regulated Soi	Y∐ I Checkii		No including Hawaii and Puerto Rico)? Yes N N-Q-338) and include with SCUR/COC paperwork
			- encour		COMMENTS:
Chain of Custody P	resent?	Yes	□No		1.
Chain of Custody Fi		<u>res</u>			· · · · · · · · · · · · · · · · · · ·
Chain of Custody R		Vres			2.
	/or Signature on COC?	Yes			3
Samples Arrived wi			No	□N/A	
		Vyes	No ∕		5.
Short Hold Time Ar		Yes	Mo		6.
Rush Turn Around		Ures	No		7.
Sufficient Volume?		Yes	No	•	8.
Correct Containers		⊡ ⁄4es	No		9.
-Pace Containers	s Used?	Ves	No		
Containers Intact?		Yes	No		10.
Filtered Volume Rec	ceived for Dissolved Tests?	Yes	□No	M∕∧/A	11. Note if sediment is visible in the dissolved container
Sample Labels Mate	ch COC?	Yes	No		12.
-Includes Date/T	ime/ID/Analysis Matrix:	<u>n</u>		_	
checked? All containers needi	ing acid/base preservation have been ing preservation are found to be in	en Yes	□No	□n/a	13. $H_{12}SO_4$ $NaOH$ Positive for Re Sample # $17-67$
(HNO₃, H₂SO₄, <2pH	A recommendation? I, NaOH >9 Sulfide, NaOH>12 Cyani bliform, TOC/DOC Oil and Grease,	de) (Dyes	□No		Initial when Lot # of added
DRO/8015 (water) a	and Dioxin.	Yes	No	MN/A	completed: preservative:
Headspace in VOA \	······	Yes	No		14.
Trip Blank Present? Trip Blank Custody Seals Present?		☐ Yes	□No		15.
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Pace Trip Blank Lot					
	NOTIFICATION/RESOLUTION				Field Data Required? 🗌 Yes 🛄 No
Person Contacted:					Date/Time:
Comments/Resolut	ion:				·
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GENERAL WASTE CCR METHODS

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

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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 stasistical 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

<u>/0-13-17</u> 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 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 Inscrease (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-paremetric 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:

$$UPL = x + ks$$

Where:

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, than 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 erros.

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

Where:

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

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. Statisitcal analysis of the data must be completed within 90 days of receiving laboratory data.

3.1 Stastically 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 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

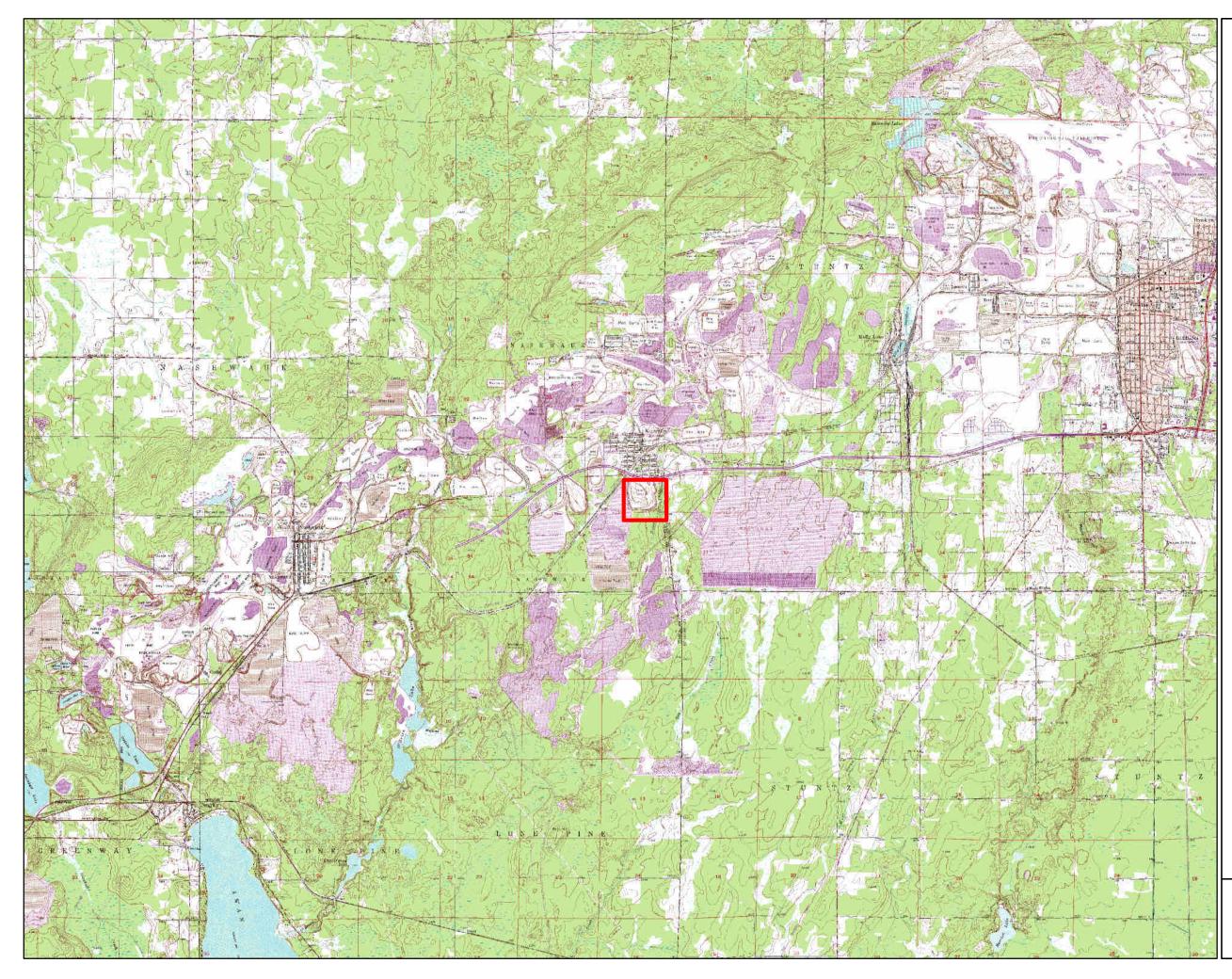
Assessment monitoring may cease and detection monitoring be re-initiated when all Appendix III and monitored Appendix IV parameters are below background (upgradient well) concentrations.

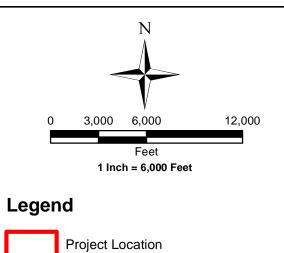
5.0 Updating Background Data

Background datasets should be updated every 2 years assuming that a SSI has not occurred. A Student t-test (α =0.01, parametric) or Mann-Whitney (α = 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 statiscically 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.

TABLE 1 Appendix III Parameters					
Parameter	MCL				
Boron	NA				
Calcium	NA				
Chloride	NA				
Fluoride	4.0 mg/L				
pН	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				





Notes:

-Background image has been provided by MNGEO Web Services

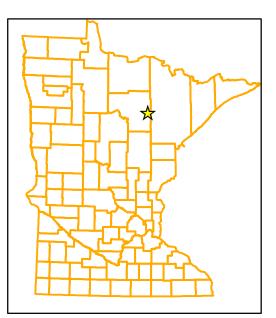


Figure 1 Site Location Map

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



Date Drawn :	
October 4, 2017	7
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				
рН	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).



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 12018 October Detection Monitoring Event Results

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.

John 1-2-19

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



Pace Analytical Services, LLC 315 Chestnut Street Virginia, MN 55792 (218) 742-1042

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,

Canin frem

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

Enclosures

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





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



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



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
		2	002	Ŭ	



ANALYTICAL RESULTS

Project: 6385CC General Waste

Pace Project No.: 12117329

Sample: MW3R	Lab ID: 12	117329001	Collected:	10/11/1	8 13:35	Received: 10	/12/18 12:30	Matrix: Water	
Parameters	Results	Units	Report	Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.8 MET ICPMS	Analytical Me	thod: EPA 20	0.8 Prepara	tion Met	hod: EP	A 200.8			
Boron Calcium	103 532	ug/L mg/L		40.0 1.0	1 10	10/15/18 14:49 10/15/18 14:49			
2540C Total Dissolved Solids	Analytical Me	ethod: SM 254	IOC (1997)						
Total Dissolved Solids	2850	mg/L		20.0	1		10/16/18 19:03	3	
4500H+ pH, Electrometric	Analytical Me	ethod: SM 450)0-H+B						
oH at 25 Degrees C	7.2	Std. Units		0.10	1		10/12/18 15:28	3	H6
300.0 IC Anions 28 Days	Analytical Me	ethod: EPA 30	0.0						
Chloride	2.0	mg/L		1.0	1		10/13/18 10:17		
Fluoride Sulfate	ND 1550	mg/L mg/L		0.10 28.0	1 14		10/13/18 10:17 10/13/18 16:42		
				2010					
Sample: MW7	Lab ID: 12	117329002	Collected:	10/11/1	8 09:50	Received: 10	/12/18 12:30	Matrix: Water	
Parameters	Results	Units	Report	Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.8 MET ICPMS	Analytical Me	ethod: EPA 20	0.8 Prepara	tion Met	hod: EP	A 200.8			
Boron Calcium	70.8 400	ug/L mg/L		40.0 1.0	1 10	10/15/18 14:49 10/15/18 14:49			
2540C Total Dissolved Solids	Analytical Me	ethod: SM 254	IOC (1997)						
Total Dissolved Solids	1600	mg/L		20.0	1		10/16/18 19:02	2	
4500H+ pH, Electrometric	Analytical Me	thod: SM 450)0-H+B						
oH at 25 Degrees C	7.2	Std. Units		0.10	1		10/12/18 15:31		H6
300.0 IC Anions 28 Days	Analytical Me	ethod: EPA 30	0.0						
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		
Sulfate	695	mg/L		14.0	7		10/13/18 16:59	14808-79-8	
Sample: MW8	Lab ID: 12	117329003	Collected:	10/11/1	8 16:15	Received: 10	/12/18 12:30	Matrix: Water	
Parameters	Results	Units	Report	Limit	DF	Prepared	Analyzed	CAS No.	Qua
200.8 MET ICPMS	Analytical Me	ethod: EPA 20	0.8 Prepara	tion Met	hod: EP	A 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			
2540C Total Dissolved Solids	Analytical Me	ethod: SM 254	IOC (1997)						

REPORT OF LABORATORY ANALYSIS



ANALYTICAL RESULTS

Project: 6385CC General Waste

Pace Project No.: 12117329

Sample: MW8	Lab ID: 12	17329003	Collected: 10/11/	18 16:15	Received: 10)/12/18 12:30 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-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 Me	thod: EPA 30	0.0					
Chloride	1.4	mg/L	1.0	1		10/13/18 10:50	16887-00-6	
Fluoride Sulfate	ND 589	mg/L	0.10	1 6		10/13/18 10:50 10/13/18 17:15		
Sunate	569	mg/L	12.0	0		10/13/16 17.13	14000-79-0	
Sample: MW9	Lab ID: 12	17329004	Collected: 10/11/	18 16:56	Received: 10)/12/18 12:30 M	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS	Analytical Me	thod: EPA 20	0.8 Preparation Me	thod: EP	PA 200.8			
Boron	ND	ug/L	40.0	1		10/16/18 12:56		
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 Me	thod: SM 254	OC (1997)					
Total Dissolved Solids	1100	mg/L	20.0	1		10/16/18 19:04		
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	ю-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 Me	thod: EPA 30	0.0					
Chloride	8.4	mg/L	1.0	1		10/13/18 11:07		
Fluoride Sulfate	ND 460	mg/L mg/L	0.10 8.0	1 4		10/13/18 11:07 10/13/18 17:32		
Sunate	400	ing/∟	0.0	4		10/13/10 17.32	14000-79-0	
Sample: Field Duplicate	Lab ID: 12	17329005	Collected: 10/11/	18 17:00	Received: 10)/12/18 12:30 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS	Analytical Me	thod: EPA 20	0.8 Preparation Me	thod: EP	PA 200.8			
Boron	ND	ug/L	40.0	1		10/16/18 13:00		
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 Me	thod: SM 254	OC (1997)					
Total Dissolved Solids	1120	mg/L	20.0	1		10/16/18 19:04		
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	ю-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 Me	thod: EPA 30	0.0					
Chloride	8.4	mg/L	1.0	1		10/13/18 11:24		
Fluoride	ND	mg/L	0.10	1		10/13/18 11:24	16984-48-8	

REPORT OF LABORATORY ANALYSIS



ANALYTICAL RESULTS

Project: 6385CC General Waste

Pace Project No.: 12117329

Sample: Field Duplicate	Lab ID: 121	17329005	Collected: 10/1	1/18 17:00	Received: 10	0/12/18 12:30	Matrix: Water	
Parameters	Results	Units	Report Limi	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 30	0.0					
Sulfate	461	mg/L	8	04		10/13/18 17:49	9 14808-79-8	
Sample: Field Blank	Lab ID: 121	17329006	Collected: 10/1	1/18 16:35	5 Received: 10	0/12/18 12:30	Matrix: Water	
Parameters	Results	Units	Report Limi	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS	Analytical Met	thod: EPA 20	0.8 Preparation N	lethod: El	PA 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	0.1	0 1	10/15/18 14:49	10/16/18 12:10) 7440-70-2	
2540C Total Dissolved Solids	Analytical Met	thod: SM 254	40C (1997)					
Total Dissolved Solids	ND	mg/L	10	0 1		10/16/18 19:06	6	
4500H+ pH, Electrometric	Analytical Met	thod: SM 450)0-H+B					
pH at 25 Degrees C	6.1	Std. Units	0.1	0 1		10/12/18 15:47	7	H6
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 30	0.0					
Chloride	ND	mg/L	1.	0 1		10/13/18 11:41	16887-00-6	
Fluoride	ND	mg/L	0.1			10/13/18 11:41		
Sulfate	ND	mg/L	2.	0 1		10/13/18 11:41	14808-79-8	



Project: Pace Project N		C General Wa	iste										
QC Batch:	154			Analys	sis Method:	F	PA 200.8						
QC Batch Meth	-	200.8			sis Descript		0.8 MET						
Associated Lab			1, 12117329002,		•			40447000	006				
Associated Lat	o Samples.	1211732900	1, 12117329002,	12117329	003, 12117	329004, 12	117329005	, 12117529	000				
METHOD BLAI	NK: 61108	4		Ν	Matrix: Wat	ter							
Associated Lab	o Samples:	1211732900	1, 12117329002,	12117329	003, 12117	329004, 12	117329005	, 12117329	006				
				Blank	K R	eporting							
F	Parameter		Units	Resul	lt	Limit	Analyz	ed	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: 6	11085										
				Spike	LCS	;	LCS	% Rec					
F	Parameter		Units	Conc.	Resu	lt	% Rec	Limits	Qı	alifiers			
Boron			ug/L	250)	248	99	85	-115				
Calcium			mg/L	25	5	25.1	100	85	-115				
MATRIX SPIKE	E & MATRIX	SPIKE DUPLI	CATE: 611086	6		611087							
				MS	MSD								
			12117352001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Para	meter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Boron		ug/L	48.8	250	250	295	292	99	97	70-130	1	-	
Calcium		mg/L	48700 ug/L	25	25	75.3	75.8	106	109	70-130	1	20	
MATRIX SPIKE	E & MATRIX	SPIKE DUPLI	CATE: 611088	3		611089							
				MS	MSD								
			1011700000	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Para	imeter	Units	12117329002 Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Para	imeter	Units ug/L		•	•		Result 305	% Rec 90	% Rec 94	Limits 70-130	RPD 3		Qual

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



Project: 6385CC G Pace Project No.: 12117329	General Waste						
QC Batch: 154544		Analysis Me	thod: S	M 2540C (199	17)		
QC Batch Method: SM 2540)C (1997)	Analysis De			solved Solids		
	2117329001, 12117329002	-	•				
METHOD BLANK: 611542		Matrix	: Water				
Associated Lab Samples: 12	2117329001, 12117329002	, 12117329003, [.] Blank	12117329004, 12 Reporting	2117329005, 1	2117329006		
Parameter	Units	Result	Limit	Analyzed	d Qualif	iers	
Total Dissolved Solids	mg/L	ND	10.0	10/16/18 18	3:58		
METHOD BLANK: 611546		Matrix	: Water				
Associated Lab Samples: 12	2117329001, 12117329002	, 12117329003, [,] Blank	12117329004, 12 Reporting	2117329005, 1	2117329006		
Parameter	Units	Result	Limit	Analyzed	d Qualif	iers	
Total Dissolved Solids	mg/L	ND	10.0	10/16/18 19	0:01		
LABORATORY CONTROL SAM	MPLE: 611543						
		Spike	LCS	LCS	% Rec		
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers	
Total Dissolved Solids	mg/L	255	228	89	80-120		
SAMPLE DUPLICATE: 61154	14						
		12117223003	Dup		Max		
Parameter	Units	Result	Result	RPD	RPD	Qualifiers	
Total Dissolved Solids	mg/L	498	476		5	5	
SAMPLE DUPLICATE: 61154	45						
SAMPLE DUPLICATE: 61154 Parameter	15 Units	12117081009 Result	Dup Result	RPD	Max RPD	Qualifiers	

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



Project:	6385CC General	Waste						
Pace Project No .:	12117329							
QC Batch:	154302		Analysis M	ethod:	SM 4500-H+B			
QC Batch Method:	SM 4500-H+B		Analysis D	escription:	4500H+B pH			
Associated Lab San	nples: 12117329	001, 12117329002	2, 12117329003,	12117329004	12117329005, 2	12117329006		
LABORATORY COM	NTROL SAMPLE:	610709						
			Spike	LCS	LCS	% Rec		
Paran	neter	Units	Conc.	Result	% Rec	Limits	Qualifiers	
pH at 25 Degrees C	;	Std. Units	7	7.1	101	98-102	H6	
SAMPLE DUPLICA	TE: 610710							
			12117317001	Dup		Max		
Paran	neter	Units	Result	Result	RPD	RPD	Qualifiers	
pH at 25 Degrees C	:	Std. Units	8.4	4	3.5	1	10 H6	

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



QC Batch: 154317	7		Analys	is Method:	E	PA 300.0						
QC Batch Method: EPA 30	0.0		Analys	is Descriptio	on: 30	00.0 IC Anio	ns					
Associated Lab Samples:	1211732900	1, 12117329002,	121173290	03, 121173	829004, 12	2117329005	, 12117329	006				
METHOD BLANK: 610736			N	latrix: Wate	er							
Associated Lab Samples:	1211732900	1, 12117329002,	121173290	03, 121173	829004, 12	2117329005	, 12117329	006				
			Blank		porting							
Parameter		Units	Result	t	Limit	Analyz	ed	Qualifiers				
Chloride		mg/L		ND	1.0	10/13/18	02:23					
Fluoride		mg/L		ND	0.10							
Sulfate		mg/L		ND	2.0	10/13/18	02:23					
		10737										
ABORATORY CONTROL SA	AIVIPIE' N					LCS	% Rec					
LABORATORY CONTROL SA	AIVIPLE: 6	10/3/	Spike	LCS		LUS	70 Keu					
LABORATORY CONTROL SA Parameter	AMPLE: 6	Units	Spike Conc.	LCS Result	t	% Rec	Limits		ualifiers			
Parameter	AMPLE: 0	Units	Conc.	Result		% Rec	Limits	Qı	ualifiers			
Parameter	AMPLE: 6	Units mg/L	Conc. 50	Result	51.0	% Rec 102	Limits 90	-110 Qu	ualifiers			
Parameter Chloride Fluoride		Units	Conc.	Result		% Rec	Limits 90 90	Qı	Jalifiers			
Parameter Chloride Fluoride Sulfate		Units mg/L mg/L mg/L	Conc. 50 5 50	Result	51.0 5.2	% Rec 102 104	Limits 90 90	Qu -110 -110	ualifiers			
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SF	PIKE DUPLI	Units mg/L mg/L mg/L CATE: 610734 12117286001	Conc. 50 5 50 3 MS Spike	Result MSD Spike	51.0 5.2 50.7 610739 MS	% Rec 102 104 101 MSD	Limits 90 90 90	Qu -110 -110 -110 MSD	% Rec		Max	
Parameter Chloride Fluoride Sulfate		Units mg/L mg/L mg/L CATE: 610734	Conc. 50 5 50 8 MS	Result	51.0 5.2 50.7 610739	% Rec 102 104 101	Limits 90 90 90	Qu -110 -110 -110		RPD		Qua
Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SF Parameter Chloride	PIKE DUPLI	Units mg/L mg/L mg/L CATE: 610734 12117286001 Result 60.6	Conc. 50 5 50 3 MS Spike Conc. 50	MSD Spike Conc. 50	51.0 5.2 50.7 610739 MS Result 113	% Rec 102 104 101 MSD	Limits 90 90 90	Qu -110 -110 -110 MSD	% Rec	RPD 0	RPD 20	Qua
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SP Parameter Chloride Fluoride	PIKE DUPLI Units mg/L mg/L	Units mg/L mg/L mg/L CATE: 610734 12117286001 Result 60.6 0.14	Conc. 50 5 50 3 MS Spike Conc. 50 5	Result MSD Spike Conc. 50 5	51.0 5.2 50.7 610739 MS Result 113 5.6	% Rec 102 104 101 MSD Result 113 5.6	Limits 90 90 90 90 90 90 90 90 90 90 90 90 90	Qu -110 -110 -110 MSD % Rec 106 109	% Rec Limits 90-110 90-110	0 1	RPD 20 20	Qua
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SF Parameter Chloride Fluoride	PIKE DUPLI	Units mg/L mg/L mg/L CATE: 610734 12117286001 Result 60.6	Conc. 50 5 50 3 MS Spike Conc. 50	MSD Spike Conc. 50	51.0 5.2 50.7 610739 MS Result 113	% Rec 102 104 101 MSD Result 113	Limits 90 90 90 90 90 90 90	Qu -110 -110 -110 MSD % Rec 106	% Rec Limits 90-110	0	RPD 20	Qua
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SF Parameter Chloride Fluoride Sulfate	PIKE DUPLI Units mg/L mg/L mg/L	Units mg/L mg/L mg/L CATE: 610734 12117286001 Result 60.6 0.14 25.6	Conc. 50 50 8 MS Spike Conc. 50 50 50	Result MSD Spike Conc. 50 5 50	51.0 5.2 50.7 610739 MS Result 113 5.6	% Rec 102 104 101 MSD Result 113 5.6	Limits 90 90 90 90 90 90 90 90 90 90 90 90 90	Qu -110 -110 -110 MSD % Rec 106 109	% Rec Limits 90-110 90-110	0 1	RPD 20 20	Qua
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SF Parameter Chloride	PIKE DUPLI Units mg/L mg/L mg/L	Units mg/L mg/L mg/L CATE: 610734 12117286001 Result 60.6 0.14 25.6 CATE: 610744	Conc. 50 50 8 MS Spike Conc. 50 50 50	Result MSD Spike Conc. 50 5 50	51.0 5.2 50.7 610739 MS Result 113 5.6 79.7	% Rec 102 104 101 MSD Result 113 5.6 80.0	Limits 90 90 90 90 90 90 90 90 90 90 90 90 90	Qu -110 -110 -110 MSD % Rec 106 109 109	% Rec Limits 90-110 90-110 90-110	0 1	RPD 20 20	Qua
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SP Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SP	PIKE DUPLI Units mg/L mg/L PIKE DUPLI	Units mg/L mg/L mg/L CATE: 610734 12117286001 Result 60.6 0.14 25.6 CATE: 610740 12117305004	Conc. 50 55 MS Spike Conc. 50 550 MS Spike	Result MSD Spike Conc. 50 5 50 MSD Spike	51.0 5.2 50.7 610739 MS Result 113 5.6 79.7 610741 MS	% Rec 102 104 101 MSD Result 113 5.6 80.0	Limits 90 90 90 90 90 90 90 90 90 90 90 90 90	Q 110 110 110 110 	% Rec Limits 90-110 90-110 90-110 % Rec	0 1 0	RPD 20 20 20	
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SF Parameter Chloride Fluoride Sulfate	PIKE DUPLI Units mg/L mg/L mg/L	Units mg/L mg/L mg/L CATE: 610734 12117286001 Result 60.6 0.14 25.6 CATE: 610744	Conc. 50 50 MS Spike Conc. 50 50 50 MS	Result MSD Spike Conc. 50 5 50 MSD	51.0 5.2 50.7 610739 MS Result 113 5.6 79.7 610741	% Rec 102 104 101 MSD Result 113 5.6 80.0	Limits 90 90 90 90 90 90 90 90 90 90 90 90 90	Qu -110 -110 -110 MSD % Rec 106 109 109	% Rec Limits 90-110 90-110 90-110	0 1	RPD 20 20 20	
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SF Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SF Parameter Chloride Chloride	PIKE DUPLI Units mg/L mg/L PIKE DUPLI Units mg/L	Units mg/L mg/L mg/L CATE: 610734 12117286001 Result 60.6 0.14 25.6 CATE: 610740 12117305004 Result 12117305004	Conc. 50 5 50 3 MS Spike Conc. 50 5 50 MS Spike Conc. 50 5 50	Result MSD Spike Conc. 50 5 50 Spike Conc. 50	51.0 5.2 50.7 610739 MS Result 113 5.6 79.7 610741 MS Result 68.3	% Rec 102 104 101 MSD Result 113 5.6 80.0 MSD Result 68.7	Limits 90 90 90 90 90 90 90 90 90 90 90 90 90	Qu -110 -110 -110 -110 MSD % Rec 106 109 109 09 % Rec 108	% Rec Limits 90-110 90-110 90-110 % Rec Limits 90-110	0 1 0 <u>RPD</u> 1	RPD 20 20 20 20 Max RPD 20	Qua
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SF Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX SF Parameter Parameter	PIKE DUPLI Units mg/L mg/L PIKE DUPLI Units	Units mg/L mg/L mg/L CATE: 610734 12117286001 Result 60.6 0.14 25.6 CATE: 610740 12117305004 Result	Conc. 50 50 8 MS Spike Conc. 50 50 50 MS Spike Conc.	MSD Spike Conc. 50 5 50 Spike Conc.	51.0 5.2 50.7 610739 MS Result 113 5.6 79.7 610741 MS Result	% Rec 102 104 101 MSD Result 113 5.6 80.0 MSD Result	Limits 90 90 90 90 90 90 90 90 90 90 90 90 90	Qu -110 -110 -110 MSD % Rec 106 109 109 109 % Rec	% Rec Limits 90-110 90-110 90-110 % Rec Limits	0 1 0 RPD	RPD 20 20 20 Max RPD	

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



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.



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		

						TIME: 1230	DATE: 10/12/18
			о ^{1.}			Cu	RECEIVED FOR LAB BY:
	TIME:				TIME:		
	DATE:	P BY:	RECEIVED FROM NTS SAMPLE LOCKUP BY:	RECEIVED FROM I	DATE		RELINQUISHED TO NTS SAMPLE LOCK-UP BY:
	TIME:				TIME: 12.30		don Anal
	DATE:			RECEIVED BY:	DATE: ICH DAL AN RECEIVED BY		RELINQUISHED BY:
Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	1 1 Boro	z	18/635 ×	10/11/18	Field Blank	Field Blank	
Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	1 1 Boro	z	× 001	10/11/13	GW WELL	Field Duplicate	
Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	- 1 Boro	z	1656 ×	10/11/18	GW WELL	6MW	
n, Calcium, Chloride, Flouride, pH, Sulfate & TDS	1 1 Boron,	z	(615 ×	10/11/18	GW WELL	MW8	
Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	1 1 Boro	z	1950 ×	10/11/18	GW WELL	MW7	
Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	1 1 Boro	z	× 5881	10/11/18	GW WELL	MW3R	
REQUIRED ANALYSIS:		ÔĽ.	TIME: LIQ.	DATE:	DESCRIPTION:	SAMPLE #	
	GENER GENEI TC	Itered	t-18		3, LLC.	SPOSAL and RECYCLING	PROJECT: GENERAL WASTE DISPOSAL and RECYCLING, LLC PROJECT NUMBER: 6385CC CCR Monitoirng
	AL CHE RAL CH DTAL MI		SW-620	PERMIT REQ.:		Indrews	SAMPLER: (Is recy
SEE ATTACHED LIST WITH METHODS	8260 (HCL) MISTRY (NO PRES) EMISTRY (H2SO4), TALS (HN03) METALS (HN03)	VBBE, RICK	ERIN CHAMBERLAIN, DENNIS SCHUBBE, RICK CRUM & SCOTT SEELEY	ERIN CHAMBER CRU	ĒQ	DEMOLITION & INDUSTRIAL LANDFILL ITASCA COUNTY, MINNESOTA	DEMOLITION (ITASCA C
SPECIAL INSTRUCTIONS:	TYPE & # CONTAINERS		10000	REPORT TO:		5#:	CLIENT NAME, ADDRESS, PHONE#:
CHAIN OF - WO# : 12117329	P CHAIN OF REQUIRED TURN-AROUND TIME: 2 Weeks from s		ET 92 741-4291	NTS 526 CHESTNUT STREET VIRGINIA, MN 55792 '41-4290 Fax: (218) 741-4291	526 CHE VIRGI1 (218) 741-4290		Environmental Science & Englineering

GENERAL WASTE CCR METHODS

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

12	Sample C		nt Name: Upon Rece	ipt Form	Document Revised: 15Mar2016 Page 1 of 1
Pace Analytical		Docum	ent No.:		Issuing Authority:
		F-VM-C-0	01-Rev.10		Pace Virginia, Minnesota Quality Office
ample Condition Upon Receipt			Project #	P	JO#: 12117329 M: CLJ Due Date: 10/26/18 CLIENT: NTS-Dennis
Courier: Fed Ex UPS			Tient		
Commercial Pace	U0ther:				
ustody Seal on Cooler/Box Present? Yes	No	Seals I	ntact?	Yes N	o Optional: Proj. Due Date: Proj. Name:
acking Material: Bubble Wrap Bubble E		оро Г	Other:		Temp Blank? Yes No
ermometer Used: 140792808	Type of			_	None Samples on ice, cooling process has beg
Cooler Temp Read °C: 1.4 Cooler Temp mp should be above freezing to 6°C Correction Fa	Corrected ° actor: 10	c: 1.	Date and	l Initials of Pe	Biological Tissue Frozen? Ves No Frozen? rson Examining Contents: BM 10/12 Comments:
Chain of Custody Present?	V Yes	No	□N/A	1.	
Chain of Custody Filled Out?	Ves	No	□N/A	2.	
Chain of Custody Relinquished?	Yes	Nc	□N/A	3.	
Sampler Name and Signature on COC?	Yes	No	□N/A	4	
Samples Arrived within Hold Time?	Yes	No	□N/A]<8 hours >8, <24 hours >24 hours
Short Hold Time Analysis (<72 hr)?	Yes	No	□n/A	6. pH	
Rush Turn Around Time Requested?	Yes	No	□N/A	7.	
Sufficient Volume?	Ves	Nc	□N/A	8.	
Correct Containers Used?	Yes	No	□N/A	9.	
-Pace Containers Used?	Yes	Nc	□N/A		
Containers Intact?	Yes	No	□N/A	10.	
Filtered Volume Received for Dissolved Tests?	Yes	No	EN/A	11. Note if s	ediment is visible in the dissolved containers.
Sample Labels Match COC?	Eves	No	□N/A	12.	
-Includes Date/Time/ID/Analysis Matrix:	NT				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	Yes	Nc	□n/A	See pH lo documen	g for results and additional preservatio tation
Headspace in Methyl Mercury Container	Yes	No	AN/A	13.	
Headspace in VOA Vials (>6mm)?	Yes	No	N/A	14.	
Trip Blank Present?	Yes	No	AN/A	15.	
Trip Blank Custody Seals Present?	Yes	No	DN/A		
Pace Trip Blank Lot # (if purchased): IENT NOTIFICATION/RESOLUTION Person Contacted: Comments/Resolution:			[Date/Time:	Field Data Required? Yes No
ECAL WAIVER ON FILE Y N		TEM	PERATU	REWAIVER	ON FILE Y N
e: Whenever there is a discrepancy affecting North Cirol d, incorrect preservative, out of temp, incorrect container		e samples,	a copy of th	Date is form will be	:10/13/18

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 CCR Monitoring	Project Number: 6385(C
Client:	peneral Waste	Project Manager: Dennis Schubble
Location:	Keewatin	Date: (yyyy-mm-dd) <u>2018-10-11</u>
Prep/Unload/Report Time:		Weather/Temp: 40°F/Overca.s
Prep Site Time:	Unload/Report Various times Total 4.5	coc#: 12117329
Arrive	Depart	
Travel Time: To	From Total 0.75	Vehicle #: + 60 35 + Miles
Summary of Tech	Total Field Time Entered to Stoneware:	
Prepped 5 went	to Gen. Waste to co,	duct the Sall
2018 001	2 well monitoring proj	
D.	arameters obtained after	stabilization at
Samples redod	5 MW-3R, MW-7, MW	$-8, \overline{2}M\omega - 9.$
For add' deta	uils see field sheets fi	eld notes, ECOC.
		Site Sketch
		Please Indicate North
Field Test Data is Estimated Pending Final La	boraton Results. *Attach <u>other documents</u> as	e defined by the Project Manager.*
Field Scientist:	Call Approved by:	Atraz
Date:	10/41/2018	Page of

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

6385 CG Gen Waste Fall CCR Monitoring 10/11/18 High 400F Overcast winds 15 mph WNW Indres 5 0632.0745 145 Prep /Eal/Load Depart NTS 0745 at Gen Waste 0830 Arrive 0950 Sample 0836 Inw7 Pump Rate 6.256pm Vol WC 5.05' TWD SWL 0853 begin pumping @ 0.25 Gpm H20 Very Turbid 1300 MW3R 1335 Sample Vol Pump Rate 6:5 6Pm JWL THE WC 11.75 2 gal 77.40 65.65 used, for stabilization of well. Purger used for 1615 Sample Juper MW8 1510 Pomp Rate 0.25 1635 FB Pomp Rate 0.5 6PM TWO WC Vol JUL 41.25 6.68 341.57 1 gal 1624 1656 Sample 1700 D-p mw91 we SWG TWD Val 7.94 1.3 10.97 18.91 Depart Gen Waste 1730 Arrive back at NTS of File. Unload / Postcheck 1815 pg hot 1

			OVERY TEST FORM						
SITE:		WASTE DISPOSAL AND RECOVE	ERY SERVICES, INC.	CALIBRA	TION:	_	NTS		
DATE:	10/11	2018		NO:					
TIME:	1300			YES:	X		MANUAL:		
SAMPLE I	DESIG.:	MW-3R (Unique Well # 79723	9)	TIME:	0645		AUTO		
CONDITIC		F Mostly Cloudy wine	In INAVILIE al						
PERSON		stel Andrews	ds WNW 15mpt		PH:	COND:	NTU: D.O.;		
PUMP RA		6.5 GPM		-					
WELL DE		,40		1					
STATIC LI		5,65		FIELD DU]		
WELL VO		2 24			PLICATE:	No]		
STATIC LI		<u> </u>							
AFTER:	65	6.65							
RECOVER	τ <u>γ</u>	PURGE METHOD:							
METHOD:		Super purger]						
STABILIZA									
METHOD:									
APPEARA	NCE:	clear							
	pН	Specific Conductance	Turbidity	Dissolved	TEMP.	4	VOL. REMOVED:		
	S∪	5% +/- umhos/cm		Oxygen	Centigrade	m∨	Gallens		
TIME			5%+/->10	(mg/L)	(+/-0.1)	ORP			
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	3,32	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.:									
COMMEN	TS:		I		L				
COMMEN	TS:_Key #3	212. Slow recharge rate.	10 Begin D.	umpin	ey C C	2.5G1	OM		
		1335 Sem	ptr 1		/	-			

STABILIZATION/RECOVERY TEST FORM

12 308 -

	STABILIZATION/RE	COVERY TEST FORM						
SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC.				TION:	_	•	NTS	
DATE: 10/11/2018			NO:]			
TIME: 0836			YES:	X		Manual.:		
SAMPLE DESIG.: MW-7 (Unique Well #817979) WEATHER			TIME:	0645		AUTO		
CONDITIONS: 2	8°F/Light Snow/	wind WNW 15m						
		wind wind 15m			COND	NITL I.		
PUMP RATE (GPM): 0,25 GPM			-1		COND:	NTU:	D.O.:	
WELL DEPTH: 2 (2.7			-1	LX	<u> </u>	<u> </u>		
2 5						٦		
STATIC LEVEL: 21.65 WELL VOL. (GAL.) 0.92				PLICATE:	No]		
07 21				EXCEPTIONS TO PROTOCOL: NONE: FLOW CELL USED:				
RECOVERY PURGE METHOD:				L	JELOW CE	LL USED:		
METHOD: What pump						·		
STABILIZATION	- when - pomp							
METHOD: X	ר ^י ר							
	0 00-21 / 1	1	_L					
APPEARANCE:	Reddi 31 Clou Specific Conductance			****				
SU	5% +/- umhos/cm	Turbidity NTU	Dissolved				MOVED:	
TIME		5%+/->10	Oxygen (mg/L)	Centigrade (+/-0.1)	ORP	Gat	UT S	
	1107			(+/-0.1)				
	1102	637.0	0.14	1.34	485			
0901 6.19	1096	175	0.56	6.78	380	2		
0 905 6,24	2098	1939	0.64	519	369	3		
0909 6.24	2108	1421	0:11	5.14	27.7	- É		
0913 6.24	2107	1647	0.80	5 21	366			
6917 6.25	2111	1201	0.58	5.28	357			
0921 6.25	2110	1918	0.93	5.72	353			
6925 6.26	2114	794	0.97	5.41	351	8		
2 INTTAL: 6.27	2114	554	0,99	5.44	346	9		
2ND->		1		0,11	510	!		
3 RECHAR. 6,27	2118	419	1.01	5.48	346	10	l l	
- 3 89-		+	µ			10		
7 DECH: 6,28	1 2117	22.8.1	1.03	5.42	344	11		
	0410. Good Recharge.							
		· · · · · · · · · · · · · · · · · · ·	02	50				
0853	Real Asmoind CO	25 GPM			mole			
					1			
Well		shout stabi	lizatio		able.	to alt		
wait			eral f	imes,		<u> </u>		
XNEE	ts new lock	/ /						
4 6.28	1436	172.5	1.05	5.51	346	, 12.	¥ leane	
,		•	<i>(· · ·</i>	-	-		sense	
+5 6,29	Mar	~~~~	1 2 -	5 41	340	13		
$\epsilon r = r$	1429	179	[,0]	5.44	JAC)		
9 6.29	1478							
6.4	1428	321	1 677	5.47	27	9 14	- -	
			1.01	- 11	23	1 1		

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	STABILIZATION/RECOVERY TEST FORM							
	SITE:	GENERAL	WASTE DISPOSAL AND RECO	VERY SERVICES, INC.	CALIBRA	TION:	_	NTS
	DATE:	10/11/2	218		NO:			
					YES:	X	1	
	SAMPLE D		MW-8 (Unique Well #817,9	TIME:	0645]	AUTO	
	CONDITIC		*F Overcast w		EDC.			
	PERSONN		- journasy a	1103 11/0013		PH:	COND:	NTŲ: D.O.:
	PUMP RA		0.25 6PM	·····	-			
	WELL DEF				-			
	STATIC LE	VEL 2	4.57		FIELD DU		NO	
	WELL VOL		laal			FLICATE.		
	STATIC LE				EXCEPTIC	ONS TO PR	OTOCOL:	
	AFTER:	35	5,15		NONE:		FLOW CEI	LL USED:
	RECOVER		PURGE METHOD:		1		4	L
	METHOD:		Whale Pin	P				
	STABILIZA		· · · · · · · · · · · · · · · · · · ·					
	METHOD:	X						
	APPEARA	NCE:	stightly clou	di				
İ	· · · ·	pН	Specific Conductance	1 Turbidity	Dissolved	TEMP.	-E±	VOL. REMOVED:
			5% +/- umhos/c		Oxygen	Centigrade	mV	Gallons
	TIME			5%+/->10	(mg/L)	(+/-0.1)	ORP	
	1534	6,29	1833	1735	0.38	5.73	264	1
	1538	6.30	1836	834	0,30	5.90	251	z
	1542	6.32	1831	540	0.19	5.86	247	3
	1546	6.32	1821	237.5	0.15	5.80	243	<u> </u>
	15-50	6.32	1812	176.2	0.11	5.71	239	5
ĺ	1544	6.33	1808	92.3	0.10	5.66	237	6
ļ	1558	6.33	1.805	70.8	0.08	5.60	235	~7
11-	1602	6.33	1800	47.5	0.09	5.64	233	8
	INITIAL:	6.33	1803	40.1	0.08	5.70	231	9
1 13	2ND RECHAR.	6.34	1798	39.8	0.06	5.74	230	61
	3RD RECH.:	6.34	1793	39.0	0.06	5.80	229	i/
		TS: Kev #04	410. Good Recharge.		1	· · · · · · · · · · · · · · · · · · ·		
ľ								
		15 30	Begin pumping	10 0.25 61	R			
					•			
ŀ			1615 Sa	mple				
┝				/				
┝								
L								

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STABILIZATION/RECOVERY TEST FOR	и							
SITE: GENERAL WASTE DISPOSAL AND RECOVERY SERVICES, INC	CALIBRATION: NTS							
DATE: 10/1/ZOLF	NO:							
TIME: 1624	YES: X MANUAL:							
SAMPLE DESIG.: MW-9 (Unique Well #817980)	TIME: 0645 AUTO							
WEATHER								
CONDITIONS: 32°F/Quercast/winds WNW 15	PARAMETERS:							
PERSONNEL over Andrews	PH: COND: NTU: D.O.:							
PUMP RATE (GPM): B+5 GDM								
WELL DEPTH: 18,91								
STATIC LEVEL: 10.97'	FIELD DUPLICATE: Yes							
WELL VOL. (GAL.) 1.3								
STATIC LEVEL	EXCEPTIONS TO PROTOCOL:							
AFTER: 10.97	NONE: FLOW CELL USED: X							
RECOVERY PURGE METHOD:								
METHOD: Whale pump								
STABILIZATION								
METHOD								
APPEARANCE: Clear								
pH Specific Conductance Turbidity	Dissolved TEMP. Est VOL. REMOVED:							
SU 5% +/- umhos/cm NTU	Oxygen Centigrade mV - Cellons							
TIME 5%+/->10	(mg/L) (+/-0.1) ORP							
1643 6.55 1538 10.1	0.10 7.61 8126 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							
1655 6.52 1526 2.8	0.04 7.61 126 5							
2ND								
RECHAR.								
3RD								
RECH.:								
COMMENTS: Key #0410. Good Recharge.	· · · · · · · · · · · · · · · · · · ·							
1140 2								
1640 Bryin pemping well @	0.5 GPM							
1656 sample								
1636 sample								
	· · · · · · · · · · · · · · · · · · ·							

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pg 6 st 11

Environmental Science & Engineering	NTS F	FIELD INSTRUMENT CALIBRATIC	IN LOG		
Instrument used:	MS5				
Instrument I.D.	46				
Required Parameters:	pH2(SU), Spec. Cond. (µS+0	cm), Diss. Øxyg. (100% Saturation	Turbidity (NTU) ORP (mV)		
Date / Initials:	2018-10-	II CA			
	Standard	Before Field Event	After Field Event		
	4.0	4.0	3.82		
	7.0	7.0	6.97		
<u>pH (SU)</u>	10.0	10.0	9.9		
		Temp. (°C)= 17.68	Temp. (°C)= 18,92		
<u>Specific Conductance (µS / cm)</u>	1000 Ø.		0.0/1000 Temp. (°C)= (8.50		
<u>ORP (mV)</u>	43024.00	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</u>	.O. to 100% Saturation (Yes / No)	28.22 in Hg	-		
	Time	0635	1820		
	Initials	C PA	1820 CA		

NOTES:

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Daily Tailgate Safety

Project: <u>6385CC</u>	63850	Date: 10/11/201	8
Work Site Hazard Assess	sment Worksheet	,	
🗖 PPE Required (List): High Vi	5	Level*
🗖 Weather Condi			
Vehicular Traff	c	Communications	
🗖 Noise		Equipment/Tools	
Housekeeping		Other Site Hazards**	
 I have examined the wor I have examined the wor taken 		no hazards ds found are listed below with c	orrective action
Hazards Identified/Safe			
<u>Olips trips</u>	1		
Preservatives	h Sample	contechers	
Corrective Actions Taker Walk cartea wear nitrile	1		
Participants in Safety Di	scussion:		
Print Name 1. orey 2.	drews (Asignature acef med	
Signature of Site Superv	isor/Examiner:	Date:	10/11/2018
*Level D, C, B or A	(

*Level D, C, B or A

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

02/20/2015 13 8 . 6 11

MP
Environmental Science & Engineering

Environmental Science & Engineering
Northeast Technical Services, Inc.
Daily Vehicle Inspection
Driver's Name: (Andrews Date: 10/30/2018Time: 0735
Odometer Reading: Vehicle #: <u>60</u>
Place a $$ (check) next to each item inspected
Driver/Passenger_Side
External Side Mirrors (Right and Left):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:
License plates (Tags Current): Exterior damage to body: <u>703</u> Turn signals:
COMMENTS:
General/Safety
Insurance Card/Operator's Manual:VVheel chocks: First Aid Kit: Strobe light: Buggy whip (If needed)
COMMENTS:
Deficiencies Corrected:
Signature: 0000 Date: 10/11/2008
O
New form 6/11/15

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pg 9sfil

PAGE 1 OF 1 CHAIN OF CUSTODY RECORD REQUIRED TURN-AROUND TIME: 2 Weeks from submitted date	иетел (Huo3) Mistry (No Pres) Mistry (No Pres) Tals (Huo3) Tals (Huo3)	HL ME. IL CHE CHEN	V ВАЗ ИЕКА ИЕКА ТОТ	IBĐ	N 1 1 1 Boron, Calcium, Chloride, PH, Sulfate & TDS	N 1 1 Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	N 1 1 Borron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	N 1 1 Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	N 1 1 Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	N 1 1 Boron, Calcium, Chloride, Flouride, pH, Sulfate & TDS	DATE:	TIME:	DATE: TIME-		
NTS 526 CHESTNUT STREET VIRGINIA, MN 55792 41-4290 Fax: (218) 741-4291	REPORT TO: CONTRACTION DENNIS SCHUBBE, RICK CRUM & SCOTT SEELEY CRUM & SCOTT SEELEY	PERMIT REQ.: SW-620	Oct-18	COLLECTION: MATRIX DATE: COLLECTION: MATRIX	50	(0/11/18 (120 ×	10/18/615 ×	(c/11/18 16 56 ×	10/11/18 1700 ×	10/11/18/635 ×	ŘECEIVED BY:		KECEIVED FROM NTS SAMPLE LOCKUP BY:	TEMP.AT ARRIVAL:	
526 CHE VIRGIN (218) 741-4290		rew5	nd RECYCLING, LLC.	CCR Monitoirng	MW3R GW WELL	MW7 GW WELL	MW8 GW WELL	MW9 GW WELL	Field Duplicate GW WELL	Field Blank Field Blank	DATE: (CA 20) CATE: ON	TIME: / 2	UALE: TIME:		
Environmental Science	CLIENT IN ANNEL ALLARGES, FINGURES GENERAL WASTE and RECYLING LLC DEMOLITION & INDUSTRIAL LANDFILL ITASCA COUNTY, MINNESOTA	SAMPLER CO Reg Paulo	PROJECT: GENERAL WASTE DISPOSAL and RECYCLING, LLC.	PROJECT NUMBER: 6385CC CCR	E				Field	- Line -	RELINQUISHED BY:	LAND INCLED TO NEED TO		RECEIVED FOR LAB BY	DATE DATE TIME

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GENERAL WASTE CCR METHODS

bodt9M A93	SYMBOL	ЯЭТЭМАЯА Ч
8.002	8	Boron
2.002	۶J	muiɔlɛϽ
300.0	Chloride	Chloride
0.00£	Flouride	Fluoride
8+H 0057 MS	Hq	Hq
300.0	[†] OS	ətəflu2
2W 2540C	SQT	SQT

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 stasistical 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

<u>/0-13-17</u> Date



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	CKGROUND MONITORING PARAMETERS	
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	ALYZING FOR TRENDS	
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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 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 Inscrease (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-paremetric 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:

$$UPL = x + ks$$

Where:

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, than 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 erros.

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

Where:

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

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. Statisitcal analysis of the data must be completed within 90 days of receiving laboratory data.

3.1 Stastically 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 Pracitical 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 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 (α =0.01, parametric) or Mann-Whitney (α = 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 statiscically 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				