2019 Annual Groundwater Monitoring and Corrective Action Report

Lansing Generating Station
Lansing, Iowa

Prepared for:

Alliant Energy

SCS ENGINEERS

25219070.00 | January 31, 2020

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

Table of Contents

Section Page

Tables

Figures

Appendices

I:\25219070.00\Deliverables\2019 Annual Groundwater Monitoring and Corrective Action Report\200131_2019 Annual CCR GW Report_LAN.docx

[This page left blank intentionally]

1.0 INTRODUCTION

This 2019 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the Coal Combustion Residuals (CCR) Rule [40 CFR 257.50-107]. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.90(e). The applicable sections of the Rule are provided below in *italics*, followed by applicable information relative to the 2019 Annual Groundwater Monitoring and Corrective Action Report for the CCR Units.

This report covers the period of groundwater monitoring from January 1, 2019, through December 31, 2019.

The groundwater monitoring system at the Lansing Generating Station (LAN) is a multiunit system that includes the following two existing CCR units:

- LAN Landfill
- LAN Upper Ash Pond

The groundwater system is designed to detect monitored constituents at the waste boundary of the facility as required by 40 CFR 257.91(d). The groundwater monitoring system currently consists of 1 upgradient monitoring well, 3 downgradient monitoring wells at the waste boundary, and 6 additional downgradient wells.

2.0 § 257.90(E) ANNUAL REPORT REQUIREMENTS

Annual groundwater monitoring and corrective action report. *For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1). At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:*

2.1 §257.90(E)(1) SITE MAP

A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

A map of the site location is provided on **Figure 1.** A map with an aerial image showing the CCR units and all background (or upgradient) and downgradient monitoring wells with identification numbers for the groundwater monitoring program is provided as **Figure 2**.

2.2 §257.90(E)(2) MONITORING SYSTEM CHANGES

Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

Six new monitoring wells were installed in 2019 to characterize site conditions in accordance with § 257.95(g)(1). MW-304, MW-305, and MW-306, were installed on May 15 and 16, 2019. The monitoring well boring logs and well construction forms were completed for the operating record on September 20, 2019. MW-302A, MW-304A, and MW-306A were installed on December 16 through December 19, 2019. Well documentation for the December well installations is in preparation and will be placed in the operating record in 2020.

2.3 §257.90(E)(3) SUMMARY OF SAMPLING EVENTS

In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

Three groundwater sampling events were completed in 2019. The first round of semiannual assessment monitoring was completed in April 2019, and the second round was completed in October 2019. The initial samples from the three new wells installed in May 2019 were collected in June 2019.

Groundwater samples collected during the April, June, and October 2019 sampling events were analyzed for both Appendix III and Appendix IV constituents. A summary including the number of groundwater samples that were collected for analysis for each background and downgradient well and the dates the samples were collected is included in Table 1. The results of the field and laboratory analyses are provided in the laboratory reports in Appendix A.

2.4 § 257.90(E)(4) MONITORING TRANSITION NARRATIVE

A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels);

An Assessment of Corrective Measures (ACM) was initiated for the LAN CCR units in April 2019 and completed in September 2019. The selection of remedy is in progress. The ACM was initiated in response to the detection of cobalt at a statistically significant level exceeding the Groundwater Protection Standard (GPS). Assessment monitoring continued during the ACM and will continue during the selection of remedy.

2.5 § 257.90(E)(5) OTHER REQUIREMENTS

Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

Additional potentially applicable requirements for the annual report, and the location of the requirement within the Rule, are provided in the following sections. For each cited section of the Rule, the portion referencing the annual report requirement is provided below in italics, followed by applicable information relative to the 2019 Annual Groundwater Monitoring and Corrective Action Report for the CCR units.

2.5.1 § 257.90(e) General Requirements

For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year.

Status of Groundwater Monitoring and Corrective Action Program. The groundwater monitoring and corrective action program is currently in the selection of remedy process, with assessment monitoring continuing.

Summary of Key Actions Completed.

- Statistical evaluation for the initial Assessment Monitoring samples collected in April, August, and October 2018, completed January 14, 2019.
- Statistical evaluation for the April 2019 monitoring event completed July 15, 2019.
- Initiation of the ACM on April 15, 2019.
- Two semiannual assessment monitoring events (April and October 2019).
- Installation of six additional groundwater monitoring wells in May and December 2019 to characterize site conditions in accordance with § 257.95(g)(1).
- Initial monitoring of wells installed in May, completed June 20, 2019.
- Preparation of the ACM report, completed September 12, 2019.

Description of Any Problems Encountered.

- No problems were encountered during 2019.

Discussion of Actions to Resolve the Problems. Not applicable.

Projection of Key Activities for the Upcoming Year (2020):

- Statistical evaluation and determination of any statistically significant levels exceeding the GPS for the October 2019 monitoring event (January 2020).
- Statistical evaluation and determination of any statistically significant levels exceeding the GPS for the April 2020 monitoring event (July 2020).
- Continued work on the selection of remedy in accordance with § 257.97.
- Two semiannual assessment monitoring events (April and October 2020).
- Semiannual progress reports for the Selection of Remedy process (March and September 2020).

2.5.2 § 257.94(d) Alternative Detection Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. The LAN CCR units are no longer in the detection monitoring program.

2.5.3 § 257.94(e)(2) Alternative Source Demonstration for Detection Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. The LAN CCR units are no longer in the detection monitoring program.

2.5.4 § 257.95(c) Alternative Assessment Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. Assessment monitoring has been initiated at the site, but no alternative assessment monitoring frequency is proposed at this time.

2.5.5 § 257.95(d)(3) Assessment Monitoring Results and Standards

Include the recorded concentrations required by paragraph (d)(1) of this section, identify the background concentrations established under § 257.94(b), and identify the groundwater protection standards established under paragraph (d)(2) of this section in the annual groundwater monitoring and corrective action report required by § 257.90(e).

The recorded concentrations for the assessment monitoring events are in the laboratory reports in Appendix A. The background concentrations established under §257.94(b) were provided in Appendix A of the 2017 Annual Groundwater Monitoring and Corrective Action Report for the LAN CCR Units. The groundwater protection standards established for the CCR units are provided in Table 2.

2.5.6 § 257.95(g)(3)(ii) Alternative Source Demonstration for Assessment Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. No alternative source demonstration evaluation for assessment monitoring was completed in 2019.

2.5.7 § 257.96(a) Extension of Time for Corrective Measures Assessment

The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to complete the assessment of corrective measure due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

The ACM was initiated on April 15, 2019. The July 10, 2019 certification demonstrating the need for a 90-day deadline extension is included in Appendix B.

[This page left blank intentionally]

Tables

Table 1. CCR Rule Groundwater Samples Summary
Lansing Generating Station / SCS Engineers Project #25219070.00

Sample Dates	Background Well	Downgradient Wells					
	MW-6	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306
4/15/2019	A	A	A	A	NI	NI	NI
6/20/2019	--	--	--	--	A	A	A
10/2/2019	A	A	A	A	A	A	A
Total Samples	2	2	2	2	2	2	2

Abbreviations:
A = Assessment Monitoring Sample
NI = Not Installed
-- = Not Sampled

Created by:	NDK	Date:	1/8/2018
Last revision by:	LWJ	Date:	1/7/2020
Checked by:	NDK	Date:	1/7/2020

I:\25219070.00\Deliverables\2019 Annual Groundwater Monitoring and Corrective Action Report\Tables\[Table 1. GW_Samples_Summary_Table_2019.xlsx]GW Summary

Table 2. Groundwater Protection Standards - CCR Program - Assessment Monitoring
Lansing Generating Station / SCS Engineers Project #25219070

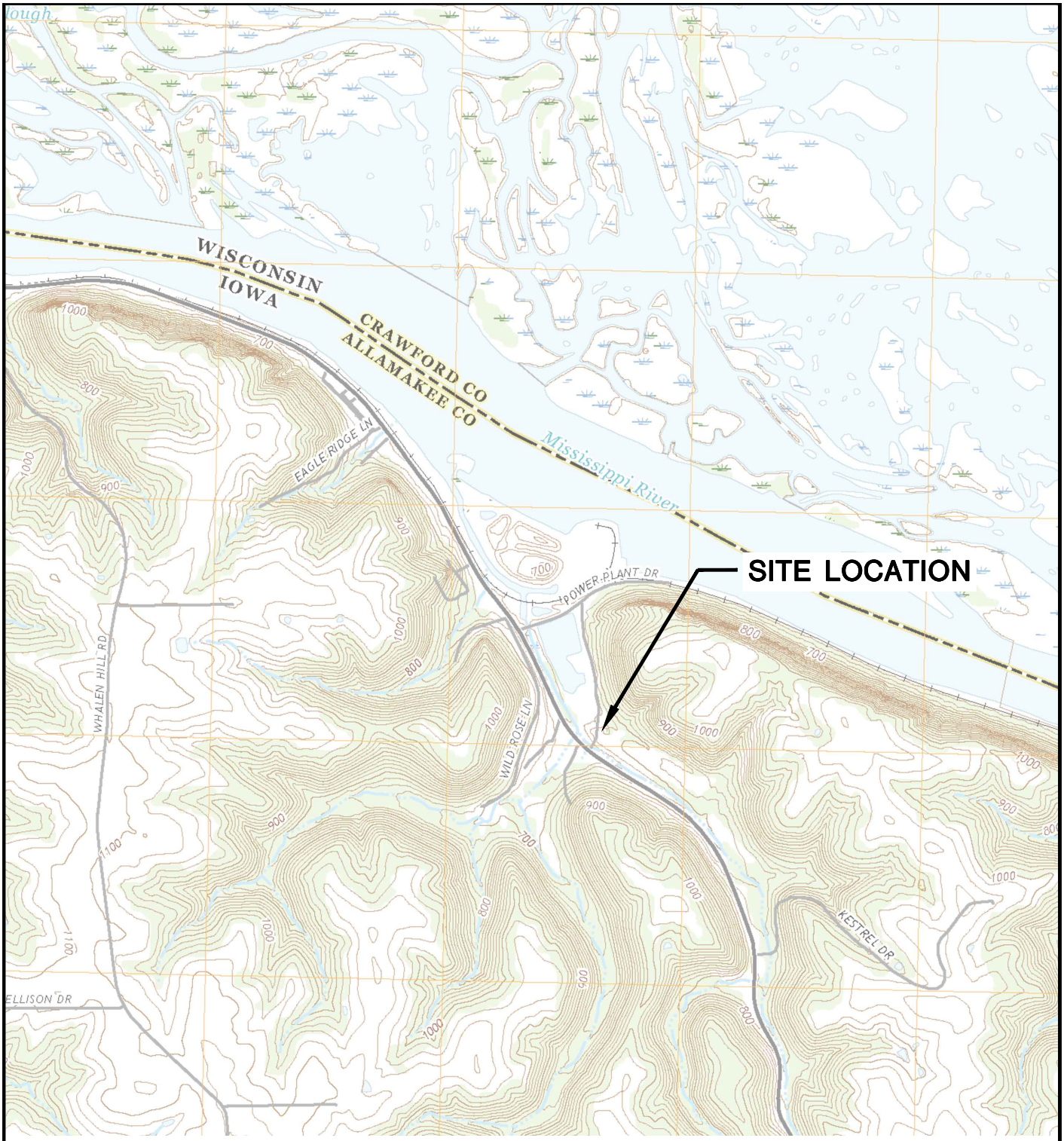
Parameter Name	GPS	Source
Antimony, ug/L	6	MCL
Arsenic, ug/L	10	MCL
Barium, ug/L	2000	MCL
Beryllium, ug/L	4	MCL
Cadmium, ug/L	5	MCL
Chromium, ug/L	100	MCL
Cobalt, ug/L	6	40 CFR 257.95(h)(2)
Fluoride, mg/L	4	MCL
Lead, ug/L	15	40 CFR 257.95(h)(2)
Lithium, ug/L	40	40 CFR 257.95(h)(2)
Mercury, ug/L	2	MCL
Molybdenum, ug/L	100	40 CFR 257.95(h)(2)
Selenium, ug/L	50	MCL
Thallium, ug/L	2	MCL
Radium 226/228 Combined, pCi/L	5	MCL

Abbreviations:
GPS = Groundwater Protection Standard
MCL = Maximum Contaminant Level established under 40 CFR 141.62 and 141.66

Created by: NDK, 9/24/2018
Checked by: SCC, 10/14/2018

I:\25219070.00\Deliverables\2019 Annual Groundwater Monitoring and Corrective Action Report\Tables\[Table 2. Groundwater Protection Standards.xlsx]Table

Figures



N

LANSING QUADRANGLE
IOWA–ALLAMAKEE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
2018
SCALE: 1" = 2,000'

CLIENT	INTERSTATE POWER AND LIGHT 2320 POWER PLANT DRIVE LANSING, IA 52151-9733	SITE	ALLIANT ENERGY LANSING GENERATING STATION LANSING, IOWA

SITE LOCATION MAP

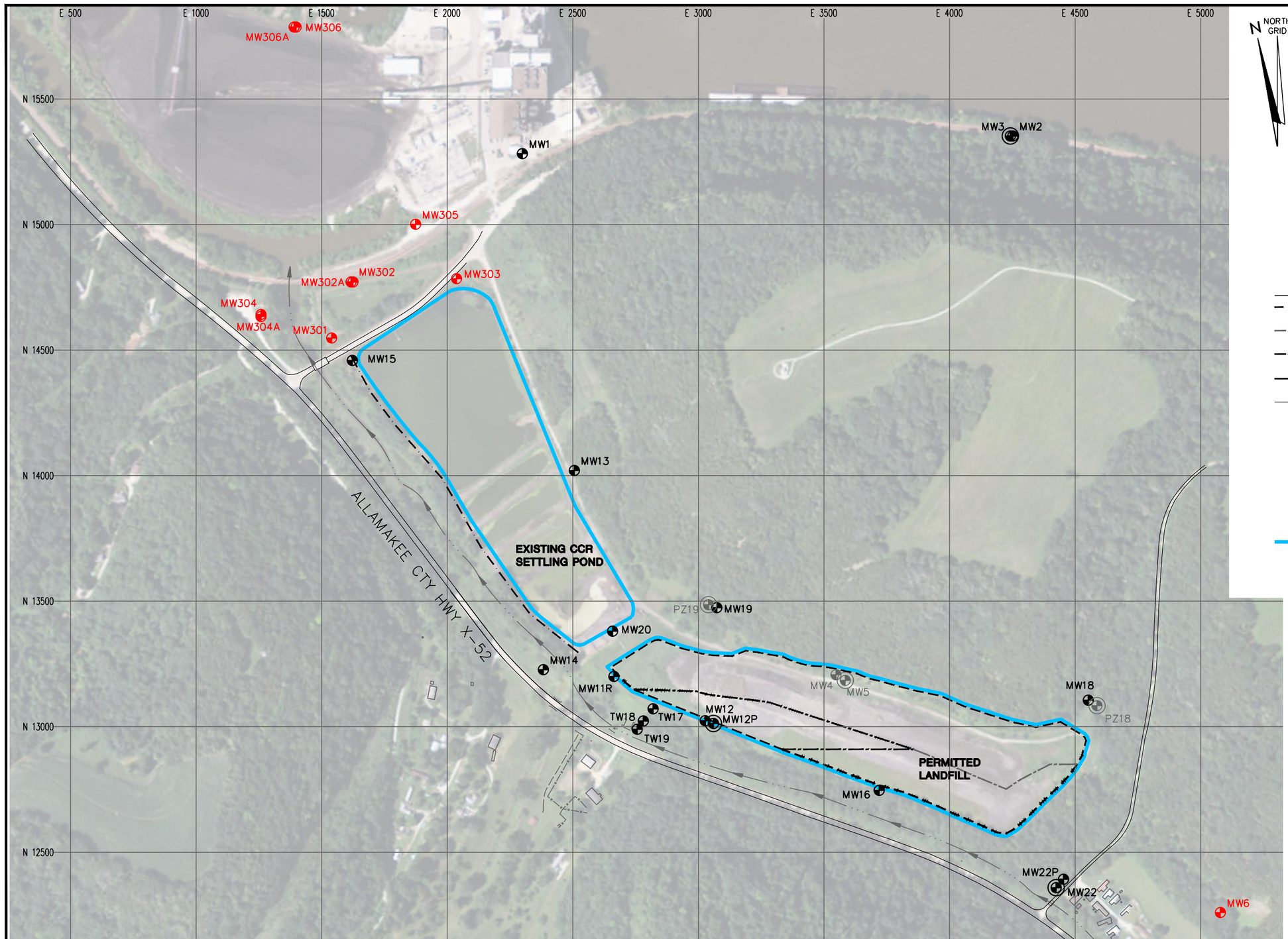
PROJECT NO.	25219070.00	DRAWN BY:	BSS
DRAWN:	11/27/2019	CHECKED BY:	MDB
REVISED:	11/27/2019	APPROVED BY:	TK 01/30/2020

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

FIGURE
1

I:\25219070.00\Drawings\CCR 2019 Annual Report\Site Location Map.dwg, 1/30/2020 3:31:40 PM



NORTH GRID

400 0 400

SCALE: 1" = 400'

LEGEND

- APPROVED LIMITS OF WASTE
- LIMITS OF PHASE 1 FINAL COVER
- LIMITS OF PHASE 2 FINAL COVER
- SLURRY WALL
- EXISTING STREAM
- MW17 EXISTING MONITORING WELL
- MW12P EXISTING PIEZOMETER
- MW4 ABANDONED MONITORING WELL
- MW5 ABANDONED PIEZOMETER
- MW301 CCR MONITORING WELL
- CCR UNITS

NOTES:

1. 2011 AERIAL PHOTOGRAPH FROM THE USDA–FSA AERIAL PHOTOGRAPHY FIELD OFFICE.
2. MONITORING WELL LOCATIONS AND CCR UNIT LIMITS ARE APPROXIMATE.
3. MONITORING WELLS MW20, MW301, MW302, AND MW303 WERE INSTALLED BY CASCADE DRILLING IN NOVEMBER 2015.
4. MONITORING WELLS MW304, MW305, AND MW306 WERE INSTALLED BY ROBERTS ENVIRONMENTAL DRILLING IN MAY 2019.
5. MONITORING WELLS MW302A, MW304A, AND MW306A WERE INSTALLED BY CASCADE DRILLING IN DECEMBER 2019.

PROJECT NO.	25219070.00	DRAWN BY:	BSS
DRAWN:	11/27/2019	CHECKED BY:	MDB
REVISED:	01/20/2020	APPROVED BY:	TK 01/30/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: INTERSTATE POWER AND LIGHT
2320 POWER PLANT DRIVE
LANSING, IA 52151-9733

SITE: ALLIANT ENERGY
LANSING POWER STATION
LANSING, IOWA

SITE PLAN AND MONITORING WELL LOCATIONS

FIGURE 2

I:\25219070.00\Drawings\CCR 2019 Annual Report\Site Plan and Monitoring Well Locations.dwg, 1/30/2020 3:32:52 PM

Appendix A

Analytical Laboratory Reports

A1 Assessment Monitoring, April 2019

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-153579-1
Client Project/Site: IPL-Lansing, 25219070
Revision: 1

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Therese Hargraves

Authorized for release by:
7/2/2019 10:35:38 AM
Therese Hargraves, Project Manager I
(708)793-3461
therese.hargraves@testamericainc.com

Designee for

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Job ID: 310-153579-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-153579-1

Comments
No additional comments.

Receipt
The samples were received on 4/18/2019 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0º C.

Receipt Exceptions

Revised Report - At client request, mercury units updated to ug/L

HPLC/IC
Method(s) 300.0, 9056A: The following sample was diluted due to the nature of the sample matrix: MW-302 (310-153579-2). Elevated reporting limits (RLs) are provided.

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

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

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

Sample Summary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-153579-1	MW-301	Water	04/15/19 12:25	04/18/19 09:05	
310-153579-2	MW-302	Water	04/15/19 13:25	04/18/19 09:05	
310-153579-3	MW-303	Water	04/15/19 14:05	04/18/19 09:05	
310-153579-4	MW-6	Water	04/15/19 15:00	04/18/19 09:05	
310-153579-5	Field Blank	Water	04/15/19 14:10	04/18/19 09:05	

Detection Summary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Client Sample ID: MW-301 — Lab Sample ID: 310-153579-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	17		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.90		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	51		5.0	1.8	mg/L	5		9056A	Total/NA
Arsenic	5.4		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	160		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	250		200	110	ug/L	1		6020A	Total/NA
Calcium	73		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	0.11	J	0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	8.7	J	10	2.7	ug/L	1		6020A	Total/NA
Molybdenum	11		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	350		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.9	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Groundwater Elevation (ft MSL)	629.19				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-171				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.2				mg/L	1		Field Sampling	Total/NA
pH, Field	8.47				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	539				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	11.3				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	9.33				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-302 — Lab Sample ID: 310-153579-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	13		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.79		0.50	0.23	mg/L	5		9056A	Total/NA
Arsenic	37		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	690		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	530		200	110	ug/L	1		6020A	Total/NA
Calcium	130		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	1.5		0.50	0.091	ug/L	1		6020A	Total/NA
Total Dissolved Solids	450		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Groundwater Elevation (ft MSL)	629.99				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-159				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.2				mg/L	1		Field Sampling	Total/NA
pH, Field	7.66				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1089				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	7.1				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	18.39				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-303 — Lab Sample ID: 310-153579-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	18		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	1.0		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	35		5.0	1.8	mg/L	5		9056A	Total/NA
Arsenic	1.4	J	2.0	0.75	ug/L	1		6020A	Total/NA
Barium	160		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	150	J	200	110	ug/L	1		6020A	Total/NA
Calcium	49		0.50	0.10	mg/L	1		6020A	Total/NA
Lithium	3.3	J	10	2.7	ug/L	1		6020A	Total/NA
Molybdenum	6.2		2.0	1.1	ug/L	1		6020A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Client Sample ID: MW-303 (Continued) — Lab Sample ID: 310-153579-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	280		30	24	mg/L	1		SM 2540C	Total/NA
pH	8.0	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Groundwater Elevation (ft MSL)	638.22				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-76				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	1.4				mg/L	1		Field Sampling	Total/NA
pH, Field	7.95				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	448				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	4.2				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	6.60				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-6 — Lab Sample ID: 310-153579-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	6.7		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.63		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	26		5.0	1.8	mg/L	5		9056A	Total/NA
Barium	43		2.0	0.84	ug/L	1		6020A	Total/NA
Calcium	67		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	340		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Groundwater Elevation (ft MSL)	672.78				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	274				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	8.7				mg/L	1		Field Sampling	Total/NA
pH, Field	7.59				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	618				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	10.0				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	0.75				NTU	1		Field Sampling	Total/NA

Client Sample ID: Field Blank — Lab Sample ID: 310-153579-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	27		1.0	0.29	mg/L	1		9056A	Total/NA
Fluoride	0.59		0.10	0.045	mg/L	1		9056A	Total/NA
Sulfate	48		1.0	0.35	mg/L	1		9056A	Total/NA
Calcium	0.32	J	0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	380		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.8	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Client Sample ID: MW-301

Date Collected: 04/15/19 12:25
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-1

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**17**		5.0	1.5	mg/L			04/25/19 18:00	5
Fluoride	**0.90**		0.50	0.23	mg/L			04/25/19 18:00	5
Sulfate	**51**		5.0	1.8	mg/L			04/25/19 18:00	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		04/19/19 08:00	05/03/19 14:19	1
Arsenic	**5.4**		2.0	0.75	ug/L		04/19/19 08:00	05/03/19 14:19	1
Barium	**160**		2.0	0.84	ug/L		04/19/19 08:00	05/03/19 14:19	1
Beryllium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 14:19	1
Boron	**250**		200	110	ug/L		04/19/19 08:00	05/03/19 14:19	1
Cadmium	<0.077		0.50	0.077	ug/L		04/19/19 08:00	05/03/19 14:19	1
Calcium	**73**		0.50	0.10	mg/L		04/19/19 08:00	05/03/19 14:19	1
Chromium	<0.98		5.0	0.98	ug/L		04/19/19 08:00	05/03/19 14:19	1
Cobalt	**0.11**	**J**	0.50	0.091	ug/L		04/19/19 08:00	05/03/19 14:19	1
Lead	<0.27		0.50	0.27	ug/L		04/19/19 08:00	05/03/19 14:19	1
Lithium	**8.7**	**J**	10	2.7	ug/L		04/19/19 08:00	05/03/19 14:19	1
Molybdenum	**11**		2.0	1.1	ug/L		04/19/19 08:00	05/03/19 14:19	1
Selenium	<1.0		5.0	1.0	ug/L		04/19/19 08:00	05/03/19 14:19	1
Thallium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 14:19	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/19/19 10:19	04/19/19 15:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**350**		30	24	mg/L			04/19/19 08:35	1
pH	**7.9**	**HF**	0.1	0.1	SU			04/18/19 15:36	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Groundwater Elevation (ft MSL)	**629.19**				ft			04/15/19 12:25	1
Oxidation Reduction Potential	**-171**				millivolts			04/15/19 12:25	1
Oxygen, Dissolved, Client Supplied	**0.2**				mg/L			04/15/19 12:25	1
pH, Field	**8.47**				SU			04/15/19 12:25	1
Specific Conductance, Field	**539**				umhos/cm			04/15/19 12:25	1
Temperature, Field	**11.3**				Degrees C			04/15/19 12:25	1
Turbidity, Field	**9.33**				NTU			04/15/19 12:25	1

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Client Sample ID: MW-302

Date Collected: 04/15/19 13:25
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-2

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**13**		5.0	1.5	mg/L			04/25/19 18:13	5
Fluoride	**0.79**		0.50	0.23	mg/L			04/25/19 18:13	5
Sulfate	<1.8		5.0	1.8	mg/L			04/25/19 18:13	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		04/19/19 08:00	05/03/19 14:22	1
Arsenic	**37**		2.0	0.75	ug/L		04/19/19 08:00	05/03/19 14:22	1
Barium	**690**		2.0	0.84	ug/L		04/19/19 08:00	05/03/19 14:22	1
Beryllium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 14:22	1
Boron	**530**		200	110	ug/L		04/19/19 08:00	05/03/19 14:22	1
Cadmium	<0.077		0.50	0.077	ug/L		04/19/19 08:00	05/03/19 14:22	1
Calcium	**130**		0.50	0.10	mg/L		04/19/19 08:00	05/03/19 14:22	1
Chromium	<0.98		5.0	0.98	ug/L		04/19/19 08:00	05/03/19 14:22	1
Cobalt	**1.5**		0.50	0.091	ug/L		04/19/19 08:00	05/03/19 14:22	1
Lead	<0.27		0.50	0.27	ug/L		04/19/19 08:00	05/03/19 14:22	1
Lithium	<2.7		10	2.7	ug/L		04/19/19 08:00	05/03/19 14:22	1
Molybdenum	<1.1		2.0	1.1	ug/L		04/19/19 08:00	05/03/19 14:22	1
Selenium	<1.0		5.0	1.0	ug/L		04/19/19 08:00	05/03/19 14:22	1
Thallium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 14:22	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/19/19 10:19	04/19/19 15:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**450**		30	24	mg/L			04/19/19 08:35	1
pH	**7.0**	**HF**	0.1	0.1	SU			04/18/19 15:31	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Groundwater Elevation (ft MSL)	**629.99**				ft			04/15/19 13:25	1
Oxidation Reduction Potential	**-159**				millivolts			04/15/19 13:25	1
Oxygen, Dissolved, Client Supplied	**0.2**				mg/L			04/15/19 13:25	1
pH, Field	**7.66**				SU			04/15/19 13:25	1
Specific Conductance, Field	**1089**				umhos/cm			04/15/19 13:25	1
Temperature, Field	**7.1**				Degrees C			04/15/19 13:25	1
Turbidity, Field	**18.39**				NTU			04/15/19 13:25	1

Client Sample Results

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Client Sample ID: MW-303

Date Collected: 04/15/19 14:05
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-3

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**18**		5.0	1.5	mg/L			04/25/19 18:38	5
Fluoride	**1.0**		0.50	0.23	mg/L			04/25/19 18:38	5
Sulfate	**35**		5.0	1.8	mg/L			04/25/19 18:38	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		04/19/19 08:00	05/03/19 14:25	1
Arsenic	**1.4**	**J**	2.0	0.75	ug/L		04/19/19 08:00	05/03/19 14:25	1
Barium	**160**		2.0	0.84	ug/L		04/19/19 08:00	05/03/19 14:25	1
Beryllium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 14:25	1
Boron	**150**	**J**	200	110	ug/L		04/19/19 08:00	05/03/19 14:25	1
Cadmium	<0.077		0.50	0.077	ug/L		04/19/19 08:00	05/03/19 14:25	1
Calcium	**49**		0.50	0.10	mg/L		04/19/19 08:00	05/03/19 14:25	1
Chromium	<0.98		5.0	0.98	ug/L		04/19/19 08:00	05/03/19 14:25	1
Cobalt	<0.091		0.50	0.091	ug/L		04/19/19 08:00	05/03/19 14:25	1
Lead	<0.27		0.50	0.27	ug/L		04/19/19 08:00	05/03/19 14:25	1
Lithium	**3.3**	**J**	10	2.7	ug/L		04/19/19 08:00	05/03/19 14:25	1
Molybdenum	**6.2**		2.0	1.1	ug/L		04/19/19 08:00	05/03/19 14:25	1
Selenium	<1.0		5.0	1.0	ug/L		04/19/19 08:00	05/03/19 14:25	1
Thallium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 14:25	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/19/19 10:19	04/19/19 15:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**280**		30	24	mg/L			04/19/19 08:35	1
pH	**8.0**	**HF**	0.1	0.1	SU			04/18/19 15:25	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Groundwater Elevation (ft MSL)	**638.22**				ft			04/15/19 14:05	1
Oxidation Reduction Potential	**-76**				millivolts			04/15/19 14:05	1
Oxygen, Dissolved, Client Supplied	**1.4**				mg/L			04/15/19 14:05	1
pH, Field	**7.95**				SU			04/15/19 14:05	1
Specific Conductance, Field	**448**				umhos/cm			04/15/19 14:05	1
Temperature, Field	**4.2**				Degrees C			04/15/19 14:05	1
Turbidity, Field	**6.60**				NTU			04/15/19 14:05	1

Client Sample Results

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Client Sample ID: MW-6

Date Collected: 04/15/19 15:00
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-4

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**6.7**		5.0	1.5	mg/L			04/25/19 18:51	5
Fluoride	**0.63**		0.50	0.23	mg/L			04/25/19 18:51	5
Sulfate	**26**		5.0	1.8	mg/L			04/25/19 18:51	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		04/19/19 08:00	05/03/19 14:29	1
Arsenic	<0.75		2.0	0.75	ug/L		04/19/19 08:00	05/03/19 14:29	1
Barium	**43**		2.0	0.84	ug/L		04/19/19 08:00	05/03/19 14:29	1
Beryllium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 14:29	1
Boron	<110		200	110	ug/L		04/19/19 08:00	05/03/19 14:29	1
Cadmium	<0.077		0.50	0.077	ug/L		04/19/19 08:00	05/03/19 14:29	1
Calcium	**67**		0.50	0.10	mg/L		04/19/19 08:00	05/03/19 14:29	1
Chromium	<0.98		5.0	0.98	ug/L		04/19/19 08:00	05/03/19 14:29	1
Cobalt	<0.091		0.50	0.091	ug/L		04/19/19 08:00	05/03/19 14:29	1
Lead	<0.27		0.50	0.27	ug/L		04/19/19 08:00	05/03/19 14:29	1
Lithium	<2.7		10	2.7	ug/L		04/19/19 08:00	05/03/19 14:29	1
Molybdenum	<1.1		2.0	1.1	ug/L		04/19/19 08:00	05/03/19 14:29	1
Selenium	<1.0		5.0	1.0	ug/L		04/19/19 08:00	05/03/19 14:29	1
Thallium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 14:29	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/19/19 10:19	04/19/19 15:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**340**		30	24	mg/L			04/19/19 08:35	1
pH	**7.5**	**HF**	0.1	0.1	SU			04/18/19 15:23	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Groundwater Elevation (ft MSL)	**672.78**				ft			04/15/19 15:00	1
Oxidation Reduction Potential	**274**				millivolts			04/15/19 15:00	1
Oxygen, Dissolved, Client Supplied	**8.7**				mg/L			04/15/19 15:00	1
pH, Field	**7.59**				SU			04/15/19 15:00	1
Specific Conductance, Field	**618**				umhos/cm			04/15/19 15:00	1
Temperature, Field	**10.0**				Degrees C			04/15/19 15:00	1
Turbidity, Field	**0.75**				NTU			04/15/19 15:00	1

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Client Sample ID: Field Blank

Date Collected: 04/15/19 14:10
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-5

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**27**		1.0	0.29	mg/L			04/25/19 19:04	1
Fluoride	**0.59**		0.10	0.045	mg/L			04/25/19 19:04	1
Sulfate	**48**		1.0	0.35	mg/L			04/25/19 19:04	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		04/19/19 08:00	05/03/19 14:32	1
Arsenic	<0.75		2.0	0.75	ug/L		04/19/19 08:00	05/03/19 14:32	1
Barium	<0.84		2.0	0.84	ug/L		04/19/19 08:00	05/03/19 14:32	1
Beryllium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 14:32	1
Boron	<110		200	110	ug/L		04/19/19 08:00	05/03/19 14:32	1
Cadmium	<0.077		0.50	0.077	ug/L		04/19/19 08:00	05/03/19 14:32	1
Calcium	**0.32**	**J**	0.50	0.10	mg/L		04/19/19 08:00	05/03/19 14:32	1
Chromium	<0.98		5.0	0.98	ug/L		04/19/19 08:00	05/03/19 14:32	1
Cobalt	<0.091		0.50	0.091	ug/L		04/19/19 08:00	05/03/19 14:32	1
Lead	<0.27		0.50	0.27	ug/L		04/19/19 08:00	05/03/19 14:32	1
Lithium	<2.7		10	2.7	ug/L		04/19/19 08:00	05/03/19 14:32	1
Molybdenum	<1.1		2.0	1.1	ug/L		04/19/19 08:00	05/03/19 14:32	1
Selenium	<1.0		5.0	1.0	ug/L		04/19/19 08:00	05/03/19 14:32	1
Thallium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 14:32	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/19/19 10:19	04/19/19 15:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**380**		30	24	mg/L			04/19/19 08:35	1
pH	**7.8**	**HF**	0.1	0.1	SU			04/18/19 15:38	1

Definitions/Glossary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

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

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-237732/3
Matrix: Water
Analysis Batch: 237732

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.29		1.0	0.29	mg/L			04/25/19 11:36	1
Fluoride	<0.045		0.10	0.045	mg/L			04/25/19 11:36	1
Sulfate	<0.35		1.0	0.35	mg/L			04/25/19 11:36	1

Lab Sample ID: LCS 310-237732/4
Matrix: Water
Analysis Batch: 237732

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.96		mg/L		100	90 - 110
Fluoride	2.00	2.02		mg/L		101	90 - 110
Sulfate	10.0	10.4		mg/L		104	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-236347/1-A
Matrix: Water
Analysis Batch: 238214

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 236347

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		04/19/19 08:00	05/03/19 12:59	1
Arsenic	<0.75		2.0	0.75	ug/L		04/19/19 08:00	05/03/19 12:59	1
Barium	<0.84		2.0	0.84	ug/L		04/19/19 08:00	05/03/19 12:59	1
Beryllium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 12:59	1
Boron	<110		200	110	ug/L		04/19/19 08:00	05/03/19 12:59	1
Cadmium	<0.077		0.50	0.077	ug/L		04/19/19 08:00	05/03/19 12:59	1
Calcium	<0.10		0.50	0.10	mg/L		04/19/19 08:00	05/03/19 12:59	1
Chromium	<0.98		5.0	0.98	ug/L		04/19/19 08:00	05/03/19 12:59	1
Cobalt	<0.091		0.50	0.091	ug/L		04/19/19 08:00	05/03/19 12:59	1
Lead	<0.27		0.50	0.27	ug/L		04/19/19 08:00	05/03/19 12:59	1
Lithium	<2.7		10	2.7	ug/L		04/19/19 08:00	05/03/19 12:59	1
Molybdenum	<1.1		2.0	1.1	ug/L		04/19/19 08:00	05/03/19 12:59	1
Selenium	<1.0		5.0	1.0	ug/L		04/19/19 08:00	05/03/19 12:59	1
Thallium	<0.27		1.0	0.27	ug/L		04/19/19 08:00	05/03/19 12:59	1

Lab Sample ID: LCS 310-236347/2-A
Matrix: Water
Analysis Batch: 238214

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236347

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	19.1		ug/L		96	80 - 120
Arsenic	40.0	40.0		ug/L		100	80 - 120
Barium	40.0	37.5		ug/L		94	80 - 120
Beryllium	20.0	20.7		ug/L		103	80 - 120
Boron	880	884		ug/L		100	80 - 120
Cadmium	20.0	19.9		ug/L		99	80 - 120
Calcium	2.00	1.98		mg/L		99	80 - 120
Chromium	40.0	38.8		ug/L		97	80 - 120
Cobalt	20.0	19.4		ug/L		97	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-236347/2-A
Matrix: Water
Analysis Batch: 238214

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236347

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	20.0	18.6		ug/L		93	80 - 120
Lithium	100	100		ug/L		100	80 - 120
Molybdenum	40.0	38.0		ug/L		95	80 - 120
Selenium	40.0	37.5		ug/L		94	80 - 120
Thallium	16.0	15.6		ug/L		98	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-236427/1-A
Matrix: Water
Analysis Batch: 236547

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 236427

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/19/19 10:19	04/19/19 15:34	1

Lab Sample ID: LCS 310-236427/2-A
Matrix: Water
Analysis Batch: 236547

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236427

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	1.67	1.45		ug/L		87	80 - 120

Lab Sample ID: 310-153579-1 MS
Matrix: Water
Analysis Batch: 236547

Client Sample ID: MW-301
Prep Type: Total/NA
Prep Batch: 236427

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	<0.10		1.67	1.63		ug/L		98	80 - 120

Lab Sample ID: 310-153579-1 MSD
Matrix: Water
Analysis Batch: 236547

Client Sample ID: MW-301
Prep Type: Total/NA
Prep Batch: 236427

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	<0.10		1.67	1.69		ug/L		101	80 - 120	4	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-236400/1
Matrix: Water
Analysis Batch: 236400

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			04/19/19 08:35	1

Lab Sample ID: LCS 310-236400/2
Matrix: Water
Analysis Batch: 236400

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1000		mg/L		100	90 - 110

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: 310-153579-4 DU
Matrix: Water
Analysis Batch: 236400

Client Sample ID: MW-6
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	340			340.0		mg/L				0.6	24

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-236326/1
Matrix: Water
Analysis Batch: 236326

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH			7.00	7.0		SU		100	98 - 102		

Lab Sample ID: LCS 310-236326/27
Matrix: Water
Analysis Batch: 236326

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH			7.00	7.0		SU		100	98 - 102		

Lab Sample ID: 310-153579-2 DU
Matrix: Water
Analysis Batch: 236326

Client Sample ID: MW-302
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.0	HF		7.0		SU				0.6	20

QC Association Summary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

HPLC/IC

Analysis Batch: 237732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153579-1	MW-301	Total/NA	Water	9056A	
310-153579-2	MW-302	Total/NA	Water	9056A	
310-153579-3	MW-303	Total/NA	Water	9056A	
310-153579-4	MW-6	Total/NA	Water	9056A	
310-153579-5	Field Blank	Total/NA	Water	9056A	
MB 310-237732/3	Method Blank	Total/NA	Water	9056A	
LCS 310-237732/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 236347

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153579-1	MW-301	Total/NA	Water	3010A	
310-153579-2	MW-302	Total/NA	Water	3010A	
310-153579-3	MW-303	Total/NA	Water	3010A	
310-153579-4	MW-6	Total/NA	Water	3010A	
310-153579-5	Field Blank	Total/NA	Water	3010A	
MB 310-236347/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-236347/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 236427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153579-1	MW-301	Total/NA	Water	7470A	
310-153579-2	MW-302	Total/NA	Water	7470A	
310-153579-3	MW-303	Total/NA	Water	7470A	
310-153579-4	MW-6	Total/NA	Water	7470A	
310-153579-5	Field Blank	Total/NA	Water	7470A	
MB 310-236427/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-236427/2-A	Lab Control Sample	Total/NA	Water	7470A	
310-153579-1 MS	MW-301	Total/NA	Water	7470A	
310-153579-1 MSD	MW-301	Total/NA	Water	7470A	

Analysis Batch: 236547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153579-1	MW-301	Total/NA	Water	7470A	236427
310-153579-2	MW-302	Total/NA	Water	7470A	236427
310-153579-3	MW-303	Total/NA	Water	7470A	236427
310-153579-4	MW-6	Total/NA	Water	7470A	236427
310-153579-5	Field Blank	Total/NA	Water	7470A	236427
MB 310-236427/1-A	Method Blank	Total/NA	Water	7470A	236427
LCS 310-236427/2-A	Lab Control Sample	Total/NA	Water	7470A	236427
310-153579-1 MS	MW-301	Total/NA	Water	7470A	236427
310-153579-1 MSD	MW-301	Total/NA	Water	7470A	236427

Analysis Batch: 238214

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153579-1	MW-301	Total/NA	Water	6020A	236347
310-153579-2	MW-302	Total/NA	Water	6020A	236347
310-153579-3	MW-303	Total/NA	Water	6020A	236347
310-153579-4	MW-6	Total/NA	Water	6020A	236347
310-153579-5	Field Blank	Total/NA	Water	6020A	236347

Metals (Continued)

Analysis Batch: 238214 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-236347/1-A	Method Blank	Total/NA	Water	6020A	236347
LCS 310-236347/2-A	Lab Control Sample	Total/NA	Water	6020A	236347

General Chemistry

Analysis Batch: 236326

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153579-1	MW-301	Total/NA	Water	SM 4500 H+ B	
310-153579-2	MW-302	Total/NA	Water	SM 4500 H+ B	
310-153579-3	MW-303	Total/NA	Water	SM 4500 H+ B	
310-153579-4	MW-6	Total/NA	Water	SM 4500 H+ B	
310-153579-5	Field Blank	Total/NA	Water	SM 4500 H+ B	
LCS 310-236326/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 310-236326/27	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-153579-2 DU	MW-302	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 236400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153579-1	MW-301	Total/NA	Water	SM 2540C	
310-153579-2	MW-302	Total/NA	Water	SM 2540C	
310-153579-3	MW-303	Total/NA	Water	SM 2540C	
310-153579-4	MW-6	Total/NA	Water	SM 2540C	
310-153579-5	Field Blank	Total/NA	Water	SM 2540C	
MB 310-236400/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-236400/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-153579-4 DU	MW-6	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 238763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153579-1	MW-301	Total/NA	Water	Field Sampling	
310-153579-2	MW-302	Total/NA	Water	Field Sampling	
310-153579-3	MW-303	Total/NA	Water	Field Sampling	
310-153579-4	MW-6	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Client Sample ID: MW-301

Lab Sample ID: 310-153579-1

Date Collected: 04/15/19 12:25

Matrix: Water

Date Received: 04/18/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	237732	04/25/19 18:00	MLU	TAL CF
Total/NA	Prep	3010A			236347	04/19/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	238214	05/03/19 14:19	SAD	TAL CF
Total/NA	Prep	7470A			236427	04/19/19 10:19	JNR	TAL CF
Total/NA	Analysis	7470A		1	236547	04/19/19 15:47	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	236400	04/19/19 08:35	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	236326	04/18/19 15:36	BER	TAL CF
Total/NA	Analysis	Field Sampling		1	238763	04/15/19 12:25	EAR	TAL CF

Client Sample ID: MW-302

Lab Sample ID: 310-153579-2

Date Collected: 04/15/19 13:25

Matrix: Water

Date Received: 04/18/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	237732	04/25/19 18:13	MLU	TAL CF
Total/NA	Prep	3010A			236347	04/19/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	238214	05/03/19 14:22	SAD	TAL CF
Total/NA	Prep	7470A			236427	04/19/19 10:19	JNR	TAL CF
Total/NA	Analysis	7470A		1	236547	04/19/19 15:53	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	236400	04/19/19 08:35	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	236326	04/18/19 15:31	BER	TAL CF
Total/NA	Analysis	Field Sampling		1	238763	04/15/19 13:25	EAR	TAL CF

Client Sample ID: MW-303

Lab Sample ID: 310-153579-3

Date Collected: 04/15/19 14:05

Matrix: Water

Date Received: 04/18/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	237732	04/25/19 18:38	MLU	TAL CF
Total/NA	Prep	3010A			236347	04/19/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	238214	05/03/19 14:25	SAD	TAL CF
Total/NA	Prep	7470A			236427	04/19/19 10:19	JNR	TAL CF
Total/NA	Analysis	7470A		1	236547	04/19/19 15:55	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	236400	04/19/19 08:35	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	236326	04/18/19 15:25	BER	TAL CF
Total/NA	Analysis	Field Sampling		1	238763	04/15/19 14:05	EAR	TAL CF

Client Sample ID: MW-6

Lab Sample ID: 310-153579-4

Date Collected: 04/15/19 15:00

Matrix: Water

Date Received: 04/18/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	237732	04/25/19 18:51	MLU	TAL CF

Lab Chronicle

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Client Sample ID: MW-6

Lab Sample ID: 310-153579-4

Date Collected: 04/15/19 15:00

Matrix: Water

Date Received: 04/18/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			236347	04/19/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	238214	05/03/19 14:29	SAD	TAL CF
Total/NA	Prep	7470A			236427	04/19/19 10:19	JNR	TAL CF
Total/NA	Analysis	7470A		1	236547	04/19/19 15:57	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	236400	04/19/19 08:35	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	236326	04/18/19 15:23	BER	TAL CF
Total/NA	Analysis	Field Sampling		1	238763	04/15/19 15:00	EAR	TAL CF

Client Sample ID: Field Blank

Lab Sample ID: 310-153579-5

Date Collected: 04/15/19 14:10

Matrix: Water

Date Received: 04/18/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	237732	04/25/19 19:04	MLU	TAL CF
Total/NA	Prep	3010A			236347	04/19/19 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	238214	05/03/19 14:32	SAD	TAL CF
Total/NA	Prep	7470A			236427	04/19/19 10:19	JNR	TAL CF
Total/NA	Analysis	7470A		1	236547	04/19/19 15:59	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	236400	04/19/19 08:35	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	236326	04/18/19 15:38	BER	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-153579-1
Project/Site: IPL-Lansing, 25219070

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Iowa	State Program	7	007	12-01-19

Method Summary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
Field Sampling	Field Sampling	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

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

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

310-153579 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Menomonee Falls STATE WI | Project: IPL - Lansing

Receipt Information

Date/Time Received: DATE 4-18-19 TIME 905 | Received By: LAB

Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ Lab Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☐ Yes	☒ No	*If yes:* Cooler # ____ of ____
Cooler Custody Seals Present?	☒ Yes	☐ No	*If yes:* Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: N | Correction Factor (°C): +0.0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 3.0 | Corrected Temp (°C): 3.0

• **Sample Container Temperature**

Container type(s) used:	CONTAINER 1		CONTAINER 2		
Uncorrected Temp (°C):	TEMP 1	TEMP 2	Corrected Temp (°C):	TEMP 1	TEMP 2

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

#38998

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Gary Sterkel	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-38998-12748.1
Client Contact: Gary Sterkel	Phone: 262-518-4081	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: N84 W13540 Leon Road	Due Date Requested:			
City: Menomonee Falls	TAT Requested (days): Standard			
State, Zip: WI, 53051				
Phone:	PO #: 25219070			
Email: gsterkel@scsengineers.com	WO #:			
Project Name: IPL-Lansing, 25219070	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	903.0 - Radium 226	904.0 - Radium 228	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	D	N	D	D	X	
MW-301	4/15/19	1225	G	Water	N	N	1	1	1	1		
MW-302	4/15/19	1325	G	Water	N	N	1	1	1	1		
MW-303	4/15/19	1405	G	Water	N	N	1	1	1	1		
MW-6	4/15/19	1500	G	Water	N	N	1	1	1	1		
Field Blank	4/15/19	1410	G	Water	N	N	1	1	1	1		
				Water								

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

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

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

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Gary Sterkel	4/17/19 1700	SCS		4/18/19 0905	TRCK
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-301	310-153579-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-301	310-153579-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-301	310-153579-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-302	310-153579-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-302	310-153579-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-302	310-153579-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-303	310-153579-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-303	310-153579-C-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-303	310-153579-D-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-6	310-153579-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-6	310-153579-C-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-6	310-153579-D-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-153579-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
Field Blank	310-153579-C-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-153579-D-5	Plastic 1 liter - Nitric Acid	<2	_____	_____

Table 2. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Lansing Generating Station / SCS Engineers Project #25219070.00

	Parameter	MW-301	MW-302	MW-303	MW-20	MW-6	Field Blank	TOTAL
Appendix III Parameters	Boron	x	x	x		x	x	5
	Calcium	x	x	x		x	x	5
	Chloride	x	x	x		x	x	5
	Fluoride	x	x	x		x	x	5
	pH	x	x	x		x	x	5
	Sulfate	x	x	x		x	x	5
	TDS	x	x	x		x	x	5
Appendix IV Parameters	Antimony	x	x	x		x	x	5
	Arsenic	x	x	x		x	x	5
	Barium	x	x	x		x	x	5
	Beryllium	x	x	x		x	x	5
	Cadmium	x	x	x		x	x	5
	Chromium	x	x	x		x	x	5
	Cobalt	x	x	x		x	x	5
	Fluoride	x	x	x		x	x	5
	Lead	x	x	x		x	x	5
	Lithium	x	x	x		x	x	5
	Mercury	x	x	x		x	x	5
	Molybdenum	x	x	x		x	x	5
	Selenium	x	x	x		x	x	5
	Thallium	x	x	x		x	x	5
	Radium	x	x	x		x	x	5
Field Parameters	Groundwater Elevation	x	x	x	x	x		5
	Well Depth	x	x	x		x		4
	pH (field)	x	x	x		x		4
	Specific Conductance	x	x	x		x		4
	Dissolved Oxygen	x	x	x		x		4
	ORP	x	x	x		x		4
	Temperature	x	x	x		x		4
	Turbidity	x	x	x		x		4
	Color	x	x	x		x		4
	Odor	x	x	x		x		4

Notes: All samples are unfiltered (total analysis)

C:\Users\fredricks\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\3TD90TJJ\[L

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-153579-1

Login Number: 153579
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-153579-2
Client Project/Site: IPL-Lansing, 25219070

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Sandie Fredrick

Authorized for release by:
6/24/2019 12:59:55 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Job ID: 310-153579-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-153579-2

Comments
No additional comments.

Receipt
The samples were received on 4/18/2019 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0º C.

RAD
Method(s) 903.0, 9315: Ra-226; The Ra-226 matrix spike (MS) is recovering (73%) outside of the control limits of 75-138%. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits. The data have been reported with this narrative. MW-301 (310-153579-1), MW-302 (310-153579-2), MW-303 (310-153579-3), MW-6 (310-153579-4), Field Blank (310-153579-5), (LCS 160-429215/1-A), (MB 160-429215/24-A), (310-153734-D-7-A), (310-153734-C-7-A MS) and (310-153734-C-7-B MSD)

Method(s) 903.0, 9315: Ra-226; Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-301 (310-153579-1), MW-302 (310-153579-2), MW-303 (310-153579-3), MW-6 (310-153579-4), Field Blank (310-153579-5), (LCS 160-429215/1-A), (MB 160-429215/24-A), (310-153734-D-7-A), (310-153734-C-7-A MS) and (310-153734-C-7-B MSD)

Method(s) 904.0, 9320: Radium-228; Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-301 (310-153579-1), MW-302 (310-153579-2), MW-303 (310-153579-3), MW-6 (310-153579-4), Field Blank (310-153579-5), (LCS 160-429223/1-A), (MB 160-429223/24-A), (310-153734-D-7-B), (310-153734-C-7-C MS) and (310-153734-C-7-D MSD)

Method(s) PrecSep_0: Radium 228 Prep Batch 160-429223. The following samples had yellow discoloration: MW-302 (310-153579-2).

Method(s) PrecSep-21: Radium 226 Prep Batch 160-429215. The following samples had yellow discoloration: MW-302 (310-153579-2)

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

Sample Summary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-153579-1	MW-301	Water	04/15/19 12:25	04/18/19 09:05	
310-153579-2	MW-302	Water	04/15/19 13:25	04/18/19 09:05	
310-153579-3	MW-303	Water	04/15/19 14:05	04/18/19 09:05	
310-153579-4	MW-6	Water	04/15/19 15:00	04/18/19 09:05	
310-153579-5	Field Blank	Water	04/15/19 14:10	04/18/19 09:05	

Detection Summary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Client Sample ID: MW-301 — Lab Sample ID: 310-153579-1

No Detections.

Client Sample ID: MW-302 — Lab Sample ID: 310-153579-2

No Detections.

Client Sample ID: MW-303 — Lab Sample ID: 310-153579-3

No Detections.

Client Sample ID: MW-6 — Lab Sample ID: 310-153579-4

No Detections.

Client Sample ID: Field Blank — Lab Sample ID: 310-153579-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-301

Date Collected: 04/15/19 12:25
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-1

Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.232		0.141	0.143	1.00	0.184	pCi/L	05/21/19 09:05	06/20/19 09:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*05/21/19 09:05*	*06/20/19 09:56*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0628	U	0.243	0.243	1.00	0.448	pCi/L	05/21/19 10:02	06/17/19 15:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*05/21/19 10:02*	*06/17/19 15:59*	*1*
Y Carrier	*81.9*		*40 - 110*	*05/21/19 10:02*	*06/17/19 15:59*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.232	U	0.281	0.282	5.00	0.448	pCi/L		06/24/19 09:02	1

Client Sample Results

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Client Sample ID: MW-302

Date Collected: 04/15/19 13:25
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-2

Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.119	U	0.105	0.106	1.00	0.156	pCi/L	05/21/19 09:05	06/20/19 09:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.4*		*40 - 110*	*05/21/19 09:05*	*06/20/19 09:57*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0267	U	0.237	0.237	1.00	0.422	pCi/L	05/21/19 10:02	06/17/19 15:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.4*		*40 - 110*	*05/21/19 10:02*	*06/17/19 15:59*	*1*
Y Carrier	*83.0*		*40 - 110*	*05/21/19 10:02*	*06/17/19 15:59*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.146	U	0.259	0.260	5.00	0.422	pCi/L		06/24/19 09:02	1

Client Sample Results

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Client Sample ID: MW-303

Date Collected: 04/15/19 14:05
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-3

Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.543**		0.186	0.192	1.00	0.198	pCi/L	05/21/19 09:05	06/20/19 09:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.5*		*40 - 110*	*05/21/19 09:05*	*06/20/19 09:57*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0763	U	0.248	0.248	1.00	0.455	pCi/L	05/21/19 10:02	06/17/19 15:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.5*		*40 - 110*	*05/21/19 10:02*	*06/17/19 15:59*	*1*
Y Carrier	*82.2*		*40 - 110*	*05/21/19 10:02*	*06/17/19 15:59*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.543**		0.310	0.314	5.00	0.455	pCi/L		06/24/19 09:02	1

Client Sample Results

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Client Sample ID: MW-6

Date Collected: 04/15/19 15:00
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-4

Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0888	U	0.103	0.104	1.00	0.169	pCi/L	05/21/19 09:05	06/20/19 13:16	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*05/21/19 09:05*	*06/20/19 13:16*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.166	U	0.237	0.237	1.00	0.396	pCi/L	05/21/19 10:02	06/17/19 15:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*05/21/19 10:02*	*06/17/19 15:59*	*1*
Y Carrier	*84.5*		*40 - 110*	*05/21/19 10:02*	*06/17/19 15:59*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.255	U	0.258	0.259	5.00	0.396	pCi/L		06/24/19 09:02	1

Client Sample ID: Field Blank

Date Collected: 04/15/19 14:10
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-5

Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0670	U	0.102	0.102	1.00	0.174	pCi/L	05/21/19 09:05	06/20/19 13:16	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.5*		*40 - 110*	*05/21/19 09:05*	*06/20/19 13:16*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.122	U	0.281	0.281	1.00	0.480	pCi/L	05/21/19 10:02	06/17/19 16:03	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.5*		*40 - 110*	*05/21/19 10:02*	*06/17/19 16:03*	*1*
Y Carrier	*84.5*		*40 - 110*	*05/21/19 10:02*	*06/17/19 16:03*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.189	U	0.299	0.299	5.00	0.480	pCi/L		06/24/19 09:02	1

Definitions/Glossary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

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

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-429215/24-A
Matrix: Water
Analysis Batch: 432306

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 429215

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.05470	U	0.0932	0.0933	1.00	0.164	pCi/L	05/21/19 09:05	06/20/19 13:22	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*05/21/19 09:05*	*06/20/19 13:22*	*1*

Lab Sample ID: LCS 160-429215/1-A
Matrix: Water
Analysis Batch: 432305

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 429215

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.497		1.06	1.00	0.168	pCi/L	84	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*105*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-429223/24-A
Matrix: Water
Analysis Batch: 431881

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 429223

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1432	U	0.212	0.212	1.00	0.356	pCi/L	05/21/19 10:02	06/17/19 16:07	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*05/21/19 10:02*	*06/17/19 16:07*	*1*
Y Carrier	*82.6*		*40 - 110*	*05/21/19 10:02*	*06/17/19 16:07*	*1*

Lab Sample ID: LCS 160-429223/1-A
Matrix: Water
Analysis Batch: 431911

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 429223

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.11	8.016		1.07	1.00	0.646	pCi/L	88	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*105*		*40 - 110*
Y Carrier	*83.7*		*40 - 110*

QC Association Summary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Rad

Prep Batch: 429215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153579-1	MW-301	Total/NA	Water	PrecSep-21	
310-153579-2	MW-302	Total/NA	Water	PrecSep-21	
310-153579-3	MW-303	Total/NA	Water	PrecSep-21	
310-153579-4	MW-6	Total/NA	Water	PrecSep-21	
310-153579-5	Field Blank	Total/NA	Water	PrecSep-21	
MB 160-429215/24-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-429215/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 429223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-153579-1	MW-301	Total/NA	Water	PrecSep_0	
310-153579-2	MW-302	Total/NA	Water	PrecSep_0	
310-153579-3	MW-303	Total/NA	Water	PrecSep_0	
310-153579-4	MW-6	Total/NA	Water	PrecSep_0	
310-153579-5	Field Blank	Total/NA	Water	PrecSep_0	
MB 160-429223/24-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-429223/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Client Sample ID: MW-301
Date Collected: 04/15/19 12:25
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			429215	05/21/19 09:05	ORM	TAL SL
Total/NA	Analysis	903.0		1	432306	06/20/19 09:56	CDR	TAL SL
Total/NA	Prep	PrecSep_0			429223	05/21/19 10:02	ORM	TAL SL
Total/NA	Analysis	904.0		1	431911	06/17/19 15:59	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	432478	06/24/19 09:02	SMP	TAL SL

Client Sample ID: MW-302
Date Collected: 04/15/19 13:25
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			429215	05/21/19 09:05	ORM	TAL SL
Total/NA	Analysis	903.0		1	432306	06/20/19 09:57	CDR	TAL SL
Total/NA	Prep	PrecSep_0			429223	05/21/19 10:02	ORM	TAL SL
Total/NA	Analysis	904.0		1	431911	06/17/19 15:59	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	432478	06/24/19 09:02	SMP	TAL SL

Client Sample ID: MW-303
Date Collected: 04/15/19 14:05
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			429215	05/21/19 09:05	ORM	TAL SL
Total/NA	Analysis	903.0		1	432306	06/20/19 09:57	CDR	TAL SL
Total/NA	Prep	PrecSep_0			429223	05/21/19 10:02	ORM	TAL SL
Total/NA	Analysis	904.0		1	431911	06/17/19 15:59	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	432478	06/24/19 09:02	SMP	TAL SL

Client Sample ID: MW-6
Date Collected: 04/15/19 15:00
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			429215	05/21/19 09:05	ORM	TAL SL
Total/NA	Analysis	903.0		1	432305	06/20/19 13:16	CDR	TAL SL
Total/NA	Prep	PrecSep_0			429223	05/21/19 10:02	ORM	TAL SL
Total/NA	Analysis	904.0		1	431911	06/17/19 15:59	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	432478	06/24/19 09:02	SMP	TAL SL

Lab Chronicle

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Client Sample ID: Field Blank

Date Collected: 04/15/19 14:10
Date Received: 04/18/19 09:05

Lab Sample ID: 310-153579-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			429215	05/21/19 09:05	ORM	TAL SL
Total/NA	Analysis	903.0		1	432305	06/20/19 13:16	CDR	TAL SL
Total/NA	Prep	PrecSep_0			429223	05/21/19 10:02	ORM	TAL SL
Total/NA	Analysis	904.0		1	431881	06/17/19 16:03	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	432478	06/24/19 09:02	SMP	TAL SL

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Iowa	State Program	7	007	12-01-19

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	Dept. of Defense ELAP		L2305	04-06-22
ANAB	DoD		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19 *
Connecticut	State Program	1	PH-0241	03-31-21
Florida	NELAP	4	E87689	06-30-19 *
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19 *
New York	NELAP	2	11616	03-31-20
North Dakota	State Program	8	R207	06-30-19 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State		9997	08-31-19
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-20
Pennsylvania	NELAP		68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-20
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
Ra226_Ra228 Pos	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

310-153579 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Menomonee Falls STATE WI | Project: IPL - Lansing

Receipt Information

Date/Time Received: DATE 4-18-19 TIME 905 | Received By: LAB

Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ Lab Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☐ Yes	☒ No	*If yes:* Cooler # ____ of ____
Cooler Custody Seals Present?	☒ Yes	☐ No	*If yes:* Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: N | Correction Factor (°C): +0.0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 3.0 | Corrected Temp (°C): 3.0

• **Sample Container Temperature**

Container type(s) used:	CONTAINER 1		CONTAINER 2	
Uncorrected Temp (°C):	TEMP 1	TEMP 2	Corrected Temp (°C):	TEMP 1 / TEMP 2

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

#38998

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Gary Sterkel	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-38998-12748.1
Client Contact: Gary Sterkel	Phone: 262-518-4081	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: N84 W13540 Leon Road	Due Date Requested:			
City: Menomonee Falls	TAT Requested (days): Standard			
State, Zip: WI, 53051				
Phone:	PO #: 25219070			
Email: gsterkel@scsengineers.com	WO #:			
Project Name: IPL-Lansing, 25219070	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	903.0 - Radium 226	904.0 - Radium 228	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	D	N	D	D	X	
MW-301	4/15/19	1225	G	Water	N	N	1	1	1	1		
MW-302	4/15/19	1325	G	Water	N	N	1	1	1	1		
MW-303	4/15/19	1405	G	Water	N	N	1	1	1	1		
MW-6	4/15/19	1500	G	Water	N	N	1	1	1	1		
Field Blank	4/15/19	1410	G	Water	N	N	1	1	1	1		
				Water								

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

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

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

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company		Date/Time:	Company
Relinquished by: Gary Sterkel	4/17/19 1700	SCS	Received by:	4/18/19 0905	TACF
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-301	310-153579-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-301	310-153579-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-301	310-153579-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-302	310-153579-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-302	310-153579-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-302	310-153579-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-303	310-153579-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-303	310-153579-C-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-303	310-153579-D-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-6	310-153579-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-6	310-153579-C-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-6	310-153579-D-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-153579-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
Field Blank	310-153579-C-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-153579-D-5	Plastic 1 liter - Nitric Acid	<2	_____	_____

Table 2. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Lansing Generating Station / SCS Engineers Project #25219070.00

	Parameter	MW-301	MW-302	MW-303	MW-20	MW-6	Field Blank	TOTAL
Appendix III Parameters	Boron	x	x	x		x	x	5
	Calcium	x	x	x		x	x	5
	Chloride	x	x	x		x	x	5
	Fluoride	x	x	x		x	x	5
	pH	x	x	x		x	x	5
	Sulfate	x	x	x		x	x	5
	TDS	x	x	x		x	x	5
Appendix IV Parameters	Antimony	x	x	x		x	x	5
	Arsenic	x	x	x		x	x	5
	Barium	x	x	x		x	x	5
	Beryllium	x	x	x		x	x	5
	Cadmium	x	x	x		x	x	5
	Chromium	x	x	x		x	x	5
	Cobalt	x	x	x		x	x	5
	Fluoride	x	x	x		x	x	5
	Lead	x	x	x		x	x	5
	Lithium	x	x	x		x	x	5
	Mercury	x	x	x		x	x	5
	Molybdenum	x	x	x		x	x	5
	Selenium	x	x	x		x	x	5
	Thallium	x	x	x		x	x	5
	Radium	x	x	x		x	x	5
Field Parameters	Groundwater Elevation	x	x	x	x	x		5
	Well Depth	x	x	x		x		4
	pH (field)	x	x	x		x		4
	Specific Conductance	x	x	x		x		4
	Dissolved Oxygen	x	x	x		x		4
	ORP	x	x	x		x		4
	Temperature	x	x	x		x		4
	Turbidity	x	x	x		x		4
	Color	x	x	x		x		4
	Odor	x	x	x		x		4

Notes: All samples are unfiltered (total analysis)

C:\Users\fredricks\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\3TD90TJJ\[L

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-153579-2

Login Number: 153579
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-153579-2

Login Number: 153579
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 04/22/19 02:00 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: SCS Engineers
Project/Site: IPL-Lansing, 25219070

Job ID: 310-153579-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
310-153579-1	MW-301	92.9
310-153579-2	MW-302	94.4
310-153579-3	MW-303	97.5
310-153579-4	MW-6	101
310-153579-5	Field Blank	97.5
LCS 160-429215/1-A	Lab Control Sample	105
MB 160-429215/24-A	Method Blank	105

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-153579-1	MW-301	92.9	81.9
310-153579-2	MW-302	94.4	83.0
310-153579-3	MW-303	97.5	82.2
310-153579-4	MW-6	101	84.5
310-153579-5	Field Blank	97.5	84.5
LCS 160-429223/1-A	Lab Control Sample	105	83.7
MB 160-429223/24-A	Method Blank	105	82.6

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

A2 Initial Sampling Event – Newly Installed Monitoring wells, June 2019

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-158624-1
Client Project/Site: Alliant Lansing, 25218221

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
7/12/2019 3:45:04 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

Table of Contents

Job ID: 310-158624-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-158624-1

Comments
FIELD BLANK WATER DATA REVIEW: After review by the lab, the field blank water supplied for this analysis had notable concentrations of chloride, fluoride, sulfate, TDS, Barium, Calcium and Molydenum present. Reanalysis of the remaining service center field blank water confirms the higher levels of analytes present.

Receipt
The samples were received on 6/25/2019 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.8º C.

HPLC/IC
Method(s) 9056A: The following samples were diluted due to the nature of the sample matrix: MW-304 (310-158624-1), MW-305 (310-158624-2) and MW-306 (310-158624-3). Elevated reporting limits (RLs) are provided.

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

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

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

Sample Summary

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-158624-1	MW-304	Water	06/20/19 12:20	06/25/19 09:05	
310-158624-2	MW-305	Water	06/20/19 14:30	06/25/19 09:05	
310-158624-3	MW-306	Water	06/20/19 13:45	06/25/19 09:05	
310-158624-4	Field Blank	Water	06/20/19 14:15	06/25/19 09:05	

Detection Summary

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-1

Client Sample ID: MW-304 — Lab Sample ID: 310-158624-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.9		5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	20		5.0	1.8	mg/L	5		9056A	Total/NA
Barium	54		2.0	0.84	ug/L	1		6020A	Total/NA
Calcium	82		0.50	0.10	mg/L	1		6020A	Total/NA
Chromium	1.6	J F2 F1	5.0	0.98	ug/L	1		6020A	Total/NA
Cobalt	1.1		0.50	0.091	ug/L	1		6020A	Total/NA
Lead	1.2		0.50	0.27	ug/L	1		6020A	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	280		5.0	1.9	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids	350		60	48	mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	N/A				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	41				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	6.2				mg/L	1		Field Sampling	Total/NA
pH, Field	7.01				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	593				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	10.6				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	104				NTU	1		Field Sampling	Total/NA
Well Depth	N/A				ft	1		Field Sampling	Total/NA

Client Sample ID: MW-305 — Lab Sample ID: 310-158624-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	6.8		5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	24		5.0	1.8	mg/L	5		9056A	Total/NA
Arsenic	2.2		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	170		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	180	J	200	110	ug/L	1		6020A	Total/NA
Calcium	92		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	0.52		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	3.4	J	10	2.7	ug/L	1		6020A	Total/NA
Molybdenum	1.7	J	2.0	1.1	ug/L	1		6020A	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	290		5.0	1.9	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids	440		60	48	mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	N/A				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	27				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.2				mg/L	1		Field Sampling	Total/NA
pH, Field	7.19				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	638				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	15.5				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	9.60				NTU	1		Field Sampling	Total/NA
Well Depth	N/A				ft	1		Field Sampling	Total/NA

Client Sample ID: MW-306 — Lab Sample ID: 310-158624-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	24		5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	280		20	7.0	mg/L	20		9056A	Total/NA
Arsenic	8.6		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	280		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	860		200	110	ug/L	1		6020A	Total/NA
Calcium	240		0.50	0.10	mg/L	1		6020A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-306 (Continued) — Lab Sample ID: 310-158624-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	1.0		0.50	0.091	ug/L	1		6020A	Total/NA
Lead	0.52		0.50	0.27	ug/L	1		6020A	Total/NA
Lithium	19		10	2.7	ug/L	1		6020A	Total/NA
Total Alkalinity as CaCO3 to pH 4.5	620		5.0	1.9	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids	1200		60	48	mg/L	1		SM 2540C	Total/NA
pH	6.9	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	N/A				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	22				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	1.0				mg/L	1		Field Sampling	Total/NA
pH, Field	6.87				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1632				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	13.8				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	25.90				NTU	1		Field Sampling	Total/NA
Well Depth	N/A				ft	1		Field Sampling	Total/NA

Client Sample ID: Field Blank — Lab Sample ID: 310-158624-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	21		1.0	0.29	mg/L	1		9056A	Total/NA
Fluoride	0.82		0.10	0.045	mg/L	1		9056A	Total/NA
Sulfate	37		1.0	0.35	mg/L	1		9056A	Total/NA
Barium	3.5		2.0	0.84	ug/L	1		6020A	Total/NA
Calcium	0.37	J	0.50	0.10	mg/L	1		6020A	Total/NA
Molybdenum	1.1	J	2.0	1.1	ug/L	1		6020A	Total/NA
Total Alkalinity as CaCO3	220		5.0	1.9	mg/L	1		2320B	Total/NA
Total Dissolved Solids	360		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-1

Client Sample ID: MW-304

Date Collected: 06/20/19 12:20
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-1

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.9**		5.0	1.5	mg/L			06/28/19 21:21	5
Fluoride	<0.23		0.50	0.23	mg/L			06/28/19 21:21	5
Sulfate	**20**		5.0	1.8	mg/L			06/28/19 21:21	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		06/26/19 08:26	07/03/19 13:10	1
Arsenic	<0.75		2.0	0.75	ug/L		06/26/19 08:26	07/01/19 21:26	1
Barium	**54**		2.0	0.84	ug/L		06/26/19 08:26	07/03/19 13:10	1
Beryllium	<0.27		1.0	0.27	ug/L		06/26/19 08:26	07/01/19 21:26	1
Boron	<110		200	110	ug/L		06/26/19 08:26	07/01/19 21:26	1
Cadmium	<0.077		0.50	0.077	ug/L		06/26/19 08:26	07/03/19 13:10	1
Calcium	**82**		0.50	0.10	mg/L		06/26/19 08:26	07/01/19 21:26	1
Chromium	**1.6**	**J F2 F1**	5.0	0.98	ug/L		06/26/19 08:26	07/01/19 21:26	1
Cobalt	**1.1**		0.50	0.091	ug/L		06/26/19 08:26	07/01/19 21:26	1
Lead	**1.2**		0.50	0.27	ug/L		06/26/19 08:26	07/03/19 13:10	1
Lithium	<2.7		10	2.7	ug/L		06/26/19 08:26	07/01/19 21:26	1
Molybdenum	<1.1		2.0	1.1	ug/L		06/26/19 08:26	07/01/19 21:26	1
Selenium	<1.0		5.0	1.0	ug/L		06/26/19 08:26	07/01/19 21:26	1
Thallium	<0.27		1.0	0.27	ug/L		06/26/19 08:26	07/01/19 21:26	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		06/26/19 10:28	06/27/19 15:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity as CaCO3 to pH 4.5	**280**		5.0	1.9	mg/L			06/28/19 11:33	1
Total Dissolved Solids	**350**		60	48	mg/L			06/25/19 15:39	1
pH	**7.4**	**HF**	0.1	0.1	SU			06/25/19 16:59	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**N/A**				ft			06/20/19 12:20	1
Oxidation Reduction Potential	**41**				millivolts			06/20/19 12:20	1
Oxygen, Dissolved, Client Supplied	**6.2**				mg/L			06/20/19 12:20	1
pH, Field	**7.01**				SU			06/20/19 12:20	1
Specific Conductance, Field	**593**				umhos/cm			06/20/19 12:20	1
Temperature, Field	**10.6**				Degrees C			06/20/19 12:20	1
Turbidity, Field	**104**				NTU			06/20/19 12:20	1
Well Depth	**N/A**				ft			06/20/19 12:20	1

Client Sample ID: MW-305

Date Collected: 06/20/19 14:30
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-2

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**6.8**		5.0	1.5	mg/L			06/28/19 21:35	5
Fluoride	<0.23		0.50	0.23	mg/L			06/28/19 21:35	5
Sulfate	**24**		5.0	1.8	mg/L			06/28/19 21:35	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		06/26/19 08:26	07/03/19 13:20	1
Arsenic	**2.2**		2.0	0.75	ug/L		06/26/19 08:26	07/01/19 21:36	1
Barium	**170**		2.0	0.84	ug/L		06/26/19 08:26	07/03/19 13:20	1
Beryllium	<0.27		1.0	0.27	ug/L		06/26/19 08:26	07/01/19 21:36	1
Boron	**180**	**J**	200	110	ug/L		06/26/19 08:26	07/01/19 21:36	1
Cadmium	<0.077		0.50	0.077	ug/L		06/26/19 08:26	07/03/19 13:20	1
Calcium	**92**		0.50	0.10	mg/L		06/26/19 08:26	07/01/19 21:36	1
Chromium	<0.98		5.0	0.98	ug/L		06/26/19 08:26	07/01/19 21:36	1
Cobalt	**0.52**		0.50	0.091	ug/L		06/26/19 08:26	07/01/19 21:36	1
Lead	<0.27		0.50	0.27	ug/L		06/26/19 08:26	07/03/19 13:20	1
Lithium	**3.4**	**J**	10	2.7	ug/L		06/26/19 08:26	07/01/19 21:36	1
Molybdenum	**1.7**	**J**	2.0	1.1	ug/L		06/26/19 08:26	07/01/19 21:36	1
Selenium	<1.0		5.0	1.0	ug/L		06/26/19 08:26	07/01/19 21:36	1
Thallium	<0.27		1.0	0.27	ug/L		06/26/19 08:26	07/01/19 21:36	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		06/26/19 10:28	06/27/19 15:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity as CaCO3 to pH 4.5	**290**		5.0	1.9	mg/L			06/28/19 11:33	1
Total Dissolved Solids	**440**		60	48	mg/L			06/25/19 15:39	1
pH	**7.2**	**HF**	0.1	0.1	SU			06/25/19 17:00	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**N/A**				ft			06/20/19 14:30	1
Oxidation Reduction Potential	**27**				millivolts			06/20/19 14:30	1
Oxygen, Dissolved, Client Supplied	**0.2**				mg/L			06/20/19 14:30	1
pH, Field	**7.19**				SU			06/20/19 14:30	1
Specific Conductance, Field	**638**				umhos/cm			06/20/19 14:30	1
Temperature, Field	**15.5**				Degrees C			06/20/19 14:30	1
Turbidity, Field	**9.60**				NTU			06/20/19 14:30	1
Well Depth	**N/A**				ft			06/20/19 14:30	1

Client Sample Results

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-1

Client Sample ID: MW-306

Date Collected: 06/20/19 13:45
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-3

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24**		5.0	1.5	mg/L			06/28/19 22:04	5
Fluoride	<0.23		0.50	0.23	mg/L			06/28/19 22:04	5
Sulfate	**280**		20	7.0	mg/L			06/28/19 22:48	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		06/26/19 08:26	07/03/19 13:23	1
Arsenic	**8.6**		2.0	0.75	ug/L		06/26/19 08:26	07/01/19 21:39	1
Barium	**280**		2.0	0.84	ug/L		06/26/19 08:26	07/03/19 13:23	1
Beryllium	<0.27		1.0	0.27	ug/L		06/26/19 08:26	07/01/19 21:39	1
Boron	**860**		200	110	ug/L		06/26/19 08:26	07/01/19 21:39	1
Cadmium	<0.077		0.50	0.077	ug/L		06/26/19 08:26	07/03/19 13:23	1
Calcium	**240**		0.50	0.10	mg/L		06/26/19 08:26	07/01/19 21:39	1
Chromium	<0.98		5.0	0.98	ug/L		06/26/19 08:26	07/01/19 21:39	1
Cobalt	**1.0**		0.50	0.091	ug/L		06/26/19 08:26	07/01/19 21:39	1
Lead	**0.52**		0.50	0.27	ug/L		06/26/19 08:26	07/03/19 13:23	1
Lithium	**19**		10	2.7	ug/L		06/26/19 08:26	07/01/19 21:39	1
Molybdenum	<1.1		2.0	1.1	ug/L		06/26/19 08:26	07/01/19 21:39	1
Selenium	<1.0		5.0	1.0	ug/L		06/26/19 08:26	07/01/19 21:39	1
Thallium	<0.27		1.0	0.27	ug/L		06/26/19 08:26	07/01/19 21:39	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		06/26/19 10:28	06/27/19 15:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity as CaCO3 to pH 4.5	**620**		5.0	1.9	mg/L			06/28/19 11:33	1
Total Dissolved Solids	**1200**		60	48	mg/L			06/25/19 15:39	1
pH	**6.9**	**HF**	0.1	0.1	SU			06/25/19 17:01	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**N/A**				ft			06/20/19 13:45	1
Oxidation Reduction Potential	**22**				millivolts			06/20/19 13:45	1
Oxygen, Dissolved, Client Supplied	**1.0**				mg/L			06/20/19 13:45	1
pH, Field	**6.87**				SU			06/20/19 13:45	1
Specific Conductance, Field	**1632**				umhos/cm			06/20/19 13:45	1
Temperature, Field	**13.8**				Degrees C			06/20/19 13:45	1
Turbidity, Field	**25.90**				NTU			06/20/19 13:45	1
Well Depth	**N/A**				ft			06/20/19 13:45	1

Client Sample ID: Field Blank

Date Collected: 06/20/19 14:15
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-4

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**21**		1.0	0.29	mg/L			06/28/19 23:03	1
Fluoride	**0.82**		0.10	0.045	mg/L			06/28/19 23:03	1
Sulfate	**37**		1.0	0.35	mg/L			06/28/19 23:03	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		06/26/19 08:26	07/03/19 13:27	1
Arsenic	<0.75		2.0	0.75	ug/L		06/26/19 08:26	07/03/19 13:27	1
Barium	**3.5**		2.0	0.84	ug/L		06/26/19 08:26	07/03/19 13:27	1
Beryllium	<0.27		1.0	0.27	ug/L		06/26/19 08:26	07/01/19 21:53	1
Boron	<110		200	110	ug/L		06/26/19 08:26	07/01/19 21:53	1
Cadmium	<0.077		0.50	0.077	ug/L		06/26/19 08:26	07/03/19 13:27	1
Calcium	**0.37**	**J**	0.50	0.10	mg/L		06/26/19 08:26	07/03/19 13:27	1
Chromium	<0.98		5.0	0.98	ug/L		06/26/19 08:26	07/01/19 21:53	1
Cobalt	<0.091		0.50	0.091	ug/L		06/26/19 08:26	07/01/19 21:53	1
Lead	<0.27		0.50	0.27	ug/L		06/26/19 08:26	07/01/19 21:53	1
Lithium	<2.7		10	2.7	ug/L		06/26/19 08:26	07/03/19 13:27	1
Molybdenum	**1.1**	**J**	2.0	1.1	ug/L		06/26/19 08:26	07/01/19 21:53	1
Selenium	<1.0		5.0	1.0	ug/L		06/26/19 08:26	07/03/19 13:27	1
Thallium	<0.27		1.0	0.27	ug/L		06/26/19 08:26	07/01/19 21:53	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		06/26/19 10:28	06/27/19 15:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity as CaCO3	**220**		5.0	1.9	mg/L			06/28/19 16:15	1
Total Dissolved Solids	**360**		30	24	mg/L			06/25/19 15:39	1
pH	**7.7**	**HF**	0.1	0.1	SU			06/25/19 17:02	1

Definitions/Glossary

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-1

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

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

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-244437/34
Matrix: Water
Analysis Batch: 244437

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.29		1.0	0.29	mg/L			07/01/19 10:15	1
Fluoride	<0.045		0.10	0.045	mg/L			07/01/19 10:15	1
Sulfate	<0.35		1.0	0.35	mg/L			07/01/19 10:15	1

Lab Sample ID: LCS 310-244437/35
Matrix: Water
Analysis Batch: 244437

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.2		mg/L		102	90 - 110
Fluoride	2.00	2.08		mg/L		104	90 - 110
Sulfate	10.0	10.5		mg/L		105	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-243799/1-A
Matrix: Water
Analysis Batch: 244559

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 243799

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		2.0	0.75	ug/L		06/26/19 08:26	07/01/19 21:19	1
Beryllium	<0.27		1.0	0.27	ug/L		06/26/19 08:26	07/01/19 21:19	1
Boron	<110		200	110	ug/L		06/26/19 08:26	07/01/19 21:19	1
Calcium	<0.10		0.50	0.10	mg/L		06/26/19 08:26	07/01/19 21:19	1
Chromium	<0.98		5.0	0.98	ug/L		06/26/19 08:26	07/01/19 21:19	1
Cobalt	<0.091		0.50	0.091	ug/L		06/26/19 08:26	07/01/19 21:19	1
Lithium	<2.7		10	2.7	ug/L		06/26/19 08:26	07/01/19 21:19	1
Molybdenum	<1.1		2.0	1.1	ug/L		06/26/19 08:26	07/01/19 21:19	1
Selenium	<1.0		5.0	1.0	ug/L		06/26/19 08:26	07/01/19 21:19	1
Thallium	<0.27		1.0	0.27	ug/L		06/26/19 08:26	07/01/19 21:19	1

Lab Sample ID: MB 310-243799/1-A
Matrix: Water
Analysis Batch: 245078

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 243799

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		06/26/19 08:26	07/03/19 12:53	1
Barium	<0.84		2.0	0.84	ug/L		06/26/19 08:26	07/03/19 12:53	1
Cadmium	<0.077		0.50	0.077	ug/L		06/26/19 08:26	07/03/19 12:53	1
Lead	<0.27		0.50	0.27	ug/L		06/26/19 08:26	07/03/19 12:53	1

Lab Sample ID: LCS 310-243799/2-A
Matrix: Water
Analysis Batch: 244559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 243799

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	40.0	44.0		ug/L		110	80 - 120
Beryllium	20.0	22.1		ug/L		110	80 - 120
Boron	880	972		ug/L		110	80 - 120
Calcium	2.00	2.30		mg/L		115	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-243799/2-A
Matrix: Water
Analysis Batch: 244559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 243799

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	40.0	44.6		ug/L		112	80 - 120
Cobalt	20.0	22.7		ug/L		114	80 - 120
Lithium	100	105		ug/L		105	80 - 120
Molybdenum	40.0	45.0		ug/L		113	80 - 120
Selenium	40.0	43.6		ug/L		109	80 - 120
Thallium	16.0	18.0		ug/L		113	80 - 120

Lab Sample ID: LCS 310-243799/2-A
Matrix: Water
Analysis Batch: 245078

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 243799

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	20.4		ug/L		102	80 - 120
Barium	40.0	43.8		ug/L		109	80 - 120
Cadmium	20.0	22.2		ug/L		111	80 - 120
Lead	20.0	22.4		ug/L		112	80 - 120

Lab Sample ID: 310-158624-1 MS
Matrix: Water
Analysis Batch: 244559

Client Sample ID: MW-304
Prep Type: Total/NA
Prep Batch: 243799

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	<0.75		40.0	45.2		ug/L		113	75 - 125
Beryllium	<0.27		20.0	22.8		ug/L		114	75 - 125
Boron	<110		880	1040		ug/L		118	75 - 125
Calcium	82		2.00	82.7	4	mg/L		37	75 - 125
Chromium	1.6	J F2 F1	40.0	46.1		ug/L		111	75 - 125
Cobalt	1.1		20.0	23.0		ug/L		110	75 - 125
Lithium	<2.7		100	108		ug/L		108	75 - 125
Molybdenum	<1.1		40.0	46.2		ug/L		116	75 - 125
Selenium	<1.0		40.0	44.0		ug/L		110	75 - 125
Thallium	<0.27		16.0	18.0		ug/L		112	75 - 125

Lab Sample ID: 310-158624-1 MS
Matrix: Water
Analysis Batch: 245078

Client Sample ID: MW-304
Prep Type: Total/NA
Prep Batch: 243799

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	<0.53		20.0	20.5		ug/L		102	75 - 125
Barium	54		40.0	100		ug/L		114	75 - 125
Cadmium	<0.077		20.0	22.3		ug/L		112	75 - 125
Lead	1.2		20.0	23.8		ug/L		113	75 - 125

Lab Sample ID: 310-158624-1 MSD
Matrix: Water
Analysis Batch: 244559

Client Sample ID: MW-304
Prep Type: Total/NA
Prep Batch: 243799

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	<0.75		40.0	43.9		ug/L		110	75 - 125	3	20
Beryllium	<0.27		20.0	22.2		ug/L		111	75 - 125	2	20

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-158624-1 MSD — **Client Sample ID: MW-304**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244559 — **Prep Batch: 243799**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	<110		880	1070		ug/L		122	75 - 125	3	20
Calcium	82		2.00	84.8	4	mg/L		142	75 - 125	2	20
Chromium	1.6	J F2 F1	40.0	70.9	F1 F2	ug/L		173	75 - 125	42	20
Cobalt	1.1		20.0	23.2		ug/L		111	75 - 125	1	20
Lithium	<2.7		100	106		ug/L		106	75 - 125	2	20
Molybdenum	<1.1		40.0	47.0		ug/L		117	75 - 125	2	20
Selenium	<1.0		40.0	43.3		ug/L		108	75 - 125	2	20
Thallium	<0.27		16.0	17.6		ug/L		110	75 - 125	2	20

Lab Sample ID: 310-158624-1 MSD — **Client Sample ID: MW-304**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 245078 — **Prep Batch: 243799**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	<0.53		20.0	20.4		ug/L		102	75 - 125	0	20
Barium	54		40.0	100		ug/L		115	75 - 125	0	20
Cadmium	<0.077		20.0	22.2		ug/L		111	75 - 125	1	20
Lead	1.2		20.0	23.6		ug/L		112	75 - 125	1	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-243832/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244121 — **Prep Batch: 243832**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		06/26/19 10:28	06/27/19 14:38	1

Lab Sample ID: LCS 310-243832/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244121 — **Prep Batch: 243832**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	1.67	1.60		ug/L		96	80 - 120

Method: 2320B - Alkalinity (Low Level)

Lab Sample ID: MB 310-244274/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244274

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity as CaCO3	<1.9		5.0	1.9	mg/L			06/28/19 16:15	1

Lab Sample ID: LCS 310-244274/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244274

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	1060	963		mg/L		91	90 - 110

Method: 2320B - Alkalinity (Low Level) (Continued)

Lab Sample ID: 310-158624-4 MS
Matrix: Water
Analysis Batch: 244274

Client Sample ID: Field Blank
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3	220		265	472		mg/L		96	74 - 122

Lab Sample ID: 310-158624-4 MSD
Matrix: Water
Analysis Batch: 244274

Client Sample ID: Field Blank
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Alkalinity as CaCO3	220		265	472		mg/L		96	74 - 122	0	14

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 310-244216/1
Matrix: Water
Analysis Batch: 244216

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity as CaCO3 to pH 4.5	<1.9		5.0	1.9	mg/L			06/28/19 11:33	1

Lab Sample ID: LCS 310-244216/2
Matrix: Water
Analysis Batch: 244216

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity as CaCO3 to pH 4.5	1060	965		mg/L		91	90 - 110

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-243733/1
Matrix: Water
Analysis Batch: 243733

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<24		30	24	mg/L			06/25/19 15:39	1

Lab Sample ID: LCS 310-243733/2
Matrix: Water
Analysis Batch: 243733

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	982		mg/L		98	90 - 110

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-243744/1
Matrix: Water
Analysis Batch: 243744

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	6.9		SU		99	98 - 102

QC Association Summary

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-1

HPLC/IC

Analysis Batch: 244437

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	9056A	
310-158624-2	MW-305	Total/NA	Water	9056A	
310-158624-3	MW-306	Total/NA	Water	9056A	
310-158624-3	MW-306	Total/NA	Water	9056A	
310-158624-4	Field Blank	Total/NA	Water	9056A	
MB 310-244437/34	Method Blank	Total/NA	Water	9056A	
LCS 310-244437/35	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 243799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	3010A	
310-158624-2	MW-305	Total/NA	Water	3010A	
310-158624-3	MW-306	Total/NA	Water	3010A	
310-158624-4	Field Blank	Total/NA	Water	3010A	
MB 310-243799/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-243799/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-158624-1 MS	MW-304	Total/NA	Water	3010A	
310-158624-1 MSD	MW-304	Total/NA	Water	3010A	

Prep Batch: 243832

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	7470A	
310-158624-2	MW-305	Total/NA	Water	7470A	
310-158624-3	MW-306	Total/NA	Water	7470A	
310-158624-4	Field Blank	Total/NA	Water	7470A	
MB 310-243832/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-243832/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 244121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	7470A	243832
310-158624-2	MW-305	Total/NA	Water	7470A	243832
310-158624-3	MW-306	Total/NA	Water	7470A	243832
310-158624-4	Field Blank	Total/NA	Water	7470A	243832
MB 310-243832/1-A	Method Blank	Total/NA	Water	7470A	243832
LCS 310-243832/2-A	Lab Control Sample	Total/NA	Water	7470A	243832

Analysis Batch: 244559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	6020A	243799
310-158624-2	MW-305	Total/NA	Water	6020A	243799
310-158624-3	MW-306	Total/NA	Water	6020A	243799
310-158624-4	Field Blank	Total/NA	Water	6020A	243799
MB 310-243799/1-A	Method Blank	Total/NA	Water	6020A	243799
LCS 310-243799/2-A	Lab Control Sample	Total/NA	Water	6020A	243799
310-158624-1 MS	MW-304	Total/NA	Water	6020A	243799
310-158624-1 MSD	MW-304	Total/NA	Water	6020A	243799

QC Association Summary

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-1

Metals

Analysis Batch: 245078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	6020A	243799
310-158624-2	MW-305	Total/NA	Water	6020A	243799
310-158624-3	MW-306	Total/NA	Water	6020A	243799
310-158624-4	Field Blank	Total/NA	Water	6020A	243799
MB 310-243799/1-A	Method Blank	Total/NA	Water	6020A	243799
LCS 310-243799/2-A	Lab Control Sample	Total/NA	Water	6020A	243799
310-158624-1 MS	MW-304	Total/NA	Water	6020A	243799
310-158624-1 MSD	MW-304	Total/NA	Water	6020A	243799

General Chemistry

Analysis Batch: 243733

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	SM 2540C	
310-158624-2	MW-305	Total/NA	Water	SM 2540C	
310-158624-3	MW-306	Total/NA	Water	SM 2540C	
310-158624-4	Field Blank	Total/NA	Water	SM 2540C	
MB 310-243733/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-243733/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 243744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	SM 4500 H+ B	
310-158624-2	MW-305	Total/NA	Water	SM 4500 H+ B	
310-158624-3	MW-306	Total/NA	Water	SM 4500 H+ B	
310-158624-4	Field Blank	Total/NA	Water	SM 4500 H+ B	
LCS 310-243744/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 244216

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	SM 2320B	
310-158624-2	MW-305	Total/NA	Water	SM 2320B	
310-158624-3	MW-306	Total/NA	Water	SM 2320B	
MB 310-244216/1	Method Blank	Total/NA	Water	SM 2320B	
LCS 310-244216/2	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 244274

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-4	Field Blank	Total/NA	Water	2320B	
MB 310-244274/1	Method Blank	Total/NA	Water	2320B	
LCS 310-244274/2	Lab Control Sample	Total/NA	Water	2320B	
310-158624-4 MS	Field Blank	Total/NA	Water	2320B	
310-158624-4 MSD	Field Blank	Total/NA	Water	2320B	

Field Service / Mobile Lab

Analysis Batch: 245591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	Field Sampling	
310-158624-2	MW-305	Total/NA	Water	Field Sampling	
310-158624-3	MW-306	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-1

Client Sample ID: MW-304

Lab Sample ID: 310-158624-1

Date Collected: 06/20/19 12:20

Matrix: Water

Date Received: 06/25/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	244437	06/28/19 21:21	MLU	TAL CF
Total/NA	Prep	3010A			243799	06/26/19 08:26	HED	TAL CF
Total/NA	Analysis	6020A		1	244559	07/01/19 21:26	SAD	TAL CF
Total/NA	Prep	3010A			243799	06/26/19 08:26	HED	TAL CF
Total/NA	Analysis	6020A		1	245078	07/03/19 13:10	SAD	TAL CF
Total/NA	Prep	7470A			243832	06/26/19 10:28	SAD	TAL CF
Total/NA	Analysis	7470A		1	244121	06/27/19 15:25	MLU	TAL CF
Total/NA	Analysis	SM 2320B		1	244216	06/28/19 11:33	MDK	TAL CF
Total/NA	Analysis	SM 2540C		1	243733	06/25/19 15:39	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	243744	06/25/19 16:59	ARG	TAL CF
Total/NA	Analysis	Field Sampling		1	245591	06/20/19 12:20	ANO	TAL CF

Client Sample ID: MW-305

Lab Sample ID: 310-158624-2

Date Collected: 06/20/19 14:30

Matrix: Water

Date Received: 06/25/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	244437	06/28/19 21:35	MLU	TAL CF
Total/NA	Prep	3010A			243799	06/26/19 08:26	HED	TAL CF
Total/NA	Analysis	6020A		1	244559	07/01/19 21:36	SAD	TAL CF
Total/NA	Prep	3010A			243799	06/26/19 08:26	HED	TAL CF
Total/NA	Analysis	6020A		1	245078	07/03/19 13:20	SAD	TAL CF
Total/NA	Prep	7470A			243832	06/26/19 10:28	SAD	TAL CF
Total/NA	Analysis	7470A		1	244121	06/27/19 15:28	MLU	TAL CF
Total/NA	Analysis	SM 2320B		1	244216	06/28/19 11:33	MDK	TAL CF
Total/NA	Analysis	SM 2540C		1	243733	06/25/19 15:39	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	243744	06/25/19 17:00	ARG	TAL CF
Total/NA	Analysis	Field Sampling		1	245591	06/20/19 14:30	ANO	TAL CF

Client Sample ID: MW-306

Lab Sample ID: 310-158624-3

Date Collected: 06/20/19 13:45

Matrix: Water

Date Received: 06/25/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	244437	06/28/19 22:04	MLU	TAL CF
Total/NA	Analysis	9056A		20	244437	06/28/19 22:48	MLU	TAL CF
Total/NA	Prep	3010A			243799	06/26/19 08:26	HED	TAL CF
Total/NA	Analysis	6020A		1	244559	07/01/19 21:39	SAD	TAL CF
Total/NA	Prep	3010A			243799	06/26/19 08:26	HED	TAL CF
Total/NA	Analysis	6020A		1	245078	07/03/19 13:23	SAD	TAL CF
Total/NA	Prep	7470A			243832	06/26/19 10:28	SAD	TAL CF
Total/NA	Analysis	7470A		1	244121	06/27/19 15:30	MLU	TAL CF
Total/NA	Analysis	SM 2320B		1	244216	06/28/19 11:33	MDK	TAL CF

Lab Chronicle

Client: SCS Engineers
Job ID: 310-158624-1
Project/Site: Alliant Lansing, 25218221

Client Sample ID: MW-306
Lab Sample ID: 310-158624-3
Date Collected: 06/20/19 13:45
Matrix: Water
Date Received: 06/25/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	243733	06/25/19 15:39	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	243744	06/25/19 17:01	ARG	TAL CF
Total/NA	Analysis	Field Sampling		1	245591	06/20/19 13:45	ANO	TAL CF

Client Sample ID: Field Blank
Lab Sample ID: 310-158624-4
Date Collected: 06/20/19 14:15
Matrix: Water
Date Received: 06/25/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	244437	06/28/19 23:03	MLU	TAL CF
Total/NA	Prep	3010A			243799	06/26/19 08:26	HED	TAL CF
Total/NA	Analysis	6020A		1	244559	07/01/19 21:53	SAD	TAL CF
Total/NA	Prep	3010A			243799	06/26/19 08:26	HED	TAL CF
Total/NA	Analysis	6020A		1	245078	07/03/19 13:27	SAD	TAL CF
Total/NA	Prep	7470A			243832	06/26/19 10:28	SAD	TAL CF
Total/NA	Analysis	7470A		1	244121	06/27/19 15:32	MLU	TAL CF
Total/NA	Analysis	2320B		1	244274	06/28/19 16:15	MDK	TAL CF
Total/NA	Analysis	SM 2540C		1	243733	06/25/19 15:39	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	243744	06/25/19 17:02	ARG	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-158624-1
Project/Site: Alliant Lansing, 25218221

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Iowa	State Program	7	007	12-01-19

Method Summary

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
2320B	Alkalinity (Low Level)	SM	TAL CF
SM 2320B	Alkalinity	SM	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
Field Sampling	Field Sampling	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

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

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Table 3. Parameters for Groundwater Monitoring to meet Federal Requirements

Appendix III	Boron
	Calcium
	Chloride
	Fluoride
	pH
	Sulfate
	TDS
Appendix IV	Antimony
	Arsenic
	Barium
	Beryllium
	Cadmium
	Chromium
	Cobalt
	Fluoride
	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Radium

eurofins | Environment Testing TestAmerica

310-158624 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS

City/State: CITY Menomonee Falls STATE WI | Project:

Receipt Information

Date/Time Received: DATE 6-25-19 TIME 905 | Received By: LAB

Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☐ Yes	☒ No	*If yes:* Cooler # ____ of ____
Cooler Custody Seals Present?	☒ Yes	☐ No	*If yes:* Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M | Correction Factor (°C): -0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.9 | Corrected Temp (°C): 0.8

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Phone: 319-277-2401 Fax: 319-277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

eurofins | Environment Testing TestAmerica

#41459

Client Information	Sampler: Gary Sterkel	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-40459-13154.1
Client Contact: Gary Sterkel	Phone: 262 518 4081	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: N84 W13540 Leon Road	Due Date Requested:			
City: Menomonee Falls	TAT Requested (days): Standard			
State, Zip: WI, 53051				
Phone:	PO #: 25218221			
Email: gsterkel@scsengineers.com	WO #:			
Project Name: Alliant Lansing, 25218221	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	903.0 - Radium 226	904.0 - Radium 228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	D		
~~MW-301~~ MW-304	6/20/19	1220	G	Water	N	N	1	1	1	1		
~~MW-302~~ MW-305	6/20/19	1430	G	Water	N	N	1	1	1	1		
~~MW-303~~ MW-306	6/20/19	1345	G	Water	N	N	1	1	1	1		
~~MW-5~~ FIELD BLANK	6/20/19	1415	G	Water	N	N	1	1	1	1		

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

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

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

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Gary Sterkel	6/21/19 1200	SCS		6-21-19 12:00	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6-21-19 1700	TA		6/25/19 0905	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.5-7.3.5

Ver: 01/16/2019

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-304	310-158624-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-304	310-158624-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-304	310-158624-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-305	310-158624-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-305	310-158624-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-305	310-158624-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-306	310-158624-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-306	310-158624-C-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-306	310-158624-D-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-158624-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
Field Blank	310-158624-C-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-158624-D-4	Plastic 1 liter - Nitric Acid	<2	_____	_____

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-158624-1

Login Number: 158624
List Number: 1
Creator: Bovy, Lorrainna L

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-158624-2
Client Project/Site: Alliant Lansing, 25218221

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
8/15/2019 9:31:16 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-2

Job ID: 310-158624-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-158624-2

Comments
No additional comments.

Receipt
The samples were received on 6/25/2019 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.8º C.

RAD
Method(s) 903.0, 9315: Ra-226 Prep Batch 160-433168 & Method(s) 904.0, 9320: Ra-228 Prep Batch 160-433172: Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-304 (310-158624-1), MW-305 (310-158624-2), MW-306 (310-158624-3), Field Blank (310-158624-4), (LCS 160-433168/1-A), (LCSD 160-433168/2-A) and (MB 160-433168/18-A

Method(s) PrecSep-21: Radium 226 Prep Batch 160-433168 & Method(s) PrecSep_0: Radium 228 Prep Batch 160-433172: Insufficient sample volume was available to perform a sample duplicate for the following samples: MW-304 (310-158624-1), MW-305 (310-158624-2), MW-306 (310-158624-3) and Field Blank (310-158624-4). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-21: Radium 226 Prep Batch 160-433168 & Method(s) PrecSep_0: Radium 228 Prep Batch 160-433172: The following samples were prepared at a reduced aliquot due to yellow discoloration: MW-304 (310-158624-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

Sample Summary

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-158624-1	MW-304	Water	06/20/19 12:20	06/25/19 09:05	
310-158624-2	MW-305	Water	06/20/19 14:30	06/25/19 09:05	
310-158624-3	MW-306	Water	06/20/19 13:45	06/25/19 09:05	
310-158624-4	Field Blank	Water	06/20/19 14:15	06/25/19 09:05	

Detection Summary

Client: SCS Engineers
Job ID: 310-158624-2
Project/Site: Alliant Lansing, 25218221

Client Sample ID: MW-304 — Lab Sample ID: 310-158624-1

No Detections.

Client Sample ID: MW-305 — Lab Sample ID: 310-158624-2

No Detections.

Client Sample ID: MW-306 — Lab Sample ID: 310-158624-3

No Detections.

Client Sample ID: Field Blank — Lab Sample ID: 310-158624-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-304

Date Collected: 06/20/19 12:20
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-1

Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.217		0.0991	0.101	1.00	0.111	pCi/L	06/28/19 13:59	08/14/19 13:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.5*		*40 - 110*	*06/28/19 13:59*	*08/14/19 13:11*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.139	U	0.274	0.275	1.00	0.468	pCi/L	06/28/19 14:44	07/18/19 08:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.5*		*40 - 110*	*06/28/19 14:44*	*07/18/19 08:53*	*1*
Y Carrier	*87.9*		*40 - 110*	*06/28/19 14:44*	*07/18/19 08:53*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.356	U	0.291	0.293	5.00	0.468	pCi/L		08/15/19 09:03	1

Client Sample Results

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-2

Client Sample ID: MW-305

Date Collected: 06/20/19 14:30
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-2

Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.181		0.0801	0.0817	1.00	0.0872	pCi/L	06/28/19 13:59	08/14/19 13:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.9*		*40 - 110*	*06/28/19 13:59*	*08/14/19 13:12*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.372		0.235	0.237	1.00	0.361	pCi/L	06/28/19 14:44	07/18/19 08:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.9*		*40 - 110*	*06/28/19 14:44*	*07/18/19 08:53*	*1*
Y Carrier	*88.6*		*40 - 110*	*06/28/19 14:44*	*07/18/19 08:53*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.553		0.248	0.251	5.00	0.361	pCi/L		08/15/19 09:03	1

Client Sample ID: MW-306

Date Collected: 06/20/19 13:45
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-3

Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.432		0.112	0.118	1.00	0.0964	pCi/L	06/28/19 13:59	08/14/19 13:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.2*		*40 - 110*	*06/28/19 13:59*	*08/14/19 13:12*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.465		0.241	0.245	1.00	0.360	pCi/L	06/28/19 14:44	07/18/19 08:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.2*		*40 - 110*	*06/28/19 14:44*	*07/18/19 08:53*	*1*
Y Carrier	*96.4*		*40 - 110*	*06/28/19 14:44*	*07/18/19 08:53*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.897		0.266	0.272	5.00	0.360	pCi/L		08/15/19 09:03	1

Client Sample Results

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-2

Client Sample ID: Field Blank

Date Collected: 06/20/19 14:15
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-4

Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0236	U	0.0359	0.0359	1.00	0.0884	pCi/L	06/28/19 13:59	08/14/19 13:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*06/28/19 13:59*	*08/14/19 13:12*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.500**		0.224	0.229	1.00	0.326	pCi/L	06/28/19 14:44	07/18/19 08:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*06/28/19 14:44*	*07/18/19 08:54*	*1*
Y Carrier	*93.5*		*40 - 110*	*06/28/19 14:44*	*07/18/19 08:54*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.500**		0.227	0.232	5.00	0.326	pCi/L		08/15/19 09:03	1

Definitions/Glossary

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

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

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-433168/18-A
Matrix: Water
Analysis Batch: 439520

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433168

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0000	U	0.0431	0.0431	1.00	0.0895	pCi/L	06/28/19 13:59	08/14/19 14:58	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.2*		*40 - 110*	*06/28/19 13:59*	*08/14/19 14:58*	*1*

Lab Sample ID: LCS 160-433168/1-A
Matrix: Water
Analysis Batch: 439522

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433168

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.887		1.02	1.00	0.106	pCi/L	87	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.6*		*40 - 110*

Lab Sample ID: LCSD 160-433168/2-A
Matrix: Water
Analysis Batch: 439522

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 433168

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	9.320		0.955	1.00	0.0949	pCi/L	82	75 - 125	0.29	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-433172/18-A
Matrix: Water
Analysis Batch: 435292

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433172

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.005494	U	0.175	0.175	1.00	0.316	pCi/L	06/28/19 14:44	07/18/19 08:55	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.2*		*40 - 110*	*06/28/19 14:44*	*07/18/19 08:55*	*1*
Y Carrier	*98.3*		*40 - 110*	*06/28/19 14:44*	*07/18/19 08:55*	*1*

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-433172/1-A
Matrix: Water
Analysis Batch: 435292

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433172

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.01	8.856		1.04	1.00	0.376	pCi/L	98	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.6*		*40 - 110*
Y Carrier	*84.9*		*40 - 110*

Lab Sample ID: LCSD 160-433172/2-A
Matrix: Water
Analysis Batch: 435292

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 433172

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.01	8.392		0.974	1.00	0.314	pCi/L	93	75 - 125	0.23	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*
Y Carrier	*86.7*		*40 - 110*

QC Association Summary

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-2

Rad

Prep Batch: 433168

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	PrecSep-21	
310-158624-2	MW-305	Total/NA	Water	PrecSep-21	
310-158624-3	MW-306	Total/NA	Water	PrecSep-21	
310-158624-4	Field Blank	Total/NA	Water	PrecSep-21	
MB 160-433168/18-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-433168/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-433168/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 433172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158624-1	MW-304	Total/NA	Water	PrecSep_0	
310-158624-2	MW-305	Total/NA	Water	PrecSep_0	
310-158624-3	MW-306	Total/NA	Water	PrecSep_0	
310-158624-4	Field Blank	Total/NA	Water	PrecSep_0	
MB 160-433172/18-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-433172/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-433172/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-2

Client Sample ID: MW-304
Date Collected: 06/20/19 12:20
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			433168	06/28/19 13:59	ORM	TAL SL
Total/NA	Analysis	903.0		1	439521	08/14/19 13:11	KLS	TAL SL
Total/NA	Prep	PrecSep_0			433172	06/28/19 14:44	ORM	TAL SL
Total/NA	Analysis	904.0		1	435292	07/18/19 08:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	439613	08/15/19 09:03	SMP	TAL SL

Client Sample ID: MW-305
Date Collected: 06/20/19 14:30
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			433168	06/28/19 13:59	ORM	TAL SL
Total/NA	Analysis	903.0		1	439521	08/14/19 13:12	KLS	TAL SL
Total/NA	Prep	PrecSep_0			433172	06/28/19 14:44	ORM	TAL SL
Total/NA	Analysis	904.0		1	435292	07/18/19 08:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	439613	08/15/19 09:03	SMP	TAL SL

Client Sample ID: MW-306
Date Collected: 06/20/19 13:45
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			433168	06/28/19 13:59	ORM	TAL SL
Total/NA	Analysis	903.0		1	439521	08/14/19 13:12	KLS	TAL SL
Total/NA	Prep	PrecSep_0			433172	06/28/19 14:44	ORM	TAL SL
Total/NA	Analysis	904.0		1	435292	07/18/19 08:53	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	439613	08/15/19 09:03	SMP	TAL SL

Client Sample ID: Field Blank
Date Collected: 06/20/19 14:15
Date Received: 06/25/19 09:05

Lab Sample ID: 310-158624-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			433168	06/28/19 13:59	ORM	TAL SL
Total/NA	Analysis	903.0		1	439521	08/14/19 13:12	KLS	TAL SL
Total/NA	Prep	PrecSep_0			433172	06/28/19 14:44	ORM	TAL SL
Total/NA	Analysis	904.0		1	435292	07/18/19 08:54	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	439613	08/15/19 09:03	SMP	TAL SL

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-158624-2
Project/Site: Alliant Lansing, 25218221

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Iowa	State Program	7	007	12-01-19

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP		L2305	04-06-22
ANAB	DoD		L2305	04-06-22
ANAB	DOE		L2305.01	04-06-22
Arizona	State		AZ0813	12-08-19
Arizona	State Program	9	AZ0813	12-08-19
California	State		2886	06-30-20
California	State Program	9	2886	06-30-20
Connecticut	State Program	1	PH-0241	03-31-21
Florida	NELAP	4	E87689	06-30-20
Florida	NELAP		E87689	06-30-20
Hawaii	State Program	9	NA	06-30-20
Illinois	NELAP	5	200023	11-30-19
Illinois	NELAP		004553	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State		KY90125	12-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-20
Louisiana (DW)	NELAP	6	LA011	12-31-19
Louisiana (DW)	State		LA011	12-31-19
Maryland	State		310	09-30-20
Maryland	State Program	3	310	09-30-20
Michigan	State Program	5	9005	06-30-20
Missouri	State		780	06-30-22
Missouri	State Program	7	780	06-30-20
New Jersey	NELAP	2	MO002	06-30-20
New Jersey	NELAP		MO002	06-30-20
New York	NELAP	2	11616	03-31-20
New York	NELAP		11616	04-01-20
North Dakota	State Program	8	R207	06-30-20
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State		9997	08-31-19
Oklahoma	State Program	6	9997	08-31-19 *
Pennsylvania	NELAP	3	68-00540	02-28-20
Pennsylvania	NELAP		68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-20
Texas	NELAP	6	T104704193-19-14	07-31-20
Texas	NELAP		T104704193-19-13	07-31-20
US Fish & Wildlife	Federal		058448	07-31-20
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542019-11	07-31-20
Virginia	NELAP	3	460230	06-14-20
Virginia	NELAP		10310	06-14-20
Washington	State Program	10	C592	08-30-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-158624-2
Project/Site: Alliant Lansing, 25218221

Laboratory: Eurofins TestAmerica, St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
West Virginia DEP	State Program	3	381	08-31-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
Ra226_Ra228 Pos	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Table 3. Parameters for Groundwater Monitoring to meet Federal Requirements

Appendix III	Boron
	Calcium
	Chloride
	Fluoride
	pH
	Sulfate
	TDS
Appendix IV	Antimony
	Arsenic
	Barium
	Beryllium
	Cadmium
	Chromium
	Cobalt
	Fluoride
	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Radium

eurofins | Environment Testing TestAmerica

310-158624 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS

City/State: CITY Menomonee Falls STATE WI | Project:

Receipt Information

Date/Time Received: DATE 6-25-19 TIME 905 | Received By: LAB

Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☐ Yes	☒ No	*If yes:* Cooler # ____ of ____
Cooler Custody Seals Present?	☒ Yes	☐ No	*If yes:* Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M | Correction Factor (°C): -0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.9 | Corrected Temp (°C): 0.8

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Phone: 319-277-2401 Fax: 319-277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

eurofins | Environment Testing TestAmerica

#41459

Client Information	Sampler: Gary Sterkel	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-40459-13154.1
Client Contact: Gary Sterkel	Phone: 262 518 4081	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: N84 W13540 Leon Road	Due Date Requested:			
City: Menomonee Falls	TAT Requested (days): Standard			
State, Zip: WI, 53051				
Phone:	PO #: 25218221			
Email: gsterkel@scsengineers.com	WO #:			
Project Name: Alliant Lansing, 25218221	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	903.0 - Radium 226	904.0 - Radium 228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	D		
~~MW-301~~ MW-304	6/20/19	1220	G	Water	N	N	1	1	1	1		
~~MW-302~~ MW-305	6/20/19	1430	G	Water	N	N	1	1	1	1		
~~MW-303~~ MW-306	6/20/19	1345	G	Water	N	N	1	1	1	1		
~~MW-5~~ FIELD BLANK	6/20/19	1415	G	Water	N	N	1	1	1	1		

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

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

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

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Gary Sterkel	6/21/19 1200	SCS		6-21-19 12:00	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6-21-19 1700	TA		6/25/19 0905	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.5-7.3.5

Ver: 01/16/2019

8/15/2019

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-304	310-158624-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-304	310-158624-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-304	310-158624-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-305	310-158624-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-305	310-158624-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-305	310-158624-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-306	310-158624-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-306	310-158624-C-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-306	310-158624-D-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-158624-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
Field Blank	310-158624-C-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-158624-D-4	Plastic 1 liter - Nitric Acid	<2	_____	_____

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone: 319-277-2401 Fax: 319-277-2425

Chain of Custody Record

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-17503.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: sandie.fredrick@testamericainc.com	State of Origin: Iowa	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): State Program - Iowa		Job #: 310-158624-2
Address: 13715 Rider Trail North,	Due Date Requested: 7/24/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Alliant Lansing, 25218221	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0/PrecSep_21 Standard Target List	904.0/PrecSep_0 Standard Target List	Ra226_228GFPC_P	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-304 (310-158624-1)	6/20/19	12:20 Central		Water			X	X	X	2	
MW-305 (310-158624-2)	6/20/19	14:30 Central		Water			X	X	X	2	
MW-306 (310-158624-3)	6/20/19	13:45 Central		Water			X	X	X	2	
Field Blank (310-158624-4)	6/20/19	14:15 Central		Water			X	X	X	2	

310-158624 Chain of Custody

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:
Empty Kit Relinquished by: Date:	Time: Method of Shipment:
Relinquished by: Date/Time: 6 25 19 1440 Company	Received by: Michael Hum Date/Time: 6-26-19 09:45 Company: TAL STL
Relinquished by: Date/Time: Company	Received by: Date/Time: Company
Relinquished by: Date/Time: Company	Received by: Date/Time: Company
Custody Seals Intact: Δ Yes Δ No — Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

8/15/2019

Page 22 of 25

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-158624-2

Login Number: 158624
List Number: 1
Creator: Bovy, Lorrainna L

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-158624-2

Login Number: 158624
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 06/26/19 12:02 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	17.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: SCS Engineers
Project/Site: Alliant Lansing, 25218221

Job ID: 310-158624-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
310-158624-1	MW-304	95.5
310-158624-2	MW-305	96.9
310-158624-3	MW-306	95.2
310-158624-4	Field Blank	106
LCS 160-433168/1-A	Lab Control Sample	94.6
LCSD 160-433168/2-A	Lab Control Sample Dup	102
MB 160-433168/18-A	Method Blank	95.2

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-158624-1	MW-304	95.5	87.9
310-158624-2	MW-305	96.9	88.6
310-158624-3	MW-306	95.2	96.4
310-158624-4	Field Blank	106	93.5
LCS 160-433172/1-A	Lab Control Sample	94.6	84.9
LCSD 160-433172/2-A	Lab Control Sample Dup	102	86.7
MB 160-433172/18-A	Method Blank	95.2	98.3

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

A3 Assessment Monitoring, October 2019

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-166665-1
Client Project/Site: Lansing Gen Station, 25219070
Revision: 2

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
11/8/2019 11:42:45 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Job ID: 310-166665-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-166665-1

Comments
No additional comments.

Receipt
The samples were received on 10/4/2019 6:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were -0.1º C and 1.0º C.

Receipt Exceptions
REVISION: Field data updated by client.

REVISION2: Field data GWE updated for MW-20 and Hg removed.

HPLC/IC
Method 9056A: The following samples were diluted due to the nature of the sample matrix: MW-301 (310-166665-1), MW-302 (310-166665-2), MW-303 (310-166665-3), MW-6 (310-166665-4), Field Blank (310-166665-5), MW-304 (310-166665-6), MW-305 (310-166665-7), MW-306 (310-166665-8) and MW-20 (310-166665-9). Elevated reporting limits (RLs) are provided.

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

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

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

Sample Summary

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-166665-1	MW-301	Water	10/02/19 13:35	10/04/19 18:20	
310-166665-2	MW-302	Water	10/02/19 12:40	10/04/19 18:20	
310-166665-3	MW-303	Water	10/02/19 14:13	10/04/19 18:20	
310-166665-4	MW-6	Water	10/02/19 11:45	10/04/19 18:20	
310-166665-5	Field Blank	Water	10/02/19 23:59	10/04/19 18:20	
310-166665-6	MW-304	Water	10/02/19 15:50	10/04/19 18:20	
310-166665-7	MW-305	Water	10/02/19 09:15	10/04/19 18:20	
310-166665-8	MW-306	Water	10/02/19 09:10	10/04/19 18:20	
310-166665-9	MW-20	Water	10/02/19 10:35	10/04/19 18:20	

Detection Summary

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: MW-301 — Lab Sample ID: 310-166665-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.23	J	0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	56		5.0	1.8	mg/L	5		9056A	Total/NA
Arsenic	5.6		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	180		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	360		200	110	ug/L	1		6020A	Total/NA
Calcium	68		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	0.11	J	0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	8.0	J	10	2.7	ug/L	1		6020A	Total/NA
Molybdenum	10		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	310		30	24	mg/L	1		SM 2540C	Total/NA
pH	8.1	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	626.54				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-156.8				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.13				mg/L	1		Field Sampling	Total/NA
pH, Field	8.11				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	501.8				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	15.6				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	1.36				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-302 — Lab Sample ID: 310-166665-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.24	J	0.50	0.23	mg/L	5		9056A	Total/NA
Arsenic	53		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	740		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	690		200	110	ug/L	1		6020A	Total/NA
Calcium	130		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	1.3		0.50	0.091	ug/L	1		6020A	Total/NA
Molybdenum	1.4	J	2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	480		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	630.04				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-160				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.11				mg/L	1		Field Sampling	Total/NA
pH, Field	7.15				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1049				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	15.9				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	4.71				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-303 — Lab Sample ID: 310-166665-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	16		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.42	J	0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	39		5.0	1.8	mg/L	5		9056A	Total/NA
Arsenic	2.5		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	220		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	520		200	110	ug/L	1		6020A	Total/NA
Calcium	46		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	0.12	J	0.50	0.091	ug/L	1		6020A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: MW-303 (Continued)

Lab Sample ID: 310-166665-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	9.1	J	10	2.7	ug/L	1		6020A	Total/NA
Molybdenum	9.8		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	210		30	24	mg/L	1		SM 2540C	Total/NA
pH	8.0	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	638.03				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	156				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.27				mg/L	1		Field Sampling	Total/NA
pH, Field	7.83				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	409				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	25.2				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	0.58				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-6

Lab Sample ID: 310-166665-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	6.9		5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	24		5.0	1.8	mg/L	5		9056A	Total/NA
Barium	46		2.0	0.84	ug/L	1		6020A	Total/NA
Calcium	70		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	280		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	675.54				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	88.9				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	10.29				mg/L	1		Field Sampling	Total/NA
pH, Field	7.46				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	590				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	10.0				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	0.70				NTU	1		Field Sampling	Total/NA

Client Sample ID: Field Blank

Lab Sample ID: 310-166665-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH	6.2	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-304

Lab Sample ID: 310-166665-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.0		5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	17		5.0	1.8	mg/L	5		9056A	Total/NA
Barium	47		2.0	0.84	ug/L	1		6020A	Total/NA
Calcium	72		0.50	0.10	mg/L	1		6020A	Total/NA
Chromium	1.0	J	5.0	0.98	ug/L	1		6020A	Total/NA
Cobalt	0.19	J	0.50	0.091	ug/L	1		6020A	Total/NA
Lead	0.35	J	0.50	0.27	ug/L	1		6020A	Total/NA
Total Dissolved Solids	300		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	623.79				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	107.3				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	7.51				mg/L	1		Field Sampling	Total/NA
pH, Field	7.16				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	578.4				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	12.4				Degrees C	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-304 (Continued) — Lab Sample ID: 310-166665-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Turbidity, Field	3.51				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-305 — Lab Sample ID: 310-166665-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	3.2	J	5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	26		5.0	1.8	mg/L	5		9056A	Total/NA
Arsenic	3.4		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	190		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	190	J	200	110	ug/L	1		6020A	Total/NA
Calcium	97		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	0.27	J	0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	4.6	J	10	2.7	ug/L	1		6020A	Total/NA
Molybdenum	1.6	J	2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	380		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	629.77				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-105.6				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.21				mg/L	1		Field Sampling	Total/NA
pH, Field	7.03				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	635				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	19.0				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	8.87				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-306 — Lab Sample ID: 310-166665-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	40		5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	140		5.0	1.8	mg/L	5		9056A	Total/NA
Arsenic	12		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	540		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	660		200	110	ug/L	1		6020A	Total/NA
Calcium	260		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	0.98		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	25		10	2.7	ug/L	1		6020A	Total/NA
Total Dissolved Solids	1300		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	622.47				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-1205				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.27				mg/L	1		Field Sampling	Total/NA
pH, Field	9.00				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1998				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	16.33				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	3.67				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-20 — Lab Sample ID: 310-166665-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	2.0	J	5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.37	J	0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	240		5.0	1.8	mg/L	5		9056A	Total/NA
Arsenic	3.4		2.0	0.75	ug/L	1		6020A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-20 (Continued)

Lab Sample ID: 310-166665-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	160		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	3100		200	110	ug/L	1		6020A	Total/NA
Calcium	150		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	0.90		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	2.8	J	10	2.7	ug/L	1		6020A	Total/NA
Molybdenum	41		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	690		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	652.64				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-49.1				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.27				mg/L	1		Field Sampling	Total/NA
pH, Field	7.79				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1026				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	13.2				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	0.99				NTU	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: MW-301

Date Collected: 10/02/19 13:35
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-1

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14		5.0	1.5	mg/L			10/09/19 00:14	5
Fluoride	0.23	J	0.50	0.23	mg/L			10/09/19 00:14	5
Sulfate	56		5.0	1.8	mg/L			10/09/19 00:14	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.6		2.0	0.75	ug/L		10/08/19 07:59	10/08/19 21:55	1
Barium	180		2.0	0.84	ug/L		10/08/19 07:59	10/08/19 21:55	1
Boron	360		200	110	ug/L		10/08/19 07:59	10/08/19 21:55	1
Calcium	68		0.50	0.10	mg/L		10/08/19 07:59	10/08/19 21:55	1
Chromium	<0.98		5.0	0.98	ug/L		10/08/19 07:59	10/08/19 21:55	1
Cobalt	0.11	J	0.50	0.091	ug/L		10/08/19 07:59	10/08/19 21:55	1
Lead	<0.27		0.50	0.27	ug/L		10/08/19 07:59	10/08/19 21:55	1
Lithium	8.0	J	10	2.7	ug/L		10/08/19 07:59	10/08/19 21:55	1
Molybdenum	10		2.0	1.1	ug/L		10/08/19 07:59	10/08/19 21:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	310		30	24	mg/L			10/08/19 12:27	1
pH	8.1	HF	0.1	0.1	SU			10/04/19 21:12	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	626.54				ft			10/02/19 13:35	1
Oxidation Reduction Potential	-156.8				millivolts			10/02/19 13:35	1
Oxygen, Dissolved, Client Supplied	0.13				mg/L			10/02/19 13:35	1
pH, Field	8.11				SU			10/02/19 13:35	1
Specific Conductance, Field	501.8				umhos/cm			10/02/19 13:35	1
Temperature, Field	15.6				Degrees C			10/02/19 13:35	1
Turbidity, Field	1.36				NTU			10/02/19 13:35	1

Client Sample Results

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: MW-302

Date Collected: 10/02/19 12:40
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-2

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12		5.0	1.5	mg/L			10/09/19 00:47	5
Fluoride	0.24	J	0.50	0.23	mg/L			10/09/19 00:47	5
Sulfate	<1.8		5.0	1.8	mg/L			10/09/19 00:47	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	53		2.0	0.75	ug/L		10/08/19 07:59	10/08/19 21:57	1
Barium	740		2.0	0.84	ug/L		10/08/19 07:59	10/08/19 21:57	1
Boron	690		200	110	ug/L		10/08/19 07:59	10/08/19 21:57	1
Calcium	130		0.50	0.10	mg/L		10/08/19 07:59	10/08/19 21:57	1
Chromium	<0.98		5.0	0.98	ug/L		10/08/19 07:59	10/08/19 21:57	1
Cobalt	1.3		0.50	0.091	ug/L		10/08/19 07:59	10/08/19 21:57	1
Lead	<0.27		0.50	0.27	ug/L		10/08/19 07:59	10/08/19 21:57	1
Lithium	<2.7		10	2.7	ug/L		10/08/19 07:59	10/08/19 21:57	1
Molybdenum	1.4	J	2.0	1.1	ug/L		10/08/19 07:59	10/08/19 21:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	480		30	24	mg/L			10/08/19 12:27	1
pH	7.0	HF	0.1	0.1	SU			10/04/19 21:13	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	630.04				ft			10/02/19 12:40	1
Oxidation Reduction Potential	-160				millivolts			10/02/19 12:40	1
Oxygen, Dissolved, Client Supplied	0.11				mg/L			10/02/19 12:40	1
pH, Field	7.15				SU			10/02/19 12:40	1
Specific Conductance, Field	1049				umhos/cm			10/02/19 12:40	1
Temperature, Field	15.9				Degrees C			10/02/19 12:40	1
Turbidity, Field	4.71				NTU			10/02/19 12:40	1

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: MW-303

Date Collected: 10/02/19 14:13
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-3

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16		5.0	1.5	mg/L			10/09/19 01:19	5
Fluoride	0.42	J	0.50	0.23	mg/L			10/09/19 01:19	5
Sulfate	39		5.0	1.8	mg/L			10/09/19 01:19	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.5		2.0	0.75	ug/L		10/08/19 07:59	10/08/19 22:00	1
Barium	220		2.0	0.84	ug/L		10/08/19 07:59	10/08/19 22:00	1
Boron	520		200	110	ug/L		10/08/19 07:59	10/08/19 22:00	1
Calcium	46		0.50	0.10	mg/L		10/08/19 07:59	10/08/19 22:00	1
Chromium	<0.98		5.0	0.98	ug/L		10/08/19 07:59	10/08/19 22:00	1
Cobalt	0.12	J	0.50	0.091	ug/L		10/08/19 07:59	10/08/19 22:00	1
Lead	<0.27		0.50	0.27	ug/L		10/08/19 07:59	10/08/19 22:00	1
Lithium	9.1	J	10	2.7	ug/L		10/08/19 07:59	10/08/19 22:00	1
Molybdenum	9.8		2.0	1.1	ug/L		10/08/19 07:59	10/08/19 22:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	210		30	24	mg/L			10/08/19 12:27	1
pH	8.0	HF	0.1	0.1	SU			10/04/19 21:16	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	638.03				ft			10/02/19 14:13	1
Oxidation Reduction Potential	156				millivolts			10/02/19 14:13	1
Oxygen, Dissolved, Client Supplied	0.27				mg/L			10/02/19 14:13	1
pH, Field	7.83				SU			10/02/19 14:13	1
Specific Conductance, Field	409				umhos/cm			10/02/19 14:13	1
Temperature, Field	25.2				Degrees C			10/02/19 14:13	1
Turbidity, Field	0.58				NTU			10/02/19 14:13	1

Client Sample Results

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: MW-6

Date Collected: 10/02/19 11:45
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-4

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**6.9**		5.0	1.5	mg/L			10/09/19 01:36	5
Fluoride	<0.23		0.50	0.23	mg/L			10/09/19 01:36	5
Sulfate	**24**		5.0	1.8	mg/L			10/09/19 01:36	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		2.0	0.75	ug/L		10/08/19 07:59	10/08/19 22:13	1
Barium	**46**		2.0	0.84	ug/L		10/08/19 07:59	10/08/19 22:13	1
Boron	<110		200	110	ug/L		10/08/19 07:59	10/08/19 22:13	1
Calcium	**70**		0.50	0.10	mg/L		10/08/19 07:59	10/08/19 22:13	1
Chromium	<0.98		5.0	0.98	ug/L		10/08/19 07:59	10/08/19 22:13	1
Cobalt	<0.091		0.50	0.091	ug/L		10/08/19 07:59	10/08/19 22:13	1
Lead	<0.27		0.50	0.27	ug/L		10/08/19 07:59	10/08/19 22:13	1
Lithium	<2.7		10	2.7	ug/L		10/08/19 07:59	10/08/19 22:13	1
Molybdenum	<1.1		2.0	1.1	ug/L		10/08/19 07:59	10/08/19 22:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**280**		30	24	mg/L			10/08/19 12:27	1
pH	**7.5**	**HF**	0.1	0.1	SU			10/04/19 22:34	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**675.54**				ft			10/02/19 11:45	1
Oxidation Reduction Potential	**88.9**				millivolts			10/02/19 11:45	1
Oxygen, Dissolved, Client Supplied	**10.29**				mg/L			10/02/19 11:45	1
pH, Field	**7.46**				SU			10/02/19 11:45	1
Specific Conductance, Field	**590**				umhos/cm			10/02/19 11:45	1
Temperature, Field	**10.0**				Degrees C			10/02/19 11:45	1
Turbidity, Field	**0.70**				NTU			10/02/19 11:45	1

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: Field Blank

Date Collected: 10/02/19 23:59
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-5

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.29		1.0	0.29	mg/L			10/09/19 01:52	1
Fluoride	<0.045		0.10	0.045	mg/L			10/09/19 01:52	1
Sulfate	<0.35		1.0	0.35	mg/L			10/09/19 01:52	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		2.0	0.75	ug/L		10/08/19 07:59	10/08/19 22:16	1
Barium	<0.84		2.0	0.84	ug/L		10/08/19 07:59	10/08/19 22:16	1
Boron	<110		200	110	ug/L		10/08/19 07:59	10/08/19 22:16	1
Calcium	<0.10		0.50	0.10	mg/L		10/08/19 07:59	10/08/19 22:16	1
Chromium	<0.98		5.0	0.98	ug/L		10/08/19 07:59	10/08/19 22:16	1
Cobalt	<0.091		0.50	0.091	ug/L		10/08/19 07:59	10/08/19 22:16	1
Lead	<0.27		0.50	0.27	ug/L		10/08/19 07:59	10/08/19 22:16	1
Lithium	<2.7		10	2.7	ug/L		10/08/19 07:59	10/08/19 22:16	1
Molybdenum	<1.1		2.0	1.1	ug/L		10/08/19 07:59	10/08/19 22:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<24		30	24	mg/L			10/08/19 12:27	1
pH	**6.2**	**HF**	0.1	0.1	SU			10/04/19 22:38	1

Client Sample Results

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: MW-304

Date Collected: 10/02/19 15:50
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-6

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**7.0**		5.0	1.5	mg/L			10/09/19 02:08	5
Fluoride	<0.23		0.50	0.23	mg/L			10/09/19 02:08	5
Sulfate	**17**		5.0	1.8	mg/L			10/09/19 02:08	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		2.0	0.75	ug/L		10/08/19 07:59	10/08/19 22:18	1
Barium	**47**		2.0	0.84	ug/L		10/08/19 07:59	10/08/19 22:18	1
Boron	<110		200	110	ug/L		10/08/19 07:59	10/08/19 22:18	1
Calcium	**72**		0.50	0.10	mg/L		10/08/19 07:59	10/08/19 22:18	1
Chromium	**1.0**	**J**	5.0	0.98	ug/L		10/08/19 07:59	10/08/19 22:18	1
Cobalt	**0.19**	**J**	0.50	0.091	ug/L		10/08/19 07:59	10/08/19 22:18	1
Lead	**0.35**	**J**	0.50	0.27	ug/L		10/08/19 07:59	10/08/19 22:18	1
Lithium	<2.7		10	2.7	ug/L		10/08/19 07:59	10/08/19 22:18	1
Molybdenum	<1.1		2.0	1.1	ug/L		10/08/19 07:59	10/08/19 22:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**300**		30	24	mg/L			10/08/19 12:27	1
pH	**7.0**	**HF**	0.1	0.1	SU			10/04/19 22:39	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**623.79**				ft			10/02/19 15:50	1
Oxidation Reduction Potential	**107.3**				millivolts			10/02/19 15:50	1
Oxygen, Dissolved, Client Supplied	**7.51**				mg/L			10/02/19 15:50	1
pH, Field	**7.16**				SU			10/02/19 15:50	1
Specific Conductance, Field	**578.4**				umhos/cm			10/02/19 15:50	1
Temperature, Field	**12.4**				Degrees C			10/02/19 15:50	1
Turbidity, Field	**3.51**				NTU			10/02/19 15:50	1

Client Sample Results

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: MW-305

Date Collected: 10/02/19 09:15
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-7

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.2	J	5.0	1.5	mg/L			10/09/19 02:25	5
Fluoride	<0.23		0.50	0.23	mg/L			10/09/19 02:25	5
Sulfate	26		5.0	1.8	mg/L			10/09/19 02:25	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.4		2.0	0.75	ug/L		10/08/19 07:59	10/08/19 22:21	1
Barium	190		2.0	0.84	ug/L		10/08/19 07:59	10/08/19 22:21	1
Boron	190	J	200	110	ug/L		10/08/19 07:59	10/08/19 22:21	1
Calcium	97		0.50	0.10	mg/L		10/08/19 07:59	10/08/19 22:21	1
Chromium	<0.98		5.0	0.98	ug/L		10/08/19 07:59	10/08/19 22:21	1
Cobalt	0.27	J	0.50	0.091	ug/L		10/08/19 07:59	10/08/19 22:21	1
Lead	<0.27		0.50	0.27	ug/L		10/08/19 07:59	10/08/19 22:21	1
Lithium	4.6	J	10	2.7	ug/L		10/08/19 07:59	10/08/19 22:21	1
Molybdenum	1.6	J	2.0	1.1	ug/L		10/08/19 07:59	10/08/19 22:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	380		30	24	mg/L			10/08/19 12:27	1
pH	7.2	HF	0.1	0.1	SU			10/04/19 22:40	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	629.77				ft			10/02/19 09:15	1
Oxidation Reduction Potential	-105.6				millivolts			10/02/19 09:15	1
Oxygen, Dissolved, Client Supplied	0.21				mg/L			10/02/19 09:15	1
pH, Field	7.03				SU			10/02/19 09:15	1
Specific Conductance, Field	635				umhos/cm			10/02/19 09:15	1
Temperature, Field	19.0				Degrees C			10/02/19 09:15	1
Turbidity, Field	8.87				NTU			10/02/19 09:15	1

Client Sample Results

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: MW-306

Date Collected: 10/02/19 09:10
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-8

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**40**		5.0	1.5	mg/L			10/09/19 03:14	5
Fluoride	<0.23		0.50	0.23	mg/L			10/09/19 03:14	5
Sulfate	**140**		5.0	1.8	mg/L			10/09/19 03:14	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**12**		2.0	0.75	ug/L		10/08/19 07:59	10/08/19 22:23	1
Barium	**540**		2.0	0.84	ug/L		10/08/19 07:59	10/08/19 22:23	1
Boron	**660**		200	110	ug/L		10/08/19 07:59	10/08/19 22:23	1
Calcium	**260**		0.50	0.10	mg/L		10/08/19 07:59	10/08/19 22:23	1
Chromium	<0.98		5.0	0.98	ug/L		10/08/19 07:59	10/08/19 22:23	1
Cobalt	**0.98**		0.50	0.091	ug/L		10/08/19 07:59	10/08/19 22:23	1
Lead	<0.27		0.50	0.27	ug/L		10/08/19 07:59	10/08/19 22:23	1
Lithium	**25**		10	2.7	ug/L		10/08/19 07:59	10/08/19 22:23	1
Molybdenum	<1.1		2.0	1.1	ug/L		10/08/19 07:59	10/08/19 22:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**1300**		30	24	mg/L			10/08/19 12:27	1
pH	**7.2**	**HF**	0.1	0.1	SU			10/04/19 22:41	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**622.47**				ft			10/02/19 09:10	1
Oxidation Reduction Potential	**-1205**				millivolts			10/02/19 09:10	1
Oxygen, Dissolved, Client Supplied	**0.27**				mg/L			10/02/19 09:10	1
pH, Field	**9.00**				SU			10/02/19 09:10	1
Specific Conductance, Field	**1998**				umhos/cm			10/02/19 09:10	1
Temperature, Field	**16.33**				Degrees C			10/02/19 09:10	1
Turbidity, Field	**3.67**				NTU			10/02/19 09:10	1

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: MW-20

Date Collected: 10/02/19 10:35
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-9

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.0	J	5.0	1.5	mg/L			10/09/19 03:47	5
Fluoride	0.37	J	0.50	0.23	mg/L			10/09/19 03:47	5
Sulfate	240		5.0	1.8	mg/L			10/09/19 03:47	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.4		2.0	0.75	ug/L		10/08/19 07:59	10/08/19 22:26	1
Barium	160		2.0	0.84	ug/L		10/08/19 07:59	10/08/19 22:26	1
Boron	3100		200	110	ug/L		10/08/19 07:59	10/08/19 22:26	1
Calcium	150		0.50	0.10	mg/L		10/08/19 07:59	10/08/19 22:26	1
Chromium	<0.98		5.0	0.98	ug/L		10/08/19 07:59	10/08/19 22:26	1
Cobalt	0.90		0.50	0.091	ug/L		10/08/19 07:59	10/08/19 22:26	1
Lead	<0.27		0.50	0.27	ug/L		10/08/19 07:59	10/08/19 22:26	1
Lithium	2.8	J	10	2.7	ug/L		10/08/19 07:59	10/08/19 22:26	1
Molybdenum	41		2.0	1.1	ug/L		10/08/19 07:59	10/08/19 22:26	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	690		30	24	mg/L			10/08/19 12:27	1
pH	7.7	HF	0.1	0.1	SU			10/04/19 22:42	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	652.64				ft			10/02/19 10:35	1
Oxidation Reduction Potential	-49.1				millivolts			10/02/19 10:35	1
Oxygen, Dissolved, Client Supplied	0.27				mg/L			10/02/19 10:35	1
pH, Field	7.79				SU			10/02/19 10:35	1
Specific Conductance, Field	1026				umhos/cm			10/02/19 10:35	1
Temperature, Field	13.2				Degrees C			10/02/19 10:35	1
Turbidity, Field	0.99				NTU			10/02/19 10:35	1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

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

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-256330/3
Matrix: Water
Analysis Batch: 256330

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.29		1.0	0.29	mg/L			10/08/19 19:08	1
Fluoride	<0.045		0.10	0.045	mg/L			10/08/19 19:08	1
Sulfate	<0.35		1.0	0.35	mg/L			10/08/19 19:08	1

Lab Sample ID: LCS 310-256330/4
Matrix: Water
Analysis Batch: 256330

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.65		mg/L		97	90 - 110
Fluoride	2.00	1.88		mg/L		94	90 - 110
Sulfate	10.0	9.29		mg/L		93	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-255858/1-A
Matrix: Water
Analysis Batch: 256010

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 255858

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.75		2.0	0.75	ug/L		10/08/19 07:59	10/08/19 21:11	1
Barium	<0.84		2.0	0.84	ug/L		10/08/19 07:59	10/08/19 21:11	1
Boron	<110		200	110	ug/L		10/08/19 07:59	10/08/19 21:11	1
Calcium	0.115	J	0.50	0.10	mg/L		10/08/19 07:59	10/08/19 21:11	1
Chromium	<0.98		5.0	0.98	ug/L		10/08/19 07:59	10/08/19 21:11	1
Cobalt	<0.091		0.50	0.091	ug/L		10/08/19 07:59	10/08/19 21:11	1
Lead	<0.27		0.50	0.27	ug/L		10/08/19 07:59	10/08/19 21:11	1
Lithium	<2.7		10	2.7	ug/L		10/08/19 07:59	10/08/19 21:11	1
Molybdenum	<1.1		2.0	1.1	ug/L		10/08/19 07:59	10/08/19 21:11	1

Lab Sample ID: LCS 310-255858/2-A
Matrix: Water
Analysis Batch: 256010

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 255858

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	19.8		ug/L		99	80 - 120
Arsenic	40.0	38.5		ug/L		96	80 - 120
Barium	40.0	43.2		ug/L		108	80 - 120
Beryllium	20.0	21.0		ug/L		105	80 - 120
Boron	880	911		ug/L		104	80 - 120
Cadmium	20.0	21.3		ug/L		106	80 - 120
Calcium	2.00	2.22		mg/L		111	80 - 120
Chromium	40.0	41.5		ug/L		104	80 - 120
Cobalt	20.0	21.7		ug/L		109	80 - 120
Lead	20.0	21.0		ug/L		105	80 - 120
Lithium	100	98.0		ug/L		98	80 - 120
Molybdenum	40.0	41.7		ug/L		104	80 - 120
Selenium	40.0	40.4		ug/L		101	80 - 120
Thallium	16.0	16.8		ug/L		105	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-166665-3 DU
Matrix: Water
Analysis Batch: 256010

Client Sample ID: MW-303
Prep Type: Total/NA
Prep Batch: 255858

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Arsenic	2.5			2.52		ug/L				1	20
Barium	220			212		ug/L				2	20
Boron	520			533		ug/L				2	20
Calcium	46			47.2		mg/L				3	20
Chromium	<0.98			<0.98		ug/L				NC	20
Cobalt	0.12	J		0.124	J	ug/L				6	20
Lead	<0.27			<0.27		ug/L				NC	20
Lithium	9.1	J		9.35	J	ug/L				3	20
Molybdenum	9.8			9.78		ug/L				0.6	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-255908/1
Matrix: Water
Analysis Batch: 255908

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<24		30	24	mg/L			10/08/19 12:27	1

Lab Sample ID: LCS 310-255908/2
Matrix: Water
Analysis Batch: 255908

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			1000	1000		mg/L		100	90 - 110		

Lab Sample ID: 310-166665-8 DU
Matrix: Water
Analysis Batch: 255908

Client Sample ID: MW-306
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	1300			1300		mg/L				0.5	24

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-255573/1
Matrix: Water
Analysis Batch: 255573

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH			7.00	7.0		SU		100	98 - 102		

Lab Sample ID: LCS 310-255573/15
Matrix: Water
Analysis Batch: 255573

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH			7.00	7.0		SU		100	98 - 102		

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Method: SM 4500 H+ B - pH (Continued)

Lab Sample ID: 310-166665-4 DU
Matrix: Water
Analysis Batch: 255573

Client Sample ID: MW-6
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.5	HF		7.4		SU				0.8	20

HPLC/IC

Analysis Batch: 256330

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-166665-1	MW-301	Total/NA	Water	9056A	
310-166665-2	MW-302	Total/NA	Water	9056A	
310-166665-3	MW-303	Total/NA	Water	9056A	
310-166665-4	MW-6	Total/NA	Water	9056A	
310-166665-5	Field Blank	Total/NA	Water	9056A	
310-166665-6	MW-304	Total/NA	Water	9056A	
310-166665-7	MW-305	Total/NA	Water	9056A	
310-166665-8	MW-306	Total/NA	Water	9056A	
310-166665-9	MW-20	Total/NA	Water	9056A	
MB 310-256330/3	Method Blank	Total/NA	Water	9056A	
LCS 310-256330/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 255858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-166665-1	MW-301	Total/NA	Water	3010A	
310-166665-2	MW-302	Total/NA	Water	3010A	
310-166665-3	MW-303	Total/NA	Water	3010A	
310-166665-4	MW-6	Total/NA	Water	3010A	
310-166665-5	Field Blank	Total/NA	Water	3010A	
310-166665-6	MW-304	Total/NA	Water	3010A	
310-166665-7	MW-305	Total/NA	Water	3010A	
310-166665-8	MW-306	Total/NA	Water	3010A	
310-166665-9	MW-20	Total/NA	Water	3010A	
MB 310-255858/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-255858/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-166665-3 DU	MW-303	Total/NA	Water	3010A	

Analysis Batch: 256010

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-166665-1	MW-301	Total/NA	Water	6020A	255858
310-166665-2	MW-302	Total/NA	Water	6020A	255858
310-166665-3	MW-303	Total/NA	Water	6020A	255858
310-166665-4	MW-6	Total/NA	Water	6020A	255858
310-166665-5	Field Blank	Total/NA	Water	6020A	255858
310-166665-6	MW-304	Total/NA	Water	6020A	255858
310-166665-7	MW-305	Total/NA	Water	6020A	255858
310-166665-8	MW-306	Total/NA	Water	6020A	255858
310-166665-9	MW-20	Total/NA	Water	6020A	255858
MB 310-255858/1-A	Method Blank	Total/NA	Water	6020A	255858
LCS 310-255858/2-A	Lab Control Sample	Total/NA	Water	6020A	255858
310-166665-3 DU	MW-303	Total/NA	Water	6020A	255858

General Chemistry

Analysis Batch: 255573

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-166665-1	MW-301	Total/NA	Water	SM 4500 H+ B	
310-166665-2	MW-302	Total/NA	Water	SM 4500 H+ B	
310-166665-3	MW-303	Total/NA	Water	SM 4500 H+ B	
310-166665-4	MW-6	Total/NA	Water	SM 4500 H+ B	

General Chemistry (Continued)

Analysis Batch: 255573 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-166665-5	Field Blank	Total/NA	Water	SM 4500 H+ B	
310-166665-6	MW-304	Total/NA	Water	SM 4500 H+ B	
310-166665-7	MW-305	Total/NA	Water	SM 4500 H+ B	
310-166665-8	MW-306	Total/NA	Water	SM 4500 H+ B	
310-166665-9	MW-20	Total/NA	Water	SM 4500 H+ B	
LCS 310-255573/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 310-255573/15	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-166665-4 DU	MW-6	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 255908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-166665-1	MW-301	Total/NA	Water	SM 2540C	
310-166665-2	MW-302	Total/NA	Water	SM 2540C	
310-166665-3	MW-303	Total/NA	Water	SM 2540C	
310-166665-4	MW-6	Total/NA	Water	SM 2540C	
310-166665-5	Field Blank	Total/NA	Water	SM 2540C	
310-166665-6	MW-304	Total/NA	Water	SM 2540C	
310-166665-7	MW-305	Total/NA	Water	SM 2540C	
310-166665-8	MW-306	Total/NA	Water	SM 2540C	
310-166665-9	MW-20	Total/NA	Water	SM 2540C	
MB 310-255908/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-255908/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-166665-8 DU	MW-306	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 257065

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-166665-1	MW-301	Total/NA	Water	Field Sampling	
310-166665-2	MW-302	Total/NA	Water	Field Sampling	
310-166665-3	MW-303	Total/NA	Water	Field Sampling	
310-166665-4	MW-6	Total/NA	Water	Field Sampling	
310-166665-6	MW-304	Total/NA	Water	Field Sampling	
310-166665-7	MW-305	Total/NA	Water	Field Sampling	
310-166665-8	MW-306	Total/NA	Water	Field Sampling	
310-166665-9	MW-20	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Client Sample ID: MW-301
Date Collected: 10/02/19 13:35
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	256330	10/09/19 00:14	CJT	TAL CF
Total/NA	Prep	3010A			255858	10/08/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	256010	10/08/19 21:55	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	255908	10/08/19 12:27	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	255573	10/04/19 21:12	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257065	10/02/19 13:35	EAR	TAL CF

Client Sample ID: MW-302
Date Collected: 10/02/19 12:40
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	256330	10/09/19 00:47	CJT	TAL CF
Total/NA	Prep	3010A			255858	10/08/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	256010	10/08/19 21:57	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	255908	10/08/19 12:27	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	255573	10/04/19 21:13	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257065	10/02/19 12:40	EAR	TAL CF

Client Sample ID: MW-303
Date Collected: 10/02/19 14:13
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	256330	10/09/19 01:19	CJT	TAL CF
Total/NA	Prep	3010A			255858	10/08/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	256010	10/08/19 22:00	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	255908	10/08/19 12:27	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	255573	10/04/19 21:16	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257065	10/02/19 14:13	EAR	TAL CF

Client Sample ID: MW-6
Date Collected: 10/02/19 11:45
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	256330	10/09/19 01:36	CJT	TAL CF
Total/NA	Prep	3010A			255858	10/08/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	256010	10/08/19 22:13	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	255908	10/08/19 12:27	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	255573	10/04/19 22:34	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257065	10/02/19 11:45	EAR	TAL CF

Lab Chronicle

Client: SCS Engineers
Job ID: 310-166665-1
Project/Site: Lansing Gen Station, 25219070

Client Sample ID: Field Blank
Lab Sample ID: 310-166665-5
Date Collected: 10/02/19 23:59
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	256330	10/09/19 01:52	CJT	TAL CF
Total/NA	Prep	3010A			255858	10/08/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	256010	10/08/19 22:16	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	255908	10/08/19 12:27	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	255573	10/04/19 22:38	JMH	TAL CF

Client Sample ID: MW-304
Lab Sample ID: 310-166665-6
Date Collected: 10/02/19 15:50
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	256330	10/09/19 02:08	CJT	TAL CF
Total/NA	Prep	3010A			255858	10/08/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	256010	10/08/19 22:18	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	255908	10/08/19 12:27	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	255573	10/04/19 22:39	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257065	10/02/19 15:50	EAR	TAL CF

Client Sample ID: MW-305
Lab Sample ID: 310-166665-7
Date Collected: 10/02/19 09:15
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	256330	10/09/19 02:25	CJT	TAL CF
Total/NA	Prep	3010A			255858	10/08/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	256010	10/08/19 22:21	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	255908	10/08/19 12:27	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	255573	10/04/19 22:40	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257065	10/02/19 09:15	EAR	TAL CF

Client Sample ID: MW-306
Lab Sample ID: 310-166665-8
Date Collected: 10/02/19 09:10
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	256330	10/09/19 03:14	CJT	TAL CF
Total/NA	Prep	3010A			255858	10/08/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	256010	10/08/19 22:23	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	255908	10/08/19 12:27	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	255573	10/04/19 22:41	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257065	10/02/19 09:10	EAR	TAL CF

Lab Chronicle

Client: SCS Engineers
Job ID: 310-166665-1
Project/Site: Lansing Gen Station, 25219070

Client Sample ID: MW-20
Date Collected: 10/02/19 10:35
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	256330	10/09/19 03:47	CJT	TAL CF
Total/NA	Prep	3010A			255858	10/08/19 07:59	HED	TAL CF
Total/NA	Analysis	6020A		1	256010	10/08/19 22:26	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	255908	10/08/19 12:27	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	255573	10/04/19 22:42	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257065	10/02/19 10:35	EAR	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-166665-1
Project/Site: Lansing Gen Station, 25219070

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Iowa	State Program	007	12-01-19

Method Summary

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
Field Sampling	Field Sampling	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

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

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

eurofins | Environment Testing TestAmerica

310-166665 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Menomonee Falls STATE ~~Falls~~ WI (CITY/STATE) | Project: Lansing Gen Station

Receipt Information

Date/Time Received: DATE 10/4/19 TIME 1820 | Received By: LAB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☒ Yes	☐ No	*If yes:* Cooler # 1 of 2
Cooler Custody Seals Present?	☐ Yes	☒ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M | Correction Factor (°C): -0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.0 | Corrected Temp (°C): -0.1

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

two MW-6's one with time 11:45 or 1550
NO MW304
sample labeled

eurofins | Environment Testing TestAmerica

Place COC scanning label here

214

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Menomonee Falls STATE WI

Project: Lansing Gen. Station

Receipt Information

Date/Time Received: DATE 10/4/19 TIME 1820

Received By: LAB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☒ Yes	☐ No	*If yes:* Cooler # 2 of 2
Cooler Custody Seals Present?	☐ Yes	☒ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M

Correction Factor (°C): -0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.1

Corrected Temp (°C): 1.0

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone: 319-277-2401 Fax: 319-277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

eurofins | Environment Testing TestAmerica

43540

Client Information	Sampler: Lonise Jennings	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-43540-12748.1
Client Contact: Gary Sterkel	Phone: 469 608 509 8245	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: N84 W13540 Leon Road	Due Date Requested:			
City: Menomonee Falls	TAT Requested (days): Standard			
State, Zip: WI, 53051				
Phone:	PO #: 25219070			
Email: gsterkel@scsengineers.com	WO #:			
Project Name: Lansing Gen Station, 25219070	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

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

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	903.0 - Radium 226	904.0 - Radium 228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	D		
MW-301	10.2.19	1335	G	Water			X	X	X	X		
MW-302	10.2.19	1240	G	Water								
MW-303	10.2.19	1413	G	Water								
MW-6	10.2.19	1145	G	Water								
Field Blank	10.2.19	2359	—	Water								There are 2 coolers for this COC.
MW-304	10.2.19	1550	G	Water								
MW-305	10.2.19	0915	G	Water								
MW-306	10.2.19	0910	G	Water								
MW-20	10.2.19	1035	G	Water								
				Water								

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

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

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

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	10.3.19 1610		Lindsay Burdett	10/4/19 1820	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-301	310-166665-A-1	Plastic 250ml - with Nitric Acid	<2		
MW-301	310-166665-C-1	Plastic 1 liter - Nitric Acid	<2		
MW-301	310-166665-D-1	Plastic 1 liter - Nitric Acid	<2		
MW-302	310-166665-A-2	Plastic 250ml - with Nitric Acid	<2		
MW-302	310-166665-C-2	Plastic 1 liter - Nitric Acid	<2		
MW-302	310-166665-D-2	Plastic 1 liter - Nitric Acid	<2		
MW-303	310-166665-A-3	Plastic 250ml - with Nitric Acid	<2		
MW-303	310-166665-C-3	Plastic 1 liter - Nitric Acid	<2		
MW-303	310-166665-D-3	Plastic 1 liter - Nitric Acid	<2		
MW-6	310-166665-A-4	Plastic 250ml - with Nitric Acid	<2		
MW-6	310-166665-C-4	Plastic 1 liter - Nitric Acid	<2		
MW-6	310-166665-D-4	Plastic 1 liter - Nitric Acid	<2		
Field Blank	310-166665-A-5	Plastic 250ml - with Nitric Acid	<2		
Field Blank	310-166665-C-5	Plastic 1 liter - Nitric Acid	<2		
Field Blank	310-166665-D-5	Plastic 1 liter - Nitric Acid	<2		
MW-304	310-166665-A-6	Plastic 250ml - with Nitric Acid	<2		
MW-304	310-166665-C-6	Plastic 1 liter - Nitric Acid	<2		
MW-304	310-166665-D-6	Plastic 1 liter - Nitric Acid	<2		
MW-305	310-166665-A-7	Plastic 250ml - with Nitric Acid	<2		
MW-305	310-166665-C-7	Plastic 1 liter - Nitric Acid	<2		
MW-305	310-166665-D-7	Plastic 1 liter - Nitric Acid	<2		
MW-306	310-166665-A-8	Plastic 250ml - with Nitric Acid	<2		
MW-306	310-166665-C-8	Plastic 1 liter - Nitric Acid	<2		
MW-306	310-166665-D-8	Plastic 1 liter - Nitric Acid	<2		
MW-20	310-166665-A-9	Plastic 250ml - with Nitric Acid	<2		
MW-20	310-166665-C-9	Plastic 1 liter - Nitric Acid	<2		
MW-20	310-166665-D-9	Plastic 1 liter - Nitric Acid	<2		

Page 1 of 1

Fredrick, Sandie

From: Blodgett, Meghan <mblodgett@scsengineers.com>
Sent: Thursday, October 10, 2019 7:50 PM
To: Fredrick, Sandie
Cc: Kron, Nicole
Subject: RE: Eurofins TestAmerica Sample Login Confirmation files from 310-166665 Lansing Gen Station, 25219070

-External Email-

Sandie,

Please remove the following metals from all samples for this sampling round at Lansing. If some have already been initiated and they'll still be on the invoice even if they're not reported, just let me know.

Antimony
Beryllium
Cadmium
Mercury
Selenium
Thallium

Thanks,

Meghan Blodgett
608.216.7362 (o)
608.345.9221 (m)

From: Sandie Fredrick <sandie.fredrick@testamericainc.com>
Sent: Monday, October 7, 2019 4:05 PM
To: Blodgett, Meghan <mblodgett@scsengineers.com>; Kron, Nicole <NKron@scsengineers.com>; Karwoski, Thomas <TKarwoski@scsengineers.com>
Subject: Eurofins TestAmerica Sample Login Confirmation files from 310-166665 Lansing Gen Station, 25219070

========== This message originated outside of SCS Engineers ==========

Hello Everyone,

Attached, please find the Sample Confirmation files for job 310-166665; Lansing Gen Station, 25219070

Please feel free to contact me if you have any questions.

Thank you.

Sandie Fredrick
Project Manager

TestAmerica Laboratories, Inc.
Phone: 920-261-1660

E-mail: sandie.fredrick@testamericainc.com
www.eurofinsus.com | www.testamericainc.com

Reference: [310-388060]
Attachments: 5

Please let us know if we met your expectations by rating the service you received from Eurofins TestAmerica on this project by visiting our website at: Project Feedback

Groundwater Monitoring Results - Field Parameters
Lansing Generating Station / SCS Engineers Project #25219070
October 2019

Sample	Sample Date/Time	Groundwater Elevation (ft AMSL)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (µmhos/cm)	ORP (mV)	Turbidity (NTU)
MW-301	10.02.19/1335	626.54	15.6	8.11	0.13	501.8	-156.8	1.36
MW-302	10.02.19/1240	630.04	15.9	7.15	0.11	1,049	-160	4.71
MW-303	10.02.19/1445	638.03	25.2	7.83	0.27	409	156	0.58
MW-304	10.02.19/1550	623.79	12.4	7.16	7.51	578.4	107.3	3.51
MW-305	10.02.19/0915	629.77	19.0	7.03	0.21	635	-105.6	8.87
MW-306	10.02.19/0910	622.47	16.33	9.00	0.27	1,998	-1,205	3.67
MW-6	10.02.19/1139	675.54	10.0	7.46	10.29	590	88.9	0.70
MW-20	10.02.19/1053	652.64	13.2	7.79	0.27	1,026	-49.1	0.99

Abbreviations:
AMSL = above mean sea level
µmhos/cm = microSiemens per centimeter
mg/L = milligrams per liter
mV = millivolts
ORP = Oxidation Reduction (REDOX)
NTU = Nephelometric Turbidity Units

Created by: MB Date: 4/19/2019
Last revision by: MDB Date: 10/23/2019
Checked by: Date:

I:\25219070.00\Data and Calculations\Tables\Field Data Tables\[October 2019_Lansing_CCR_Field.xlsx]Data

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-166665-1

Login Number: 166665
List Number: 1
Creator: Spoerre, Autumn R

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-166665-2
Client Project/Site: Lansing Gen Station, 25219070

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
10/31/2019 2:32:17 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-2

Job ID: 310-166665-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-166665-2

Comments
No additional comments.

Receipt
The samples were received on 10/4/2019 6:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were -0.1º C and 1.0º C.

RAD
Methods 903.0, 9315: Radium-226 prep batch 160-445567-Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-301 (310-166665-1), MW-302 (310-166665-2), MW-303 (310-166665-3), MW-6 (310-166665-4), Field Blank (310-166665-5), MW-304 (310-166665-6), MW-305 (310-166665-7), MW-306 (310-166665-8), MW-20 (310-166665-9), (LCS 160-445567/1-A), (LCSD 160-445567/2-A) and (MB 160-445567/20-A)

Methods 904.0, 9320: Radium-228 prep batch 160-445583- Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-301 (310-166665-1), MW-302 (310-166665-2), MW-303 (310-166665-3), MW-6 (310-166665-4), Field Blank (310-166665-5), MW-304 (310-166665-6), MW-305 (310-166665-7), MW-306 (310-166665-8), MW-20 (310-166665-9), (LCS 160-445583/1-A), (LCSD 160-445583/2-A) and (MB 160-445583/20-A)

Method PrecSep_0: Radium 228 Prep Batch 160-445583: The following samples had light yellow discoloration:MW-302 (310-166665-2) and MW-306 (310-166665-8). Sample 440-251680-F-2 was reduced due to brown discoloration with suspended solids.

Method PrecSep_0: Radium 228 Prep Batch 160-445583: Insufficient sample volume was available to perform a sample duplicate for the following samples: MW-301 (310-166665-1), MW-302 (310-166665-2), MW-303 (310-166665-3), MW-6 (310-166665-4), Field Blank (310-166665-5), MW-304 (310-166665-6), MW-305 (310-166665-7), MW-306 (310-166665-8) and MW-20 (310-166665-9). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method PrecSep-21: Radium 226 Prep Batch 160-445567: The following samples had light yellow discoloration:MW-302 (310-166665-2) and MW-306 (310-166665-8). Sample 440-251680-F-2 was reduced due to brown discoloration with suspended solids.

Method PrecSep-21: Radium 226 Prep Batch 160-445567: Insufficient sample volume was available to perform a sample duplicate for the following samples: MW-301 (310-166665-1), MW-302 (310-166665-2), MW-303 (310-166665-3), MW-6 (310-166665-4), Field Blank (310-166665-5), MW-304 (310-166665-6), MW-305 (310-166665-7), MW-306 (310-166665-8) and MW-20 (310-166665-9). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

Sample Summary

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-166665-1	MW-301	Water	10/02/19 13:35	10/04/19 18:20	
310-166665-2	MW-302	Water	10/02/19 12:40	10/04/19 18:20	
310-166665-3	MW-303	Water	10/02/19 14:13	10/04/19 18:20	
310-166665-4	MW-6	Water	10/02/19 11:45	10/04/19 18:20	
310-166665-5	Field Blank	Water	10/02/19 23:59	10/04/19 18:20	
310-166665-6	MW-304	Water	10/02/19 15:50	10/04/19 18:20	
310-166665-7	MW-305	Water	10/02/19 09:15	10/04/19 18:20	
310-166665-8	MW-306	Water	10/02/19 09:10	10/04/19 18:20	
310-166665-9	MW-20	Water	10/02/19 10:35	10/04/19 18:20	

Detection Summary

Client: SCS Engineers
Job ID: 310-166665-2
Project/Site: Lansing Gen Station, 25219070

Client Sample ID: MW-301 — Lab Sample ID: 310-166665-1

No Detections.

Client Sample ID: MW-302 — Lab Sample ID: 310-166665-2

No Detections.

Client Sample ID: MW-303 — Lab Sample ID: 310-166665-3

No Detections.

Client Sample ID: MW-6 — Lab Sample ID: 310-166665-4

No Detections.

Client Sample ID: Field Blank — Lab Sample ID: 310-166665-5

No Detections.

Client Sample ID: MW-304 — Lab Sample ID: 310-166665-6

No Detections.

Client Sample ID: MW-305 — Lab Sample ID: 310-166665-7

No Detections.

Client Sample ID: MW-306 — Lab Sample ID: 310-166665-8

No Detections.

Client Sample ID: MW-20 — Lab Sample ID: 310-166665-9

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-301
Date Collected: 10/02/19 13:35
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-1
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.372		0.148	0.151	1.00	0.164	pCi/L	10/09/19 12:55	10/31/19 05:39	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*75.1*		*40 - 110*	*10/09/19 12:55*	*10/31/19 05:39*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.116	U	0.327	0.327	1.00	0.566	pCi/L	10/09/19 13:31	10/24/19 12:39	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*75.1*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:39*	*1*
Y Carrier	*74.4*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:39*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.488	U	0.359	0.360	5.00	0.566	pCi/L		10/31/19 13:31	1

Client Sample ID: MW-302
Date Collected: 10/02/19 12:40
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-2
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.807		0.193	0.207	1.00	0.156	pCi/L	10/09/19 12:55	10/31/19 05:39	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*77.4*		*40 - 110*	*10/09/19 12:55*	*10/31/19 05:39*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.675		0.428	0.433	1.00	0.658	pCi/L	10/09/19 13:31	10/24/19 12:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*77.4*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:40*	*1*
Y Carrier	*62.4*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:40*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	1.48		0.470	0.480	5.00	0.658	pCi/L		10/31/19 13:31	1

Client Sample ID: MW-303
Date Collected: 10/02/19 14:13
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-3
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.444**		0.140	0.146	1.00	0.141	pCi/L	10/09/19 12:55	10/31/19 05:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.7*		*40 - 110*	*10/09/19 12:55*	*10/31/19 05:40*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0185	U	0.233	0.233	1.00	0.420	pCi/L	10/09/19 13:31	10/24/19 12:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.7*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:40*	*1*
Y Carrier	*77.8*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:40*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.463**		0.272	0.275	5.00	0.420	pCi/L		10/31/19 13:31	1

Client Sample ID: MW-6
Lab Sample ID: 310-166665-4

Date Collected: 10/02/19 11:45
Matrix: Water
Date Received: 10/04/19 18:20

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.237**		0.127	0.129	1.00	0.171	pCi/L	10/09/19 12:55	10/31/19 05:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.9*		*40 - 110*	*10/09/19 12:55*	*10/31/19 05:40*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.259	U	0.268	0.270	1.00	0.437	pCi/L	10/09/19 13:31	10/24/19 12:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.9*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:40*	*1*
Y Carrier	*81.5*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:40*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.495**		0.297	0.299	5.00	0.437	pCi/L		10/31/19 13:31	1

Client Sample ID: Field Blank
Lab Sample ID: 310-166665-5

Date Collected: 10/02/19 23:59
Matrix: Water

Date Received: 10/04/19 18:20

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.128	U	0.103	0.103	1.00	0.154	pCi/L	10/09/19 12:55	10/31/19 05:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.6*		*40 - 110*	*10/09/19 12:55*	*10/31/19 05:40*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.194	U	0.258	0.259	1.00	0.490	pCi/L	10/09/19 13:31	10/24/19 12:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.6*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:36*	*1*
Y Carrier	*82.2*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:36*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.128	U	0.278	0.279	5.00	0.490	pCi/L		10/31/19 13:31	1

Client Sample ID: MW-304
Lab Sample ID: 310-166665-6

Date Collected: 10/02/19 15:50
Matrix: Water

Date Received: 10/04/19 18:20

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.246		0.127	0.129	1.00	0.163	pCi/L	10/09/19 12:55	10/31/19 05:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.8*		*40 - 110*	*10/09/19 12:55*	*10/31/19 05:40*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.653		0.382	0.386	1.00	0.587	pCi/L	10/09/19 13:31	10/24/19 12:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.8*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:35*	*1*
Y Carrier	*80.7*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:35*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.900		0.403	0.407	5.00	0.587	pCi/L		10/31/19 13:31	1

Client Sample Results

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-2

Client Sample ID: MW-305

Date Collected: 10/02/19 09:15
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-7

Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.380**		0.138	0.143	1.00	0.156	pCi/L	10/09/19 12:55	10/31/19 05:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.5*		*40 - 110*	*10/09/19 12:55*	*10/31/19 05:41*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.178	U	0.295	0.295	1.00	0.496	pCi/L	10/09/19 13:31	10/24/19 12:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.5*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:36*	*1*
Y Carrier	*87.5*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:36*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.557**		0.326	0.328	5.00	0.496	pCi/L		10/31/19 13:31	1

Client Sample ID: MW-306
Lab Sample ID: 310-166665-8

Date Collected: 10/02/19 09:10
Matrix: Water

Date Received: 10/04/19 18:20

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.902		0.198	0.214	1.00	0.152	pCi/L	10/09/19 12:55	10/31/19 05:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*76.8*		*40 - 110*	*10/09/19 12:55*	*10/31/19 05:41*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.889		0.381	0.390	1.00	0.555	pCi/L	10/09/19 13:31	10/24/19 12:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*76.8*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:36*	*1*
Y Carrier	*85.6*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:36*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	1.79		0.429	0.445	5.00	0.555	pCi/L		10/31/19 13:31	1

Client Sample ID: MW-20
Date Collected: 10/02/19 10:35
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-9
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.521**		0.149	0.157	1.00	0.142	pCi/L	10/09/19 12:55	10/31/19 08:08	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.0*		*40 - 110*	*10/09/19 12:55*	*10/31/19 08:08*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.530	U	0.376	0.379	1.00	0.594	pCi/L	10/09/19 13:31	10/24/19 12:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.0*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:36*	*1*
Y Carrier	*76.3*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:36*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**1.05**		0.404	0.410	5.00	0.594	pCi/L		10/31/19 13:31	1

Definitions/Glossary

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

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

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-445567/20-A
Matrix: Water
Analysis Batch: 448412

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445567

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.2099		0.117	0.119	1.00	0.160	pCi/L	10/09/19 12:55	10/31/19 08:08	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.6*		*40 - 110*	*10/09/19 12:55*	*10/31/19 08:08*	*1*

Lab Sample ID: LCS 160-445567/1-A
Matrix: Water
Analysis Batch: 448412

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445567

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.922		1.09	1.00	0.168	pCi/L	87	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*71.5*		*40 - 110*

Lab Sample ID: LCSD 160-445567/2-A
Matrix: Water
Analysis Batch: 448412

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445567

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	9.379		1.03	1.00	0.171	pCi/L	83	75 - 125	0.26	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*81.4*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-445583/20-A
Matrix: Water
Analysis Batch: 447584

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445583

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.02149	U	0.261	0.261	1.00	0.468	pCi/L	10/09/19 13:31	10/24/19 12:36	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.6*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:36*	*1*
Y Carrier	*83.7*		*40 - 110*	*10/09/19 13:31*	*10/24/19 12:36*	*1*

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-445583/1-A
Matrix: Water
Analysis Batch: 447518

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445583

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.46	10.73		1.47	1.00	0.873	pCi/L	113	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*71.5*		*40 - 110*
Y Carrier	*54.2*		*40 - 110*

Lab Sample ID: LCSD 160-445583/2-A
Matrix: Water
Analysis Batch: 447518

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 445583

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.46	10.09		1.23	1.00	0.532	pCi/L	107	75 - 125	0.24	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*81.4*		*40 - 110*
Y Carrier	*77.0*		*40 - 110*

QC Association Summary

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-2

Rad

Prep Batch: 445567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-166665-1	MW-301	Total/NA	Water	PrecSep-21	
310-166665-2	MW-302	Total/NA	Water	PrecSep-21	
310-166665-3	MW-303	Total/NA	Water	PrecSep-21	
310-166665-4	MW-6	Total/NA	Water	PrecSep-21	
310-166665-5	Field Blank	Total/NA	Water	PrecSep-21	
310-166665-6	MW-304	Total/NA	Water	PrecSep-21	
310-166665-7	MW-305	Total/NA	Water	PrecSep-21	
310-166665-8	MW-306	Total/NA	Water	PrecSep-21	
310-166665-9	MW-20	Total/NA	Water	PrecSep-21	
MB 160-445567/20-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-445567/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-445567/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 445583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-166665-1	MW-301	Total/NA	Water	PrecSep_0	
310-166665-2	MW-302	Total/NA	Water	PrecSep_0	
310-166665-3	MW-303	Total/NA	Water	PrecSep_0	
310-166665-4	MW-6	Total/NA	Water	PrecSep_0	
310-166665-5	Field Blank	Total/NA	Water	PrecSep_0	
310-166665-6	MW-304	Total/NA	Water	PrecSep_0	
310-166665-7	MW-305	Total/NA	Water	PrecSep_0	
310-166665-8	MW-306	Total/NA	Water	PrecSep_0	
310-166665-9	MW-20	Total/NA	Water	PrecSep_0	
MB 160-445583/20-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-445583/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-445583/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: SCS Engineers
Job ID: 310-166665-2
Project/Site: Lansing Gen Station, 25219070

Client Sample ID: MW-301
Lab Sample ID: 310-166665-1
Date Collected: 10/02/19 13:35
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			445567	10/09/19 12:55	ORM	TAL SL
Total/NA	Analysis	903.0		1	448412	10/31/19 05:39	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445583	10/09/19 13:31	ORM	TAL SL
Total/NA	Analysis	904.0		1	447518	10/24/19 12:39	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	448473	10/31/19 13:31	SMP	TAL SL

Client Sample ID: MW-302
Lab Sample ID: 310-166665-2
Date Collected: 10/02/19 12:40
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			445567	10/09/19 12:55	ORM	TAL SL
Total/NA	Analysis	903.0		1	448412	10/31/19 05:39	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445583	10/09/19 13:31	ORM	TAL SL
Total/NA	Analysis	904.0		1	447518	10/24/19 12:40	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	448473	10/31/19 13:31	SMP	TAL SL

Client Sample ID: MW-303
Lab Sample ID: 310-166665-3
Date Collected: 10/02/19 14:13
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			445567	10/09/19 12:55	ORM	TAL SL
Total/NA	Analysis	903.0		1	448412	10/31/19 05:40	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445583	10/09/19 13:31	ORM	TAL SL
Total/NA	Analysis	904.0		1	447518	10/24/19 12:40	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	448473	10/31/19 13:31	SMP	TAL SL

Client Sample ID: MW-6
Lab Sample ID: 310-166665-4
Date Collected: 10/02/19 11:45
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			445567	10/09/19 12:55	ORM	TAL SL
Total/NA	Analysis	903.0		1	448412	10/31/19 05:40	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445583	10/09/19 13:31	ORM	TAL SL
Total/NA	Analysis	904.0		1	447518	10/24/19 12:40	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	448473	10/31/19 13:31	SMP	TAL SL

Lab Chronicle

Client: SCS Engineers
Job ID: 310-166665-2
Project/Site: Lansing Gen Station, 25219070

Client Sample ID: Field Blank
Lab Sample ID: 310-166665-5
Date Collected: 10/02/19 23:59
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			445567	10/09/19 12:55	ORM	TAL SL
Total/NA	Analysis	903.0		1	448412	10/31/19 05:40	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445583	10/09/19 13:31	ORM	TAL SL
Total/NA	Analysis	904.0		1	447584	10/24/19 12:36	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	448473	10/31/19 13:31	SMP	TAL SL

Client Sample ID: MW-304
Lab Sample ID: 310-166665-6
Date Collected: 10/02/19 15:50
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			445567	10/09/19 12:55	ORM	TAL SL
Total/NA	Analysis	903.0		1	448412	10/31/19 05:40	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445583	10/09/19 13:31	ORM	TAL SL
Total/NA	Analysis	904.0		1	447584	10/24/19 12:35	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	448473	10/31/19 13:31	SMP	TAL SL

Client Sample ID: MW-305
Lab Sample ID: 310-166665-7
Date Collected: 10/02/19 09:15
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			445567	10/09/19 12:55	ORM	TAL SL
Total/NA	Analysis	903.0		1	448459	10/31/19 05:41	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445583	10/09/19 13:31	ORM	TAL SL
Total/NA	Analysis	904.0		1	447584	10/24/19 12:36	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	448473	10/31/19 13:31	SMP	TAL SL

Client Sample ID: MW-306
Lab Sample ID: 310-166665-8
Date Collected: 10/02/19 09:10
Matrix: Water
Date Received: 10/04/19 18:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			445567	10/09/19 12:55	ORM	TAL SL
Total/NA	Analysis	903.0		1	448459	10/31/19 05:41	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445583	10/09/19 13:31	ORM	TAL SL
Total/NA	Analysis	904.0		1	447584	10/24/19 12:36	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	448473	10/31/19 13:31	SMP	TAL SL

Lab Chronicle

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-2

Client Sample ID: MW-20

Date Collected: 10/02/19 10:35
Date Received: 10/04/19 18:20

Lab Sample ID: 310-166665-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			445567	10/09/19 12:55	ORM	TAL SL
Total/NA	Analysis	903.0		1	448412	10/31/19 08:08	SCB	TAL SL
Total/NA	Prep	PrecSep_0			445583	10/09/19 13:31	ORM	TAL SL
Total/NA	Analysis	904.0		1	447584	10/24/19 12:36	JCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	448473	10/31/19 13:31	SMP	TAL SL

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-166665-2
Project/Site: Lansing Gen Station, 25219070

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Iowa	State Program	007	12-01-19

Laboratory: Eurofins TestAmerica, St. Louis

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

Authority	Program	Identification Number	Expiration Date
Iowa	State Program	373	12-01-20

Method Summary

Client: SCS Engineers
Project/Site: Lansing Gen Station, 25219070

Job ID: 310-166665-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
Ra226_Ra228 Pos	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

eurofins | Environment Testing TestAmerica

310-166665 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Menomonee Falls STATE ~~Falls~~ WI (CITY/STATE) | Project: Lansing Gen Station

Receipt Information

Date/Time Received: DATE 10/4/19 TIME 1820 | Received By: LAB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☒ Yes	☐ No	*If yes:* Cooler # 1 of 2
Cooler Custody Seals Present?	☐ Yes	☒ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M | Correction Factor (°C): -0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.0 | Corrected Temp (°C): -0.1

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

two MW-6's one with time 11:45 or 1550
NO MW304
sample labeled

eurofins | Environment Testing TestAmerica

Place COC scanning label here

214

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Menomonee Falls STATE WI

Project: Lansing Gen. Station

Receipt Information

Date/Time Received: DATE 10/4/19 TIME 1820

Received By: LAB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☒ Yes	☐ No	*If yes:* Cooler # 2 of 2
Cooler Custody Seals Present?	☐ Yes	☒ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M

Correction Factor (°C): -0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.1

Corrected Temp (°C): 1.0

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

...ofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone: 319-277-2401 Fax: 319-277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Lonise Jennings	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-43540-12748.1
Client Contact: Gary Sterkel	Phone: 469 608 509 8245	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: N84 W13540 Leon Road	Due Date Requested:			
City: Menomonee Falls	TAT Requested (days): Standard			
State, Zip: WI, 53051				
Phone:	PO #: 25219070			
Email: gsterkel@scsengineers.com	WO #:			
Project Name: Lansing Gen Station, 25219070	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	903.0 - Radium 226	904.0 - Radium 228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	D		
MW-301	10.2.19	1335	G	Water			X	X	X	X		
MW-302	10.2.19	1240	G	Water								
MW-303	10.2.19	1413	G	Water								
MW-6	10.2.19	1145	G	Water								
Field Blank	10.2.19	2359	—	Water								There are 2 coolers for this COC.
MW-304	10.2.19	1550	G	Water								
MW-305	10.2.19	0915	G	Water								
MW-306	10.2.19	0910	G	Water								
MW-20	10.2.19	1035	G	Water								
				Water								

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

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

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

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	10.3.19 1610		Lindsay Burdett	10/4/19 1820	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 01/16/2019

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-301	310-166665-A-1	Plastic 250ml - with Nitric Acid	<2		
MW-301	310-166665-C-1	Plastic 1 liter - Nitric Acid	<2		
MW-301	310-166665-D-1	Plastic 1 liter - Nitric Acid	<2		
MW-302	310-166665-A-2	Plastic 250ml - with Nitric Acid	<2		
MW-302	310-166665-C-2	Plastic 1 liter - Nitric Acid	<2		
MW-302	310-166665-D-2	Plastic 1 liter - Nitric Acid	<2		
MW-303	310-166665-A-3	Plastic 250ml - with Nitric Acid	<2		
MW-303	310-166665-C-3	Plastic 1 liter - Nitric Acid	<2		
MW-303	310-166665-D-3	Plastic 1 liter - Nitric Acid	<2		
MW-6	310-166665-A-4	Plastic 250ml - with Nitric Acid	<2		
MW-6	310-166665-C-4	Plastic 1 liter - Nitric Acid	<2		
MW-6	310-166665-D-4	Plastic 1 liter - Nitric Acid	<2		
Field Blank	310-166665-A-5	Plastic 250ml - with Nitric Acid	<2		
Field Blank	310-166665-C-5	Plastic 1 liter - Nitric Acid	<2		
Field Blank	310-166665-D-5	Plastic 1 liter - Nitric Acid	<2		
MW-304	310-166665-A-6	Plastic 250ml - with Nitric Acid	<2		
MW-304	310-166665-C-6	Plastic 1 liter - Nitric Acid	<2		
MW-304	310-166665-D-6	Plastic 1 liter - Nitric Acid	<2		
MW-305	310-166665-A-7	Plastic 250ml - with Nitric Acid	<2		
MW-305	310-166665-C-7	Plastic 1 liter - Nitric Acid	<2		
MW-305	310-166665-D-7	Plastic 1 liter - Nitric Acid	<2		
MW-306	310-166665-A-8	Plastic 250ml - with Nitric Acid	<2		
MW-306	310-166665-C-8	Plastic 1 liter - Nitric Acid	<2		
MW-306	310-166665-D-8	Plastic 1 liter - Nitric Acid	<2		
MW-20	310-166665-A-9	Plastic 250ml - with Nitric Acid	<2		
MW-20	310-166665-C-9	Plastic 1 liter - Nitric Acid	<2		
MW-20	310-166665-D-9	Plastic 1 liter - Nitric Acid	<2		

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-166665-2

Login Number: 166665
List Number: 1
Creator: Spoerre, Autumn R

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-166665-2

Login Number: 166665
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 10/08/19 03:08 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: SCS Engineers
Job ID: 310-166665-2
Project/Site: Lansing Gen Station, 25219070

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)
310-166665-1	MW-301	75.1
310-166665-2	MW-302	77.4
310-166665-3	MW-303	88.7
310-166665-4	MW-6	83.9
310-166665-5	Field Blank	87.6
310-166665-6	MW-304	80.8
310-166665-7	MW-305	84.5
310-166665-8	MW-306	76.8
310-166665-9	MW-20	87.0
LCS 160-445567/1-A	Lab Control Sample	71.5
LCSD 160-445567/2-A	Lab Control Sample Dup	81.4
MB 160-445567/20-A	Method Blank	87.6

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)	Y Carrier (40-110)
310-166665-1	MW-301	75.1	74.4
310-166665-2	MW-302	77.4	62.4
310-166665-3	MW-303	88.7	77.8
310-166665-4	MW-6	83.9	81.5
310-166665-5	Field Blank	87.6	82.2
310-166665-6	MW-304	80.8	80.7
310-166665-7	MW-305	84.5	87.5
310-166665-8	MW-306	76.8	85.6
310-166665-9	MW-20	87.0	76.3
LCS 160-445583/1-A	Lab Control Sample	71.5	54.2
LCSD 160-445583/2-A	Lab Control Sample Dup	81.4	77.0
MB 160-445583/20-A	Method Blank	87.6	83.7

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

Appendix B

Demonstration of Need for ACM Deadline Extension

July 10, 2019
File No. 25218201.00

Mr. Jon Jackson
Interstate Power and Light Company
1031 Iowa Street, Suite 5007
Dubuque, IA 52001

Subject: Demonstration of Need for Deadline Extension
Assessment of Corrective Measures
Lansing Generating Station, Lansing, Iowa

Dear Mr. Jackson:

In accordance with 40 CFR 257.96(a), Interstate Power and Light Company (IPL) has initiated an Assessment of Corrective Measures (ACM) for the Lansing Generating Station. The ACM was initiated on April 15, 2019, in response to detections of constituents in Appendix IV to 40 CFR Part 257 at statistically significant levels above the groundwater protection standards (GPS) established under 40 CFR 257.95(h). As allowed under 40 CFR 257.96(a), this letter provides a demonstration that additional time beyond the 90-day deadline is needed to complete the ACM, and that the deadline may be extended by 60 days. Therefore, the ACM must be completed by September 13, 2019.

Demonstration of Need for Additional Time

Additional time is needed to complete the ACM in order to investigate the nature and extent of downgradient groundwater impacts and consider that information in preparing the ACM. The additional information obtained through further investigation of site conditions is important to the selection of suitable corrective measures and the evaluation of those corrective measures in meeting the requirements and objectives outlined in 40 CFR 257.96(c). Specifically, additional data about the nature and extent of groundwater impacts is needed to determine the current level of risk, evaluate the reduction of risk provided, and evaluate the implementation of potential corrective measures.

In January 2019, prior to initiating an ACM in April 2019, IPL began the process of designing, permitting, installing, and sampling additional groundwater monitoring wells to investigate the nature and extent of these constituents in groundwater, in accordance with 40 CFR 257.95(g)(1).

The following factors contributed to delays in the installation and sampling of the new wells, which in turn created the need for the extension of the ACM deadline by up to 60 days as allowed under 40 CFR 257.96(a):

- Selection of well locations, arrangement for access to the well locations, and local permit reviews delayed well installation.

- Drilling subcontractor schedules caused additional delays due to limited subcontractor availability and Iowa drilling licensing requirements.

Additional information regarding the nature and extent of groundwater impacts will provide further understanding of existing risks associated with the groundwater impacts identified at the Lansing Generating Station, which provides the basis for evaluating potential corrective measures as required under 40 CFR 257.96. While evaluation of the nature and extent of impacts may continue in parallel with the ACM and selection of remedy, extending the ACM deadline as allowed under the coal combustion residuals (CCR) rule will allow for the consideration of additional information and provide for a more complete ACM. Thus, the 60-day extension is needed.

As required by 40 CFR 257.96(a), a professional engineer's certification of the accuracy of this demonstration is enclosed.

PE Certification

<table>
<tr><td rowspan="5"> 
</td><td>As required by 40 CFR 257.96, I, Eric J. Nelson, hereby certify that this demonstration of need for the 60-day extension of the deadline for completing an Assessment of Corrective Measures is accurate. I am a duly licensed Professional Engineer under the laws of the State of Iowa.

7/10/2019
(signature) (date)</td></tr>
<tr><td>Eric J. Nelson
(printed or typed name)</td></tr>
<tr><td>License number 23136

My license renewal date is December 31, 2020.

Pages or sheets covered by this seal:

ACM - Demonstration of Need for Deadline Extension</td></tr>
<tr><td>Lansing Generating Station</td></tr>
<tr><td></td></tr>
</table>

Sincerely,

Eric J. Nelson, PE
Project Director
SCS Engineers

Thomas J. Karwoski
Senior Project Manager
SCS Engineers

EJN/AJR/SC

cc: Matt Cole, Interstate Power and Light Company
Jeff Maxted, Alliant Energy

I:\25218201.00\Correspondence\Client\ACM Extension\190710_Jackson_LAN_ACM Ext_PE_Certification_Letter.docx