



2017 Annual Groundwater Monitoring and Corrective Action Report

Ottumwa Generating Station Ottumwa, Iowa

Prepared for:

Alliant Energy



Prepared by:

SCS ENGINEERS

2830 Dairy Drive
Madison, Wisconsin 53718-6751
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January 31, 2018
File No. 25216072.17

Offices Nationwide
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1.0 INTRODUCTION

This 2017 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the “Coal Combustion Residuals (CCR) Final Rule” published by the U.S. Environmental Protection Agency (USEPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, dated April 17, 2015 (USEPA, 2015). 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 2017 Annual Groundwater Monitoring and Corrective Action Report for the CCR Units.

This report covers the period of groundwater monitoring from April 26, 2016 through December 31, 2017. April 26, 2016 is the date of the first background sampling round. All future annual reports will cover the period from January 1 through December 31 of the previous year.

The system is designed to detect monitored constituents at the waste boundary of the OGS Ash Pond (existing CCR surface impoundment) located at the Ottumwa Generating Station, as required by 40 CFR 257.91(d). The groundwater monitoring system consists of one upgradient and five downgradient monitoring 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 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 1**. Other CCR units are also presented on **Figure 1**.

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;

No new monitoring wells were installed and no wells were decommissioned as part of the groundwater monitoring program for the CCR unit in 2017. Upgradient and downgradient monitoring wells, MW-301, MW-302, MW-303, MW-304, MW-305, and MW-306 were installed between November 12 through December 8, 2015 to monitor the CCR Units at the Ottumwa Generating Station.

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;

Eight groundwater samples were collected from each CCR monitoring well for the establishment of background. Background sampling began in April 2016 and concluded in August 2017. Background samples 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, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs is included in **Table 1**. The results of the analytical laboratory analyses are provided in the laboratory reports in **Appendices A1** through **A8**.

Detection monitoring was initiated at the site on October 17, 2017. The date of sample collection, field measurements, and the analytical results of the analytical laboratory analyses are provided in **Appendix A9**.

Assessment monitoring has not been initiated for the CCR Units at the Ottumwa Generating Station.

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);

Following completion of eight background groundwater monitoring events, detection monitoring was initiated in October 2017. There were no transitions between monitoring programs or statistically significant increase (SSI) determinations completed in 2017.

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 2017 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 detection monitoring.

Summary of Key Actions Completed. Collection of background groundwater quality data was completed, and the initial detection monitoring sampling and analysis event was completed.

Description of Any Problems Encountered:

- During the background round 2 sampling of monitoring wells MW-305, the battery for the instruments used to measure all field parameters except turbidity lost power. All parameters except turbidity had already stabilized. Purging was continued until turbidity stabilized.
- During background round 3 sampling, pH did not stabilize at well MW-302 as specified in the sampling plan. All other parameters did stabilize. The sample was obtained.

Discussion of Actions to Resolve the Problems. See above. All problems were resolved, and the problems are not believed to have affected the samples that were collected.

Projection of Key Activities for the Upcoming Year (2018):

- Statistical evaluation and determination of any SSIs for October 2017 monitoring event (by 1/15/18)
- If an SSI is determined, then within 90 days either
 - Complete alternative source demonstration (if applicable), or
 - Establish an assessment monitoring program

- Two semi-annual groundwater sampling and analysis events (April and October 2018)

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. No alternative detection monitoring frequency has been proposed.

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. No alternative source demonstration was completed in 2017.

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 not been initiated and no alternative assessment monitoring frequency has been proposed.

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).

Not Applicable. Assessment monitoring was not performed in 2017.

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. Assessment monitoring has not been initiated and no alternative source demonstration for assessment monitoring was completed in 2017.

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.

Not Applicable. Corrective measures assessment has not been initiated.

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TABLE 1

CCR Rule Groundwater Samples Summary

**Table 1. CCR Rule Groundwater Samples Summary
Ottumwa Generating Station/ SCS Engineers Project #25216072**

Sample Dates	Downgradient Wells					Background Well
	MW-302	MW-303	MW-304	MW-305	MW-306	MW-301
4/26/2016	B	B	B	B	B	B
6/23/2016	B	B	B	B	B	B
8/10-11/2016	B	B	B	B	B	B
10/26-27/2016	B	B	B	B	B	B
1/18/2017	B	B	B	B	B	B
4/19/2017	B	B	B	B	B	B
6/20-21/2017	B	B	B	B	B	B
8/22-23/2017	B	B	B	B	B	B
11/8/2017	D	D	D	D	D	D
Total Samples	9	9	9	9	9	9

Abbreviations:

B = Background Sample

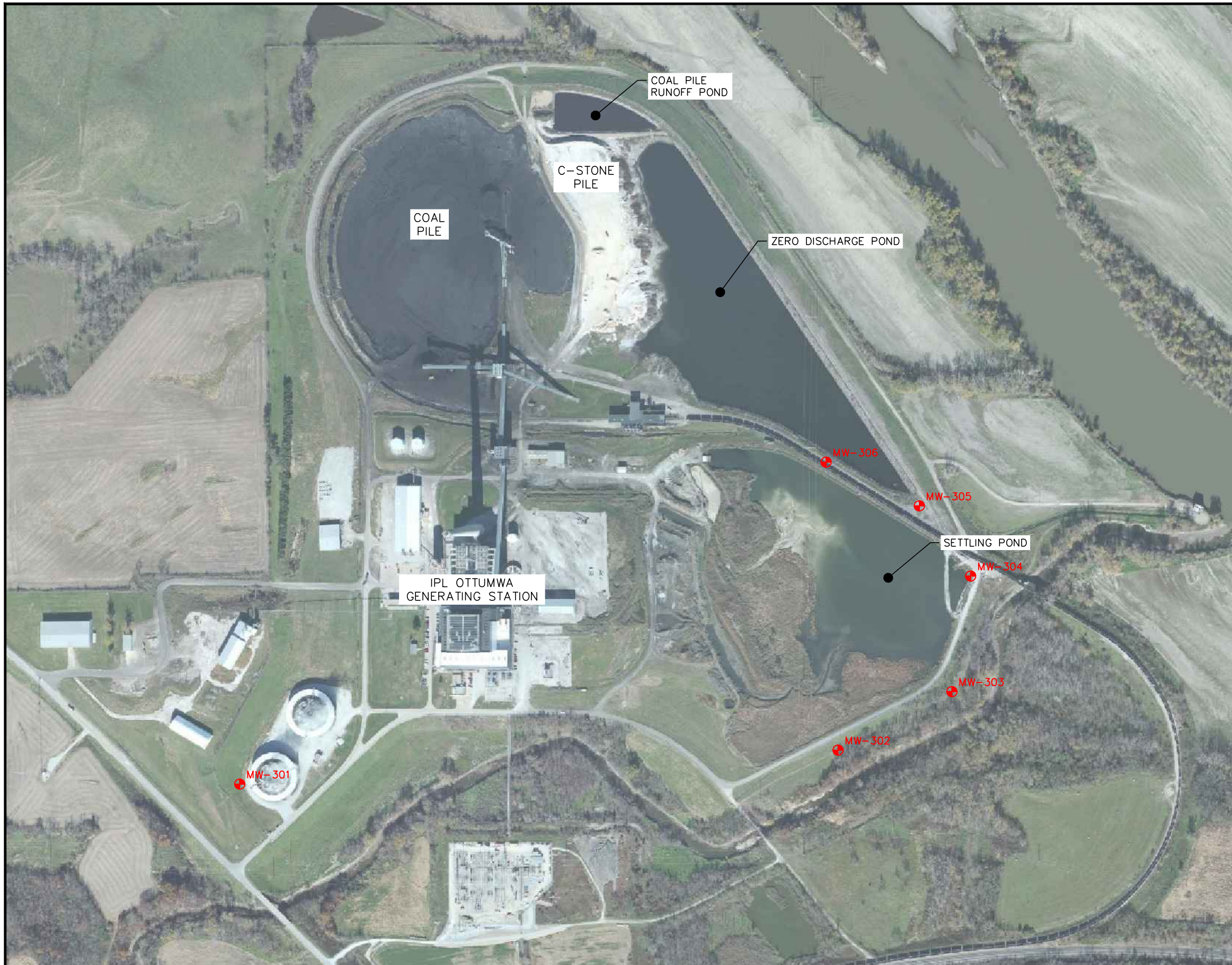
D = Required by Detection Monitoring Program

Created by: NDK Date: 1/4/2018
 Last revision by: NDK Date: 1/9/2018
 Checked by: JD Date: 1/9/2018

I:\25216072.00\Reports\2017 Annual report\[GW_Samples_Summary_Table_OGS-1.xlsx]GW Summary

FIGURE 1

Site Plan and Monitoring Well Locations



LEGEND

- ⊕ CCR MONITORING WELL LOCATION (APPROXIMATE)

NOTES:

1. MONITORING WELLS MW-301, MW-302, MW-304, WERE INSTALLED BY CASCADE DRILLING, LLP. UNDER THE SUPERVISION OF SCS ENGINEERS FROM NOVEMBER 11-12, 2015.
2. MONITORING WELLS MW-303 AND MW-305 WERE INSTALLED BY CASCADE DRILLING LLP. UNDER THE SUPERVISION OF SCS ENGINEERS ON DECEMBER 7-8, 2015.
3. MONITORING WELLS MW-301, MW-302, MW-304 AND MW-306 WERE SURVEYED BY FRENCH RENEKER ASSOCIATES, INC. ON DECEMBER 3, 2015.
4. MONITORING WELLS MW-303 AND MW-305 WERE SURVEYED BY FRENCH-RENEKER ASSOCIATES, INC. ON FEBRUARY 11, 2016.

N



SCALE: 1" = 500'

PROJECT NO. 25216072.00	DRAWN BY: AHB	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT INTERSTATE POWER AND LIGHT CO. 15300 130th STREET OTTUMWA, IA 52501	SITE OTTUMWA GENERATING STATION 20775 POWER PLANT ROAD OTTUMWA, IOWA	MONITORING WELL LOCATION MAP	FIGURE
DRAWN: 05/29/15	CHECKED BY: NK					1
REVISED: 01/18/18	APPROVED BY:					

APPENDIX A

- A1 Round 1 Background Sampling, Analytical Laboratory Report
- A2 Round 2 Background Sampling, Analytical Laboratory Report
- A3 Round 3 Background Sampling, Analytical Laboratory Report
- A4 Round 4 Background Sampling, Analytical Laboratory Report
- A5 Round 5 Background Sampling, Analytical Laboratory Report
- A6 Round 6 Background Sampling, Analytical Laboratory Report
- A7 Round 7 Background Sampling, Analytical Laboratory Report
- A8 Round 8 Background Sampling, Analytical Laboratory Report
- A9 Fall 2017 Detection Sampling, Analytical Laboratory Report

A1 Round 1 Background Sampling, Analytical Laboratory Report

May 06, 2016

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Generating Station
Pace Project No.: 60217932

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 28, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

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SAMPLE SUMMARY

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60217932001	MW-301	Water	04/26/16 08:30	04/28/16 08:20
60217932002	MW-302	Water	04/26/16 09:40	04/28/16 08:20
60217932003	MW-303	Water	04/26/16 12:55	04/28/16 08:20
60217932004	MW-304	Water	04/26/16 13:45	04/28/16 08:20
60217932005	MW-305	Water	04/26/16 14:30	04/28/16 08:20
60217932006	MW-306	Water	04/26/16 15:40	04/28/16 08:20
60217932007	FIELD BLANK	Water	04/26/16 15:00	04/28/16 08:20

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SAMPLE ANALYTE COUNT

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60217932001	MW-301	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		EPA 9040	CRS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60217932002	MW-302	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		EPA 9040	CRS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60217932003	MW-303	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		EPA 9040	CRS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60217932004	MW-304	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		EPA 9040	CRS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60217932005	MW-305	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		EPA 9040	CRS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60217932006	MW-306	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		EPA 9040	CRS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60217932007	FIELD BLANK	EPA 6010	TDS	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NDJ	1	PASI-K
		SM 2540C	AGO	1	PASI-K
		EPA 9040	CRS	1	PASI-K
		EPA 9056	OL	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Sample: MW-301		Lab ID: 60217932001		Collected: 04/26/16 08:30		Received: 04/28/16 08:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	574	ug/L	100	50.0	1	04/28/16 15:10	05/02/16 14:37	7440-42-8	
Calcium	66.9	mg/L	0.10	0.0081	1	04/28/16 15:10	05/02/16 14:37	7440-70-2	
Lithium	22.8	ug/L	10.0	4.9	1	04/28/16 15:10	05/02/16 14:37	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	ND	ug/L	1.0	0.058	1	04/28/16 15:15	05/04/16 13:01	7440-36-0	
Arsenic	0.38J	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:01	7440-38-2	
Barium	51.6	ug/L	1.0	0.14	1	04/28/16 15:15	05/04/16 13:01	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	04/28/16 15:15	05/04/16 13:01	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	04/28/16 15:15	05/04/16 13:01	7440-43-9	
Chromium	0.59J	ug/L	1.0	0.34	1	04/28/16 15:15	05/04/16 13:01	7440-47-3	
Cobalt	4.1	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:01	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	04/28/16 15:15	05/04/16 13:01	7439-92-1	
Molybdenum	1.2	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:01	7439-98-7	
Selenium	4.7	ug/L	1.0	0.18	1	04/28/16 15:15	05/04/16 13:01	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:01	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	05/05/16 09:30	05/05/16 15:42	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	500	mg/L	5.0	5.0	1		05/03/16 09:12		
9040 pH		Analytical Method: EPA 9040							
pH	6.5	Std. Units	0.10	0.10	1		04/29/16 10:15		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	63.4	mg/L	5.0	2.5	5		05/01/16 14:15	16887-00-6	
Fluoride	0.22	mg/L	0.20	0.073	1		04/30/16 22:20	16984-48-8	
Sulfate	150	mg/L	20.0	5.0	20		05/01/16 14:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Sample: MW-302 **Lab ID: 60217932002** Collected: 04/26/16 09:40 Received: 04/28/16 08:20 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	1110	ug/L	100	50.0	1	04/28/16 15:10	05/02/16 14:48	7440-42-8	
Calcium	193	mg/L	0.10	0.0081	1	04/28/16 15:10	05/02/16 14:48	7440-70-2	
Lithium	11.3	ug/L	10.0	4.9	1	04/28/16 15:10	05/02/16 14:48	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.088J	ug/L	1.0	0.058	1	04/28/16 15:15	05/04/16 13:06	7440-36-0	
Arsenic	1.7	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:06	7440-38-2	
Barium	31.5	ug/L	1.0	0.14	1	04/28/16 15:15	05/04/16 13:06	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	04/28/16 15:15	05/04/16 13:06	7440-41-7	
Cadmium	0.25J	ug/L	0.50	0.029	1	04/28/16 15:15	05/04/16 13:06	7440-43-9	
Chromium	2.1	ug/L	1.0	0.34	1	04/28/16 15:15	05/04/16 13:06	7440-47-3	
Cobalt	2.6	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:06	7440-48-4	
Lead	1.1	ug/L	1.0	0.19	1	04/28/16 15:15	05/04/16 13:06	7439-92-1	
Molybdenum	0.68J	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:06	7439-98-7	
Selenium	0.23J	ug/L	1.0	0.18	1	04/28/16 15:15	05/04/16 13:06	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:06	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.039	1	05/05/16 09:30	05/05/16 15:45	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	1680	mg/L	5.0	5.0	1		05/03/16 09:12		
9040 pH Analytical Method: EPA 9040									
pH	6.7	Std. Units	0.10	0.10	1		04/29/16 10:15		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	258	mg/L	20.0	10.0	20		05/01/16 14:43	16887-00-6	
Fluoride	0.22	mg/L	0.20	0.073	1		04/30/16 22:34	16984-48-8	
Sulfate	752	mg/L	100	24.8	100		05/01/16 14:57	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Sample: MW-303		Lab ID: 60217932003		Collected: 04/26/16 12:55		Received: 04/28/16 08:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	417	ug/L	100	50.0	1	04/28/16 15:10	05/02/16 14:50	7440-42-8	
Calcium	179	mg/L	0.10	0.0081	1	04/28/16 15:10	05/02/16 14:50	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	04/28/16 15:10	05/02/16 14:50	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.23J	ug/L	1.0	0.058	1	04/28/16 15:15	05/04/16 13:19	7440-36-0	
Arsenic	0.89J	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:19	7440-38-2	
Barium	68.2	ug/L	1.0	0.14	1	04/28/16 15:15	05/04/16 13:19	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	04/28/16 15:15	05/04/16 13:19	7440-41-7	
Cadmium	0.24J	ug/L	0.50	0.029	1	04/28/16 15:15	05/04/16 13:19	7440-43-9	
Chromium	0.74J	ug/L	1.0	0.34	1	04/28/16 15:15	05/04/16 13:19	7440-47-3	
Cobalt	2.2	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:19	7440-48-4	
Lead	0.31J	ug/L	1.0	0.19	1	04/28/16 15:15	05/04/16 13:19	7439-92-1	
Molybdenum	3.3	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:19	7439-98-7	
Selenium	0.38J	ug/L	1.0	0.18	1	04/28/16 15:15	05/04/16 13:19	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:19	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	05/05/16 09:30	05/05/16 15:47	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	856	mg/L	5.0	5.0	1		05/03/16 09:13		
9040 pH		Analytical Method: EPA 9040							
pH	7.0	Std. Units	0.10	0.10	1		04/29/16 10:15		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	109	mg/L	10.0	5.0	10		05/01/16 15:11	16887-00-6	
Fluoride	0.21	mg/L	0.20	0.073	1		04/30/16 22:48	16984-48-8	
Sulfate	183	mg/L	10.0	2.5	10		05/01/16 15:11	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Sample: MW-304		Lab ID: 60217932004		Collected: 04/26/16 13:45	Received: 04/28/16 08:20	Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	965	ug/L	100	50.0	1	04/28/16 15:10	05/02/16 14:53	7440-42-8	
Calcium	124	mg/L	0.10	0.0081	1	04/28/16 15:10	05/02/16 14:53	7440-70-2	
Lithium	5.1J	ug/L	10.0	4.9	1	04/28/16 15:10	05/02/16 14:53	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.069J	ug/L	1.0	0.058	1	04/28/16 15:15	05/04/16 13:23	7440-36-0	
Arsenic	2.1	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:23	7440-38-2	
Barium	104	ug/L	1.0	0.14	1	04/28/16 15:15	05/04/16 13:23	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	04/28/16 15:15	05/04/16 13:23	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	04/28/16 15:15	05/04/16 13:23	7440-43-9	
Chromium	4.5	ug/L	1.0	0.34	1	04/28/16 15:15	05/04/16 13:23	7440-47-3	
Cobalt	0.89J	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:23	7440-48-4	
Lead	0.50J	ug/L	1.0	0.19	1	04/28/16 15:15	05/04/16 13:23	7439-92-1	
Molybdenum	2.5	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:23	7439-98-7	
Selenium	0.23J	ug/L	1.0	0.18	1	04/28/16 15:15	05/04/16 13:23	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:23	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	05/05/16 09:30	05/05/16 15:49	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1190	mg/L	5.0	5.0	1		05/03/16 09:13		
9040 pH		Analytical Method: EPA 9040							
pH	7.0	Std. Units	0.10	0.10	1		04/29/16 10:15		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	311	mg/L	20.0	10.0	20		05/01/16 15:39	16887-00-6	
Fluoride	0.84	mg/L	0.20	0.073	1		04/30/16 23:02	16984-48-8	
Sulfate	230	mg/L	20.0	5.0	20		05/01/16 15:39	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Sample: MW-305		Lab ID: 60217932005		Collected: 04/26/16 14:30		Received: 04/28/16 08:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	888	ug/L	100	50.0	1	04/28/16 15:10	05/02/16 14:55	7440-42-8	
Calcium	98.1	mg/L	0.10	0.0081	1	04/28/16 15:10	05/02/16 14:55	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	04/28/16 15:10	05/02/16 14:55	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.14J	ug/L	1.0	0.058	1	04/28/16 15:15	05/04/16 13:27	7440-36-0	
Arsenic	2.4	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:27	7440-38-2	
Barium	131	ug/L	1.0	0.14	1	04/28/16 15:15	05/04/16 13:27	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	04/28/16 15:15	05/04/16 13:27	7440-41-7	
Cadmium	0.051J	ug/L	0.50	0.029	1	04/28/16 15:15	05/04/16 13:27	7440-43-9	
Chromium	1.3	ug/L	1.0	0.34	1	04/28/16 15:15	05/04/16 13:27	7440-47-3	
Cobalt	14.8	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:27	7440-48-4	
Lead	0.53J	ug/L	1.0	0.19	1	04/28/16 15:15	05/04/16 13:27	7439-92-1	
Molybdenum	4.9	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:27	7439-98-7	
Selenium	0.38J	ug/L	1.0	0.18	1	04/28/16 15:15	05/04/16 13:27	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:27	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	05/05/16 09:30	05/05/16 15:51	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1040	mg/L	5.0	5.0	1		05/03/16 09:14		
9040 pH		Analytical Method: EPA 9040							
pH	7.1	Std. Units	0.10	0.10	1		04/29/16 10:15		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	310	mg/L	50.0	25.0	50		05/01/16 16:07	16887-00-6	
Fluoride	0.35	mg/L	0.20	0.073	1		04/30/16 23:16	16984-48-8	
Sulfate	65.7	mg/L	10.0	2.5	10		05/01/16 15:53	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Sample: MW-306		Lab ID: 60217932006		Collected: 04/26/16 15:40		Received: 04/28/16 08:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	540	ug/L	100	50.0	1	04/28/16 15:10	05/02/16 14:57	7440-42-8	
Calcium	101	mg/L	0.10	0.0081	1	04/28/16 15:10	05/02/16 14:57	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	04/28/16 15:10	05/02/16 14:57	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.20J	ug/L	1.0	0.058	1	04/28/16 15:15	05/04/16 13:32	7440-36-0	
Arsenic	2.2	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:32	7440-38-2	
Barium	93.0	ug/L	1.0	0.14	1	04/28/16 15:15	05/04/16 13:32	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	04/28/16 15:15	05/04/16 13:32	7440-41-7	
Cadmium	0.87	ug/L	0.50	0.029	1	04/28/16 15:15	05/04/16 13:32	7440-43-9	
Chromium	1.9	ug/L	1.0	0.34	1	04/28/16 15:15	05/04/16 13:32	7440-47-3	
Cobalt	8.3	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:32	7440-48-4	
Lead	0.74J	ug/L	1.0	0.19	1	04/28/16 15:15	05/04/16 13:32	7439-92-1	
Molybdenum	4.8	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:32	7439-98-7	
Selenium	0.30J	ug/L	1.0	0.18	1	04/28/16 15:15	05/04/16 13:32	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:32	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	05/05/16 09:30	05/05/16 15:54	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	899	mg/L	5.0	5.0	1		05/03/16 09:15		
9040 pH		Analytical Method: EPA 9040							
pH	6.6	Std. Units	0.10	0.10	1		04/29/16 10:15		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	85.8	mg/L	10.0	5.0	10		05/01/16 16:48	16887-00-6	
Fluoride	0.11J	mg/L	0.20	0.073	1		04/30/16 23:30	16984-48-8	
Sulfate	264	mg/L	50.0	12.4	50		05/01/16 17:02	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Sample: FIELD BLANK Lab ID: 60217932007 Collected: 04/26/16 15:00 Received: 04/28/16 08:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	ND	ug/L	100	50.0	1	04/28/16 15:10	05/02/16 15:00	7440-42-8	
Calcium	0.014J	mg/L	0.10	0.0081	1	04/28/16 15:10	05/02/16 15:00	7440-70-2	B
Lithium	ND	ug/L	10.0	4.9	1	04/28/16 15:10	05/02/16 15:00	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.058	1	04/28/16 15:15	05/04/16 13:45	7440-36-0	
Arsenic	ND	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:45	7440-38-2	
Barium	0.15J	ug/L	1.0	0.14	1	04/28/16 15:15	05/04/16 13:45	7440-39-3	B
Beryllium	ND	ug/L	0.50	0.080	1	04/28/16 15:15	05/04/16 13:45	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	04/28/16 15:15	05/04/16 13:45	7440-43-9	
Chromium	ND	ug/L	1.0	0.34	1	04/28/16 15:15	05/04/16 13:45	7440-47-3	
Cobalt	ND	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:45	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	04/28/16 15:15	05/04/16 13:45	7439-92-1	
Molybdenum	ND	ug/L	1.0	0.10	1	04/28/16 15:15	05/04/16 13:45	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	04/28/16 15:15	05/04/16 13:45	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	04/28/16 15:15	05/04/16 13:45	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.039	1	05/05/16 09:30	05/05/16 16:00	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	7.0	mg/L	5.0	5.0	1		05/03/16 09:15		
9040 pH Analytical Method: EPA 9040									
pH	5.9	Std. Units	0.10	0.10	1		04/29/16 10:15		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	ND	mg/L	1.0	0.50	1		04/30/16 23:44	16887-00-6	
Fluoride	ND	mg/L	0.20	0.073	1		04/30/16 23:44	16984-48-8	
Sulfate	ND	mg/L	1.0	0.25	1		04/30/16 23:44	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Generating Station

Pace Project No.: 60217932

QC Batch: MERP/10575 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006, 60217932007

METHOD BLANK: 1752183 Matrix: Water
 Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006, 60217932007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.039	05/05/16 15:18	

LABORATORY CONTROL SAMPLE: 1752184

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1752185 1752186

Parameter	Units	60217925001		60217925001		60217925001		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					
Mercury	ug/L	ND	ND	5	5	0.44	0.48	9	10	75-125	7	20 M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Generating Station

Pace Project No.: 60217932

QC Batch: MPRP/35716

Analysis Method: EPA 6010

QC Batch Method: EPA 3010

Analysis Description: 6010 MET

Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006, 60217932007

METHOD BLANK: 1748957

Matrix: Water

Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006, 60217932007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	50.0	05/02/16 14:03	
Calcium	mg/L	0.019J	0.10	0.0081	05/02/16 14:03	
Lithium	ug/L	ND	10.0	4.9	05/02/16 14:03	

LABORATORY CONTROL SAMPLE: 1748959

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	958	96	80-120	
Calcium	mg/L	10	10	100	80-120	
Lithium	ug/L	1000	934	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1748960 1748961

Parameter	Units	60217932001		60217932002		60217932003		60217932004		% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec						
Boron	ug/L	574	1000	1000	1600	1570	103	100	75-125	2	20		
Calcium	mg/L	66.9	10	10	78.0	77.5	111	106	75-125	1	20		
Lithium	ug/L	22.8	1000	1000	996	994	97	97	75-125	0	20		

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QUALITY CONTROL DATA

Project: Ottumwa Generating Station

Pace Project No.: 60217932

QC Batch: MPRP/35718 Analysis Method: EPA 6020
 QC Batch Method: EPA 3010 Analysis Description: 6020 MET
 Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006, 60217932007

METHOD BLANK: 1748993 Matrix: Water
 Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006, 60217932007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	0.058	05/04/16 12:52	
Arsenic	ug/L	ND	1.0	0.10	05/04/16 12:52	
Barium	ug/L	0.32J	1.0	0.14	05/04/16 12:52	
Beryllium	ug/L	ND	0.50	0.080	05/04/16 12:52	
Cadmium	ug/L	ND	0.50	0.029	05/04/16 12:52	
Chromium	ug/L	ND	1.0	0.34	05/04/16 12:52	
Cobalt	ug/L	ND	1.0	0.50	05/04/16 12:52	
Lead	ug/L	ND	1.0	0.19	05/04/16 12:52	
Molybdenum	ug/L	ND	1.0	0.10	05/04/16 12:52	
Selenium	ug/L	ND	1.0	0.18	05/04/16 12:52	
Thallium	ug/L	ND	1.0	0.50	05/04/16 12:52	

LABORATORY CONTROL SAMPLE: 1748994

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	42.3	106	80-120	
Arsenic	ug/L	40	42.4	106	80-120	
Barium	ug/L	40	41.6	104	80-120	
Beryllium	ug/L	40	41.5	104	80-120	
Cadmium	ug/L	40	41.6	104	80-120	
Chromium	ug/L	40	43.1	108	80-120	
Cobalt	ug/L	40	42.0	105	80-120	
Lead	ug/L	40	41.3	103	80-120	
Molybdenum	ug/L	40	44.0	110	80-120	
Selenium	ug/L	40	40.5	101	80-120	
Thallium	ug/L	40	39.4	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1748995 1748996

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		Spike Conc.	Result	Spike Conc.	Result							
Antimony	ug/L	0.088J	40	40	41.2	39.8	103	99	75-125	3	20	
Arsenic	ug/L	1.7	40	40	41.6	40.2	100	96	75-125	3	20	
Barium	ug/L	31.5	40	40	71.4	67.6	100	90	75-125	5	20	
Beryllium	ug/L	ND	40	40	36.2	34.6	90	86	75-125	4	20	
Cadmium	ug/L	0.25J	40	40	37.9	36.9	94	92	75-125	3	20	
Chromium	ug/L	2.1	40	40	42.6	41.5	101	99	75-125	3	20	
Cobalt	ug/L	2.6	40	40	42.1	40.1	99	94	75-125	5	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Parameter	Units	60217932002		1748995		1748996		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
Lead	ug/L	1.1	40	40	43.1	41.6	105	101	75-125	4	20			
Molybdenum	ug/L	0.68J	40	40	42.8	41.0	105	101	75-125	4	20			
Selenium	ug/L	0.23J	40	40	36.1	34.2	90	85	75-125	5	20			
Thallium	ug/L	ND	40	40	40.4	39.0	101	97	75-125	4	20			

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QUALITY CONTROL DATA

Project: Ottumwa Generating Station

Pace Project No.: 60217932

QC Batch: WET/61578

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006, 60217932007

METHOD BLANK: 1750681

Matrix: Water

Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006, 60217932007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	05/03/16 09:05	

LABORATORY CONTROL SAMPLE: 1750682

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	997	100	80-120	

SAMPLE DUPLICATE: 1750683

Parameter	Units	60217709006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	677	731	8	10	

SAMPLE DUPLICATE: 1750684

Parameter	Units	60217899004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	12600	13400	6	10	

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QUALITY CONTROL DATA

Project: Ottumwa Generating Station

Pace Project No.: 60217932

QC Batch: WET/61528

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006, 60217932007

SAMPLE DUPLICATE: 1749416

Parameter	Units	60217768001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.6	7.6	0	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Generating Station
Pace Project No.: 60217932

QC Batch: WETA/39257 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006, 60217932007

METHOD BLANK: 1750264 Matrix: Water
Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006, 60217932007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	04/30/16 19:34	
Fluoride	mg/L	ND	0.20	0.073	04/30/16 19:34	
Sulfate	mg/L	ND	1.0	0.25	04/30/16 19:34	

METHOD BLANK: 1750351 Matrix: Water
Associated Lab Samples: 60217932001, 60217932002, 60217932003, 60217932004, 60217932005, 60217932006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	05/01/16 10:45	
Fluoride	mg/L	ND	0.20	0.073	05/01/16 10:45	
Sulfate	mg/L	ND	1.0	0.25	05/01/16 10:45	

LABORATORY CONTROL SAMPLE: 1750265

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	80-120	
Fluoride	mg/L	2.5	2.5	102	80-120	
Sulfate	mg/L	5	5.2	105	80-120	

LABORATORY CONTROL SAMPLE: 1750352

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	80-120	
Fluoride	mg/L	2.5	2.6	104	80-120	
Sulfate	mg/L	5	5.4	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1750266 1750267

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		Spike Conc.	Result	Spike Conc.	Result							
Chloride	mg/L	60217880001	12.0	5	5	16.8	16.8	97	96	80-120	0	15
Fluoride	mg/L		0.23	2.5	2.5	2.7	2.7	98	97	80-120	0	15
Sulfate	mg/L		106	50	50	165	164	117	116	80-120	1	15

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QUALITY CONTROL DATA

Project: Ottumwa Generating Station

Pace Project No.: 60217932

SAMPLE DUPLICATE: 1750268

Parameter	Units	60217881001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	ND	0.81J		15	
Fluoride	mg/L	ND	0.080J		15	
Sulfate	mg/L	1.1	1.1	1	15	

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QUALIFIERS

Project: Ottumwa Generating Station

Pace Project No.: 60217932

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Generating Station

Pace Project No.: 60217932

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60217932001	MW-301	EPA 3010	MPRP/35716	EPA 6010	ICP/26108
60217932002	MW-302	EPA 3010	MPRP/35716	EPA 6010	ICP/26108
60217932003	MW-303	EPA 3010	MPRP/35716	EPA 6010	ICP/26108
60217932004	MW-304	EPA 3010	MPRP/35716	EPA 6010	ICP/26108
60217932005	MW-305	EPA 3010	MPRP/35716	EPA 6010	ICP/26108
60217932006	MW-306	EPA 3010	MPRP/35716	EPA 6010	ICP/26108
60217932007	FIELD BLANK	EPA 3010	MPRP/35716	EPA 6010	ICP/26108
60217932001	MW-301	EPA 3010	MPRP/35718	EPA 6020	ICPM/4226
60217932002	MW-302	EPA 3010	MPRP/35718	EPA 6020	ICPM/4226
60217932003	MW-303	EPA 3010	MPRP/35718	EPA 6020	ICPM/4226
60217932004	MW-304	EPA 3010	MPRP/35718	EPA 6020	ICPM/4226
60217932005	MW-305	EPA 3010	MPRP/35718	EPA 6020	ICPM/4226
60217932006	MW-306	EPA 3010	MPRP/35718	EPA 6020	ICPM/4226
60217932007	FIELD BLANK	EPA 3010	MPRP/35718	EPA 6020	ICPM/4226
60217932001	MW-301	EPA 7470	MERP/10575	EPA 7470	MERC/10522
60217932002	MW-302	EPA 7470	MERP/10575	EPA 7470	MERC/10522
60217932003	MW-303	EPA 7470	MERP/10575	EPA 7470	MERC/10522
60217932004	MW-304	EPA 7470	MERP/10575	EPA 7470	MERC/10522
60217932005	MW-305	EPA 7470	MERP/10575	EPA 7470	MERC/10522
60217932006	MW-306	EPA 7470	MERP/10575	EPA 7470	MERC/10522
60217932007	FIELD BLANK	EPA 7470	MERP/10575	EPA 7470	MERC/10522
60217932001	MW-301	SM 2540C	WET/61578		
60217932002	MW-302	SM 2540C	WET/61578		
60217932003	MW-303	SM 2540C	WET/61578		
60217932004	MW-304	SM 2540C	WET/61578		
60217932005	MW-305	SM 2540C	WET/61578		
60217932006	MW-306	SM 2540C	WET/61578		
60217932007	FIELD BLANK	SM 2540C	WET/61578		
60217932001	MW-301	EPA 9040	WET/61528		
60217932002	MW-302	EPA 9040	WET/61528		
60217932003	MW-303	EPA 9040	WET/61528		
60217932004	MW-304	EPA 9040	WET/61528		
60217932005	MW-305	EPA 9040	WET/61528		
60217932006	MW-306	EPA 9040	WET/61528		
60217932007	FIELD BLANK	EPA 9040	WET/61528		
60217932001	MW-301	EPA 9056	WETA/39257		
60217932002	MW-302	EPA 9056	WETA/39257		
60217932003	MW-303	EPA 9056	WETA/39257		
60217932004	MW-304	EPA 9056	WETA/39257		
60217932005	MW-305	EPA 9056	WETA/39257		
60217932006	MW-306	EPA 9056	WETA/39257		
60217932007	FIELD BLANK	EPA 9056	WETA/39257		

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Sample Condition Upon Receipt

WO#: 60217932



Client Name: SCS Eng.

Courier: FedEx UPS VIA Clay PEX ECI Pace Other Client

Tracking #: 7829 3242 8367 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: CF +1.0 T-239 / CF 0.0 T-262 Type of Ice: Water Blue None Samples received on ice, cooling process has begun. (circle one)

Cooler Temperature: 2.0

Date and initials of person examining contents: [Signature] 4/28/16

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <u>PH</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>WT</u>		13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:
Additional labels attached to 5035A vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 4-28-16

May 23, 2016

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Generating Station
Pace Project No.: 60217937

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 28, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Generating Station

Pace Project No.: 60217937

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Ottumwa Generating Station

Pace Project No.: 60217937

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60217937001	MW-301	Water	04/26/16 08:30	04/28/16 08:20
60217937002	MW-302	Water	04/26/16 09:40	04/28/16 08:20
60217937003	MW-303	Water	04/26/16 12:55	04/28/16 08:20
60217937004	MW-304	Water	04/26/16 13:45	04/28/16 08:20
60217937005	MW-305	Water	04/26/16 14:30	04/28/16 08:20
60217937006	MW-306	Water	04/26/16 15:40	04/28/16 08:20
60217937007	FIELD BLANK	Water	04/26/16 15:00	04/28/16 08:20

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SAMPLE ANALYTE COUNT

Project: Ottumwa Generating Station

Pace Project No.: 60217937

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60217937001	MW-301	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60217937002	MW-302	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60217937003	MW-303	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60217937004	MW-304	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60217937005	MW-305	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60217937006	MW-306	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60217937007	FIELD BLANK	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Generating Station

Pace Project No.: 60217937

Sample: MW-301 **Lab ID: 60217937001** Collected: 04/26/16 08:30 Received: 04/28/16 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0840 ± 0.436 (0.905) C:NA T:94%	pCi/L	05/20/16 20:11	13982-63-3	
Radium-228	EPA 904.0	0.426 ± 0.360 (0.722) C:81% T:78%	pCi/L	05/18/16 15:51	15262-20-1	
Total Radium	Total Radium Calculation	0.510 ± 0.796 (1.63)	pCi/L	05/23/16 12:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Generating Station

Pace Project No.: 60217937

Sample: MW-302 **Lab ID: 60217937002** Collected: 04/26/16 09:40 Received: 04/28/16 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.400 ± 0.600 (0.991) C:NA T:85%	pCi/L	05/20/16 20:16	13982-63-3	
Radium-228	EPA 904.0	0.631 ± 0.380 (0.704) C:79% T:83%	pCi/L	05/18/16 15:51	15262-20-1	
Total Radium	Total Radium Calculation	1.03 ± 0.980 (1.70)	pCi/L	05/23/16 12:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Generating Station

Pace Project No.: 60217937

Sample: MW-303 **Lab ID: 60217937003** Collected: 04/26/16 12:55 Received: 04/28/16 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.163 ± 0.372 (0.599) C:NA T:93%	pCi/L	05/20/16 20:25	13982-63-3	
Radium-228	EPA 904.0	0.643 ± 0.386 (0.716) C:77% T:86%	pCi/L	05/18/16 15:51	15262-20-1	
Total Radium	Total Radium Calculation	0.806 ± 0.758 (1.32)	pCi/L	05/23/16 12:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Generating Station

Pace Project No.: 60217937

Sample: MW-304 **Lab ID: 60217937004** Collected: 04/26/16 13:45 Received: 04/28/16 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.706 ± 0.496 (0.239) C:NA T:87%	pCi/L	05/20/16 20:41	13982-63-3	
Radium-228	EPA 904.0	0.952 ± 0.417 (0.673) C:80% T:80%	pCi/L	05/18/16 15:51	15262-20-1	
Total Radium	Total Radium Calculation	1.66 ± 0.913 (0.912)	pCi/L	05/23/16 12:27	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Generating Station

Pace Project No.: 60217937

Sample: MW-305 **Lab ID: 60217937005** Collected: 04/26/16 14:30 Received: 04/28/16 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.281 ± 0.428 (0.253) C:NA T:93%	pCi/L	05/20/16 21:07	13982-63-3	
Radium-228	EPA 904.0	0.412 ± 0.385 (0.785) C:76% T:76%	pCi/L	05/18/16 15:51	15262-20-1	
Total Radium	Total Radium Calculation	0.693 ± 0.813 (1.04)	pCi/L	05/23/16 12:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Generating Station

Pace Project No.: 60217937

Sample: MW-306 **Lab ID: 60217937006** Collected: 04/26/16 15:40 Received: 04/28/16 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.179 ± 0.592 (0.996) C:NA T:89%	pCi/L	05/20/16 21:07	13982-63-3	
Radium-228	EPA 904.0	0.962 ± 0.428 (0.700) C:76% T:84%	pCi/L	05/18/16 15:51	15262-20-1	
Total Radium	Total Radium Calculation	1.14 ± 1.02 (1.70)	pCi/L	05/23/16 12:27	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Generating Station

Pace Project No.: 60217937

Sample: FIELD BLANK **Lab ID: 60217937007** Collected: 04/26/16 15:00 Received: 04/28/16 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0930 ± 0.425 (0.864) C:NA T:91%	pCi/L	05/20/16 21:24	13982-63-3	
Radium-228	EPA 904.0	0.355 ± 0.389 (0.814) C:72% T:83%	pCi/L	05/18/16 15:51	15262-20-1	
Total Radium	Total Radium Calculation	0.448 ± 0.814 (1.68)	pCi/L	05/23/16 12:27	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Generating Station

Pace Project No.: 60217937

QC Batch: RADC/29287

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60217937001, 60217937002, 60217937003, 60217937004, 60217937005, 60217937006, 60217937007

METHOD BLANK: 1070015

Matrix: Water

Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0835 ± 0.381 (0.226) C:NA T:91%	pCi/L	05/20/16 19:56	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Generating Station

Pace Project No.: 60217937

QC Batch: RADC/29301

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60217937001, 60217937002, 60217937003, 60217937004, 60217937005, 60217937006, 60217937007

METHOD BLANK: 1070043

Matrix: Water

Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0192 ± 0.294 (0.681) C:77% T:89%	pCi/L	05/18/16 15:48	

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

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QUALIFIERS

Project: Ottumwa Generating Station

Pace Project No.: 60217937

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Generating Station

Pace Project No.: 60217937

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60217937001	MW-301	EPA 903.1	RADC/29287		
60217937002	MW-302	EPA 903.1	RADC/29287		
60217937003	MW-303	EPA 903.1	RADC/29287		
60217937004	MW-304	EPA 903.1	RADC/29287		
60217937005	MW-305	EPA 903.1	RADC/29287		
60217937006	MW-306	EPA 903.1	RADC/29287		
60217937007	FIELD BLANK	EPA 903.1	RADC/29287		
60217937001	MW-301	EPA 904.0	RADC/29301		
60217937002	MW-302	EPA 904.0	RADC/29301		
60217937003	MW-303	EPA 904.0	RADC/29301		
60217937004	MW-304	EPA 904.0	RADC/29301		
60217937005	MW-305	EPA 904.0	RADC/29301		
60217937006	MW-306	EPA 904.0	RADC/29301		
60217937007	FIELD BLANK	EPA 904.0	RADC/29301		
60217937001	MW-301	Total Radium Calculation	RADC/29564		
60217937002	MW-302	Total Radium Calculation	RADC/29564		
60217937003	MW-303	Total Radium Calculation	RADC/29564		
60217937004	MW-304	Total Radium Calculation	RADC/29564		
60217937005	MW-305	Total Radium Calculation	RADC/29564		
60217937006	MW-306	Total Radium Calculation	RADC/29564		
60217937007	FIELD BLANK	Total Radium Calculation	RADC/29564		

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Sample Condition Upon Receipt

WO#: 60217937



Client Name: SCS Eng.

Courier: FedEx UPS VIA Clay PEX ECI Pace Other Client

Tracking #: 7829 3242 8367 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T-239 / T-262 Type of Ice: (We) Blue None Samples received on ice, cooling process has begun. (circle one)

Cooler Temperature: 3.6

Date and initials of person examining contents: JS 4/28/16 JS

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>water</u>		13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>JS</u> Lot # of added preservative
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank lot # (if purchased): <u>None</u>		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
		16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:
Additional labels attached to 5035A vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: JS

Date: 4.28.16

Sample Condition Upon Receipt Pittsburgh

30181727



Client Name: Pace KS

Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Thermometer Used N/A Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Date and initials of person examining contents: NTV
5-2-16

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC:	X			5.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:	X			8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked.	X			13.
All containers needing preservation are found to be in compliance with EPA recommendation.	X			
exceptions: VOA, coliform, TOC, O&G, Phenolics				
				Initial when completed <u>NTV</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	14.
Trip Blank Present:			X	15.
Trip Blank Custody Seals Present			X	

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

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

A2 Round 2 Background Sampling, Analytical Laboratory Report

July 05, 2016

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

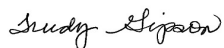
RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60222191

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on June 25, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60222191001	MW-301	Water	06/23/16 09:45	06/25/16 08:50
60222191002	MW-302	Water	06/23/16 11:05	06/25/16 08:50
60222191003	MW-303	Water	06/23/16 12:30	06/25/16 08:50
60222191004	MW-304	Water	06/23/16 13:45	06/25/16 08:50
60222191005	MW-305	Water	06/23/16 15:55	06/25/16 08:50
60222191006	MW-306	Water	06/23/16 17:25	06/25/16 08:50
60222191007	FIELD BLANK	Water	06/23/16 10:45	06/25/16 08:50

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60222191001	MW-301	EPA 6010	NDJ	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	HAC	1	PASI-K
		EPA 9040	LDB	1	PASI-K
		EPA 9056	OL	3	PASI-K
60222191002	MW-302	EPA 6010	NDJ	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	HAC	1	PASI-K
		EPA 9040	LDB	1	PASI-K
		EPA 9056	OL	3	PASI-K
60222191003	MW-303	EPA 6010	NDJ	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	HAC	1	PASI-K
		EPA 9040	LDB	1	PASI-K
		EPA 9056	OL	3	PASI-K
60222191004	MW-304	EPA 6010	NDJ	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	HAC	1	PASI-K
		EPA 9040	LDB	1	PASI-K
		EPA 9056	OL	3	PASI-K
60222191005	MW-305	EPA 6010	NDJ	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	HAC	1	PASI-K
		EPA 9040	LDB	1	PASI-K
		EPA 9056	OL	3	PASI-K
60222191006	MW-306	EPA 6010	NDJ	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	HAC	1	PASI-K
		EPA 9040	LDB	1	PASI-K
		EPA 9056	OL	3	PASI-K
60222191007	FIELD BLANK	EPA 6010	NDJ	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	HAC	1	PASI-K
		EPA 9040	LDB	1	PASI-K
		EPA 9056	OL	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Sample: MW-301		Lab ID: 60222191001		Collected: 06/23/16 09:45		Received: 06/25/16 08:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	612	ug/L	100	50.0	1	06/27/16 16:30	06/28/16 16:25	7440-42-8	
Calcium	62.5	mg/L	0.10	0.0081	1	06/27/16 16:30	06/28/16 16:25	7440-70-2	
Lithium	28.7	ug/L	10.0	4.9	1	06/27/16 16:30	06/28/16 16:25	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.13J	ug/L	1.0	0.058	1	06/27/16 16:30	06/28/16 15:05	7440-36-0	B
Arsenic	0.38J	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:05	7440-38-2	
Barium	55.8	ug/L	1.0	0.14	1	06/27/16 16:30	06/28/16 15:05	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	06/27/16 16:30	06/30/16 13:22	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	06/27/16 16:30	06/28/16 15:05	7440-43-9	
Chromium	0.74J	ug/L	1.0	0.34	1	06/27/16 16:30	06/28/16 15:05	7440-47-3	
Cobalt	3.1	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:05	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	06/27/16 16:30	06/28/16 15:05	7439-92-1	
Molybdenum	1.2	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:05	7439-98-7	B
Selenium	5.4	ug/L	1.0	0.18	1	06/27/16 16:30	06/28/16 15:05	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:05	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	06/28/16 16:45	06/29/16 12:13	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	531	mg/L	5.0	5.0	1		06/28/16 10:39		
9040 pH		Analytical Method: EPA 9040							
pH	6.4	Std. Units	0.10	0.10	1		06/27/16 09:00		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	66.9	mg/L	10.0	5.0	10		07/03/16 17:58	16887-00-6	
Fluoride	0.20J	mg/L	0.20	0.073	1		07/02/16 21:33	16984-48-8	
Sulfate	157	mg/L	10.0	2.5	10		07/03/16 17:58	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Sample: MW-302		Lab ID: 60222191002		Collected: 06/23/16 11:05		Received: 06/25/16 08:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	1130	ug/L	100	50.0	1	06/27/16 16:30	06/28/16 16:27	7440-42-8	
Calcium	177	mg/L	0.10	0.0081	1	06/27/16 16:30	06/28/16 16:27	7440-70-2	
Lithium	14.1	ug/L	10.0	4.9	1	06/27/16 16:30	06/28/16 16:27	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.12J	ug/L	1.0	0.058	1	06/27/16 16:30	06/28/16 15:09	7440-36-0	B
Arsenic	0.69J	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:09	7440-38-2	
Barium	23.0	ug/L	1.0	0.14	1	06/27/16 16:30	06/28/16 15:09	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	06/27/16 16:30	06/30/16 13:24	7440-41-7	
Cadmium	0.21J	ug/L	0.50	0.029	1	06/27/16 16:30	06/28/16 15:09	7440-43-9	
Chromium	0.82J	ug/L	1.0	0.34	1	06/27/16 16:30	06/28/16 15:09	7440-47-3	
Cobalt	1.4	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:09	7440-48-4	
Lead	0.20J	ug/L	1.0	0.19	1	06/27/16 16:30	06/28/16 15:09	7439-92-1	
Molybdenum	0.60J	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:09	7439-98-7	B
Selenium	ND	ug/L	1.0	0.18	1	06/27/16 16:30	06/28/16 15:09	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:09	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	06/28/16 16:45	06/29/16 12:16	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1480	mg/L	5.0	5.0	1		06/30/16 10:36		
9040 pH		Analytical Method: EPA 9040							
pH	6.6	Std. Units	0.10	0.10	1		06/27/16 09:00		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	258	mg/L	50.0	25.0	50		07/03/16 18:13	16887-00-6	
Fluoride	0.17J	mg/L	0.20	0.073	1		07/02/16 21:48	16984-48-8	
Sulfate	865	mg/L	50.0	12.4	50		07/03/16 18:13	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Sample: MW-303		Lab ID: 60222191003		Collected: 06/23/16 12:30		Received: 06/25/16 08:50		Matrix: Water	
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	579	ug/L	100	50.0	1	06/27/16 16:30	06/28/16 16:34	7440-42-8	
Calcium	172	mg/L	0.10	0.0081	1	06/27/16 16:30	06/28/16 16:34	7440-70-2	
Lithium	8.3J	ug/L	10.0	4.9	1	06/27/16 16:30	06/28/16 16:34	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.32J	ug/L	1.0	0.058	1	06/27/16 16:30	06/28/16 15:13	7440-36-0	B
Arsenic	0.91J	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:13	7440-38-2	
Barium	78.5	ug/L	1.0	0.14	1	06/27/16 16:30	06/28/16 15:13	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	06/27/16 16:30	06/30/16 13:25	7440-41-7	
Cadmium	0.28J	ug/L	0.50	0.029	1	06/27/16 16:30	06/28/16 15:13	7440-43-9	
Chromium	0.83J	ug/L	1.0	0.34	1	06/27/16 16:30	06/28/16 15:13	7440-47-3	
Cobalt	2.5	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:13	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	06/27/16 16:30	06/28/16 15:13	7439-92-1	
Molybdenum	3.6	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:13	7439-98-7	
Selenium	0.43J	ug/L	1.0	0.18	1	06/27/16 16:30	06/28/16 15:13	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:13	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	06/28/16 16:45	06/29/16 12:18	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	988	mg/L	5.0	5.0	1		06/30/16 10:37		
9040 pH		Analytical Method: EPA 9040							
pH	6.8	Std. Units	0.10	0.10	1		06/27/16 09:00		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	155	mg/L	20.0	10.0	20		07/03/16 18:43	16887-00-6	
Fluoride	0.17J	mg/L	0.20	0.073	1		07/02/16 22:03	16984-48-8	
Sulfate	190	mg/L	20.0	5.0	20		07/03/16 18:43	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Sample: MW-304		Lab ID: 60222191004		Collected: 06/23/16 13:45		Received: 06/25/16 08:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	968	ug/L	100	50.0	1	06/27/16 16:30	06/28/16 16:36	7440-42-8	
Calcium	123	mg/L	0.10	0.0081	1	06/27/16 16:30	06/28/16 16:36	7440-70-2	
Lithium	7.5J	ug/L	10.0	4.9	1	06/27/16 16:30	06/28/16 16:36	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.13J	ug/L	1.0	0.058	1	06/27/16 16:30	06/28/16 15:18	7440-36-0	B
Arsenic	2.2	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:18	7440-38-2	
Barium	106	ug/L	1.0	0.14	1	06/27/16 16:30	06/28/16 15:18	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	06/27/16 16:30	06/30/16 13:27	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	06/27/16 16:30	06/28/16 15:18	7440-43-9	
Chromium	7.1	ug/L	1.0	0.34	1	06/27/16 16:30	06/28/16 15:18	7440-47-3	
Cobalt	1.1	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:18	7440-48-4	
Lead	0.82J	ug/L	1.0	0.19	1	06/27/16 16:30	06/28/16 15:18	7439-92-1	
Molybdenum	2.4	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:18	7439-98-7	
Selenium	0.32J	ug/L	1.0	0.18	1	06/27/16 16:30	06/28/16 15:18	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:18	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	06/28/16 16:45	06/29/16 12:20	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1160	mg/L	5.0	5.0	1		06/30/16 10:38		
9040 pH		Analytical Method: EPA 9040							
pH	7.0	Std. Units	0.10	0.10	1		06/27/16 09:00		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	316	mg/L	50.0	25.0	50		07/03/16 18:57	16887-00-6	
Fluoride	0.77	mg/L	0.20	0.073	1		07/02/16 22:17	16984-48-8	
Sulfate	234	mg/L	50.0	12.4	50		07/03/16 18:57	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Sample: MW-305		Lab ID: 60222191005		Collected: 06/23/16 15:55		Received: 06/25/16 08:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	906	ug/L	100	50.0	1	06/27/16 16:30	06/28/16 16:38	7440-42-8	
Calcium	92.1	mg/L	0.10	0.0081	1	06/27/16 16:30	06/28/16 16:38	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	06/27/16 16:30	06/28/16 16:38	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.20J	ug/L	1.0	0.058	1	06/27/16 16:30	06/28/16 15:22	7440-36-0	B
Arsenic	1.7	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:22	7440-38-2	
Barium	120	ug/L	1.0	0.14	1	06/27/16 16:30	06/28/16 15:22	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	06/27/16 16:30	06/30/16 13:28	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	06/27/16 16:30	06/28/16 15:22	7440-43-9	
Chromium	0.80J	ug/L	1.0	0.34	1	06/27/16 16:30	06/28/16 15:22	7440-47-3	
Cobalt	15.1	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:22	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	06/27/16 16:30	06/28/16 15:22	7439-92-1	
Molybdenum	5.2	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:22	7439-98-7	
Selenium	0.37J	ug/L	1.0	0.18	1	06/27/16 16:30	06/28/16 15:22	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:22	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	06/28/16 16:45	06/29/16 12:27	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	982	mg/L	5.0	5.0	1		06/30/16 10:39		
9040 pH		Analytical Method: EPA 9040							
pH	7.0	Std. Units	0.10	0.10	1		06/27/16 09:00		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	312	mg/L	50.0	25.0	50		07/03/16 19:27	16887-00-6	
Fluoride	0.29	mg/L	0.20	0.073	1		07/02/16 22:32	16984-48-8	
Sulfate	71.3	mg/L	5.0	1.2	5		07/03/16 19:12	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Sample: MW-306		Lab ID: 60222191006		Collected: 06/23/16 17:25		Received: 06/25/16 08:50		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	575	ug/L	100	50.0	1	06/27/16 16:30	06/28/16 16:41	7440-42-8	
Calcium	88.5	mg/L	0.10	0.0081	1	06/27/16 16:30	06/28/16 16:41	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	06/27/16 16:30	06/28/16 16:41	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.25J	ug/L	1.0	0.058	1	06/27/16 16:30	06/28/16 15:27	7440-36-0	B
Arsenic	1.7	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:27	7440-38-2	
Barium	80.5	ug/L	1.0	0.14	1	06/27/16 16:30	06/28/16 15:27	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	06/27/16 16:30	06/30/16 13:30	7440-41-7	
Cadmium	0.98	ug/L	0.50	0.029	1	06/27/16 16:30	06/28/16 15:27	7440-43-9	
Chromium	2.3	ug/L	1.0	0.34	1	06/27/16 16:30	06/28/16 15:27	7440-47-3	
Cobalt	7.7	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:27	7440-48-4	
Lead	0.74J	ug/L	1.0	0.19	1	06/27/16 16:30	06/28/16 15:27	7439-92-1	
Molybdenum	4.8	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:27	7439-98-7	
Selenium	0.30J	ug/L	1.0	0.18	1	06/27/16 16:30	06/28/16 15:27	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:27	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	06/28/16 16:45	06/29/16 12:29	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	849	mg/L	5.0	5.0	1		06/30/16 10:39		
9040 pH		Analytical Method: EPA 9040							
pH	6.6	Std. Units	0.10	0.10	1		06/27/16 09:00		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	77.6	mg/L	5.0	2.5	5		07/03/16 19:41	16887-00-6	
Fluoride	ND	mg/L	0.20	0.073	1		07/02/16 22:47	16984-48-8	
Sulfate	271	mg/L	20.0	5.0	20		07/03/16 20:26	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Sample: FIELD BLANK Lab ID: 60222191007 Collected: 06/23/16 10:45 Received: 06/25/16 08:50 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	ND	ug/L	100	50.0	1	06/27/16 16:30	06/28/16 16:43	7440-42-8	
Calcium	ND	mg/L	0.10	0.0081	1	06/27/16 16:30	06/28/16 16:43	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	06/27/16 16:30	06/28/16 16:43	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.082J	ug/L	1.0	0.058	1	06/27/16 16:30	06/28/16 15:31	7440-36-0	B
Arsenic	ND	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:31	7440-38-2	
Barium	ND	ug/L	1.0	0.14	1	06/27/16 16:30	06/28/16 15:31	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	06/27/16 16:30	06/30/16 13:31	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	06/27/16 16:30	06/28/16 15:31	7440-43-9	
Chromium	0.63J	ug/L	1.0	0.34	1	06/27/16 16:30	06/28/16 15:31	7440-47-3	
Cobalt	ND	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:31	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	06/27/16 16:30	06/28/16 15:31	7439-92-1	
Molybdenum	0.15J	ug/L	1.0	0.10	1	06/27/16 16:30	06/28/16 15:31	7439-98-7	B
Selenium	ND	ug/L	1.0	0.18	1	06/27/16 16:30	06/28/16 15:31	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	06/27/16 16:30	06/28/16 15:31	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.039	1	06/28/16 16:45	06/29/16 12:31	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	ND	mg/L	5.0	5.0	1		06/30/16 10:40		
9040 pH Analytical Method: EPA 9040									
pH	6.0	Std. Units	0.10	0.10	1		06/27/16 09:00		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	ND	mg/L	1.0	0.50	1		07/03/16 14:47	16887-00-6	
Fluoride	ND	mg/L	0.20	0.073	1		07/03/16 14:47	16984-48-8	
Sulfate	ND	mg/L	1.0	0.25	1		07/03/16 14:47	14808-79-8	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

QC Batch: MPRP/36477 Analysis Method: EPA 6010
 QC Batch Method: EPA 3010 Analysis Description: 6010 MET
 Associated Lab Samples: 60222191001, 60222191002, 60222191003, 60222191004, 60222191005, 60222191006, 60222191007

METHOD BLANK: 1783844 Matrix: Water
 Associated Lab Samples: 60222191001, 60222191002, 60222191003, 60222191004, 60222191005, 60222191006, 60222191007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	50.0	06/28/16 15:50	
Calcium	mg/L	ND	0.10	0.0081	06/28/16 15:50	
Lithium	ug/L	ND	10.0	4.9	06/28/16 15:50	

LABORATORY CONTROL SAMPLE: 1783845

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	964	96	80-120	
Calcium	mg/L	10	9.4	94	80-120	
Lithium	ug/L	1000	986	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1783846 1783847

Parameter	Units	60222190001		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	Spike Conc.	Result	MSD Result	% Rec	MSD % Rec					
Boron	ug/L	1860	1000	1000	2910	2870	106	102	75-125	1	20		
Calcium	mg/L	472	10	10	494	489	216	171	75-125	1	20	M1	
Lithium	ug/L	268	1000	1000	1370	1370	110	110	75-125	0	20		

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

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

QC Batch: MPRP/36478 Analysis Method: EPA 6020
 QC Batch Method: EPA 3010 Analysis Description: 6020 MET
 Associated Lab Samples: 60222191001, 60222191002, 60222191003, 60222191004, 60222191005, 60222191006, 60222191007

METHOD BLANK: 1783848 Matrix: Water
 Associated Lab Samples: 60222191001, 60222191002, 60222191003, 60222191004, 60222191005, 60222191006, 60222191007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	0.094J	1.0	0.058	06/28/16 14:12	
Arsenic	ug/L	ND	1.0	0.10	06/28/16 14:12	
Barium	ug/L	0.15J	1.0	0.14	06/28/16 14:12	
Beryllium	ug/L	ND	0.50	0.080	06/30/16 13:03	
Cadmium	ug/L	ND	0.50	0.029	06/28/16 14:12	
Chromium	ug/L	ND	1.0	0.34	06/28/16 14:12	
Cobalt	ug/L	ND	1.0	0.50	06/28/16 14:12	
Lead	ug/L	ND	1.0	0.19	06/28/16 14:12	
Molybdenum	ug/L	0.17J	1.0	0.10	06/28/16 14:12	
Selenium	ug/L	ND	1.0	0.18	06/28/16 14:12	
Thallium	ug/L	ND	1.0	0.50	06/28/16 14:12	

LABORATORY CONTROL SAMPLE: 1783849

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	42.4	106	80-120	
Arsenic	ug/L	40	43.5	109	80-120	
Barium	ug/L	40	40.8	102	80-120	
Beryllium	ug/L	40	43.8	109	80-120	
Cadmium	ug/L	40	42.7	107	80-120	
Chromium	ug/L	40	42.6	106	80-120	
Cobalt	ug/L	40	41.9	105	80-120	
Lead	ug/L	40	40.2	100	80-120	
Molybdenum	ug/L	40	42.5	106	80-120	
Selenium	ug/L	40	43.3	108	80-120	
Thallium	ug/L	40	39.3	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1783850 1783851

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		Spike Conc.	Result	Spike Conc.	Result							
Antimony	ug/L	0.15J	40	40	40.7	41.4	101	103	75-125	2	20	
Arsenic	ug/L	0.39J	40	40	41.5	42.5	103	105	75-125	2	20	
Barium	ug/L	45.4	40	40	86.7	87.8	103	106	75-125	1	20	
Beryllium	ug/L	0.16J	40	40	33.9	34.1	84	85	75-125	0	20	
Cadmium	ug/L	ND	40	40	40.7	41.3	102	103	75-125	1	20	
Chromium	ug/L	6.2	40	40	48.0	48.8	105	106	75-125	2	20	
Cobalt	ug/L	1.1	40	40	41.1	41.7	100	102	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Parameter	Units	60222190002		1783850		1783851		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
Lead	ug/L	0.90J	40	40	43.9	44.3	107	109	75-125	1	20			
Molybdenum	ug/L	0.49J	40	40	40.5	42.2	100	104	75-125	4	20			
Selenium	ug/L	0.39J	40	40	37.8	38.8	94	96	75-125	3	20			
Thallium	ug/L	ND	40	40	41.6	42.7	104	107	75-125	2	20			

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

QC Batch: WET/62658

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60222191001

METHOD BLANK: 1784043

Matrix: Water

Associated Lab Samples: 60222191001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	06/28/16 10:29	

LABORATORY CONTROL SAMPLE: 1784044

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	962	96	80-120	

SAMPLE DUPLICATE: 1784045

Parameter	Units	60222267002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2130	2120	0	10	

SAMPLE DUPLICATE: 1784046

Parameter	Units	60222021001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1450	1440	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

QC Batch: WET/62688 Analysis Method: SM 2540C
 QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
 Associated Lab Samples: 60222191002, 60222191003, 60222191004, 60222191005, 60222191006, 60222191007

METHOD BLANK: 1784999 Matrix: Water
 Associated Lab Samples: 60222191002, 60222191003, 60222191004, 60222191005, 60222191006, 60222191007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	06/30/16 10:34	

LABORATORY CONTROL SAMPLE: 1785000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	955	96	80-120	

SAMPLE DUPLICATE: 1785001

Parameter	Units	60222216001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	481	484	1	10	

SAMPLE DUPLICATE: 1785002

Parameter	Units	60222213001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	432	434	0	10	

SAMPLE DUPLICATE: 1785007

Parameter	Units	60222309005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	462	469	2	10	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

QC Batch: WET/62631

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Associated Lab Samples: 60222191001, 60222191002, 60222191003, 60222191004, 60222191005, 60222191006, 60222191007

SAMPLE DUPLICATE: 1783487

Parameter	Units	60222190003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	6.2	6.1	0	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

QC Batch: WETA/40379 Analysis Method: EPA 9056
 QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
 Associated Lab Samples: 60222191001, 60222191002, 60222191003, 60222191004, 60222191005, 60222191006

METHOD BLANK: 1787659 Matrix: Water
 Associated Lab Samples: 60222191001, 60222191002, 60222191003, 60222191004, 60222191005, 60222191006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.20	0.073	07/02/16 17:34	

LABORATORY CONTROL SAMPLE: 1787660

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	95	80-120	

SAMPLE DUPLICATE: 1787663

Parameter	Units	60222190001 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	0.38	0.40	6	15	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

QC Batch: WETA/40383 Analysis Method: EPA 9056
 QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
 Associated Lab Samples: 60222191001, 60222191002, 60222191003, 60222191004, 60222191005, 60222191006, 60222191007

METHOD BLANK: 1787896 Matrix: Water
 Associated Lab Samples: 60222191001, 60222191002, 60222191003, 60222191004, 60222191005, 60222191006, 60222191007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	07/03/16 12:50	
Fluoride	mg/L	ND	0.20	0.073	07/03/16 12:50	
Sulfate	mg/L	ND	1.0	0.25	07/03/16 12:50	

LABORATORY CONTROL SAMPLE: 1787897

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	80-120	
Fluoride	mg/L	2.5	2.5	99	80-120	
Sulfate	mg/L	5	5.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1787898 1787899

Parameter	Units	60222164001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	41.1	25	25	66.9	66.7	103	103	80-120	0	15	
Fluoride	mg/L	ND	12.5	12.5	12.8	12.8	98	98	80-120	0	15	
Sulfate	mg/L	61.6	25	25	89.5	89.1	111	110	80-120	0	15	

SAMPLE DUPLICATE: 1787922

Parameter	Units	60222190001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	112	112	0	15	
Fluoride	mg/L	0.38	0.95J			
Sulfate	mg/L	5370	4750	12	15	

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60222191001	MW-301	EPA 3010	MPRP/36477	EPA 6010	ICP/26588
60222191002	MW-302	EPA 3010	MPRP/36477	EPA 6010	ICP/26588
60222191003	MW-303	EPA 3010	MPRP/36477	EPA 6010	ICP/26588
60222191004	MW-304	EPA 3010	MPRP/36477	EPA 6010	ICP/26588
60222191005	MW-305	EPA 3010	MPRP/36477	EPA 6010	ICP/26588
60222191006	MW-306	EPA 3010	MPRP/36477	EPA 6010	ICP/26588
60222191007	FIELD BLANK	EPA 3010	MPRP/36477	EPA 6010	ICP/26588
60222191001	MW-301	EPA 3010	MPRP/36478	EPA 6020	ICPM/4340
60222191002	MW-302	EPA 3010	MPRP/36478	EPA 6020	ICPM/4340
60222191003	MW-303	EPA 3010	MPRP/36478	EPA 6020	ICPM/4340
60222191004	MW-304	EPA 3010	MPRP/36478	EPA 6020	ICPM/4340
60222191005	MW-305	EPA 3010	MPRP/36478	EPA 6020	ICPM/4340
60222191006	MW-306	EPA 3010	MPRP/36478	EPA 6020	ICPM/4340
60222191007	FIELD BLANK	EPA 3010	MPRP/36478	EPA 6020	ICPM/4340
60222191001	MW-301	EPA 7470	MERP/10767	EPA 7470	MERC/10707
60222191002	MW-302	EPA 7470	MERP/10767	EPA 7470	MERC/10707
60222191003	MW-303	EPA 7470	MERP/10767	EPA 7470	MERC/10707
60222191004	MW-304	EPA 7470	MERP/10767	EPA 7470	MERC/10707
60222191005	MW-305	EPA 7470	MERP/10767	EPA 7470	MERC/10707
60222191006	MW-306	EPA 7470	MERP/10767	EPA 7470	MERC/10707
60222191007	FIELD BLANK	EPA 7470	MERP/10767	EPA 7470	MERC/10707
60222191001	MW-301	SM 2540C	WET/62658		
60222191002	MW-302	SM 2540C	WET/62688		
60222191003	MW-303	SM 2540C	WET/62688		
60222191004	MW-304	SM 2540C	WET/62688		
60222191005	MW-305	SM 2540C	WET/62688		
60222191006	MW-306	SM 2540C	WET/62688		
60222191007	FIELD BLANK	SM 2540C	WET/62688		
60222191001	MW-301	EPA 9040	WET/62631		
60222191002	MW-302	EPA 9040	WET/62631		
60222191003	MW-303	EPA 9040	WET/62631		
60222191004	MW-304	EPA 9040	WET/62631		
60222191005	MW-305	EPA 9040	WET/62631		
60222191006	MW-306	EPA 9040	WET/62631		
60222191007	FIELD BLANK	EPA 9040	WET/62631		
60222191001	MW-301	EPA 9056	WETA/40379		
60222191001	MW-301	EPA 9056	WETA/40383		
60222191002	MW-302	EPA 9056	WETA/40379		
60222191002	MW-302	EPA 9056	WETA/40383		
60222191003	MW-303	EPA 9056	WETA/40379		
60222191003	MW-303	EPA 9056	WETA/40383		
60222191004	MW-304	EPA 9056	WETA/40379		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222191

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60222191004	MW-304	EPA 9056	WETA/40383		
60222191005	MW-305	EPA 9056	WETA/40379		
60222191005	MW-305	EPA 9056	WETA/40383		
60222191006	MW-306	EPA 9056	WETA/40379		
60222191006	MW-306	EPA 9056	WETA/40383		
60222191007	FIELD BLANK	EPA 9056	WETA/40383		

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Sample Condition Upon Receipt

WO#: 60222191

60222191

Client Name: SCS

Courier: FedEx UPS VIA Clay PEX ECI Pace Other Client

Tracking #: 7834 4170 1907 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: CF-0.1 T-239 / CF 0.0 T-262 Type of Ice: Wet Blue None Samples received on ice, cooling process has begun.

Cooler Temperature: 11

Optional
Proj Due Date:
Proj Name:

Temperature should be above freezing to 6°C

Date and initials of person examining contents: SBG/25

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <u>PH</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>WT</u>		13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:
Additional labels attached to 5035A vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature] Date: 6-27-16

July 20, 2016

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60222210

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on June 25, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60222210001	MW-301	Water	06/23/16 09:45	06/25/16 08:50
60222210002	MW-302	Water	06/23/16 11:05	06/25/16 08:50
60222210003	MW-303	Water	06/23/16 12:30	06/25/16 08:50
60222210004	MW-304	Water	06/23/16 13:45	06/25/16 08:50
60222210005	MW-305	Water	06/23/16 15:55	06/25/16 08:50
60222210006	MW-306	Water	06/23/16 17:25	06/25/16 08:50
60222210007	FIELD BLANK	Water	06/23/16 10:45	06/25/16 08:50

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60222210001	MW-301	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60222210002	MW-302	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60222210003	MW-303	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60222210004	MW-304	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60222210005	MW-305	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60222210006	MW-306	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60222210007	FIELD BLANK	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

Sample: MW-301 **Lab ID: 60222210001** Collected: 06/23/16 09:45 Received: 06/25/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.270 (0.550) C:NA T:103%	pCi/L	07/18/16 11:43	13982-63-3	
Radium-228	EPA 904.0	0.614 ± 0.357 (0.641) C:72% T:86%	pCi/L	07/18/16 15:43	15262-20-1	
Total Radium	Total Radium Calculation	0.614 ± 0.627 (1.19)	pCi/L	07/20/16 12:17	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

Sample: MW-302 **Lab ID: 60222210002** Collected: 06/23/16 11:05 Received: 06/25/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.375 ± 0.444 (0.697) C:NA T:80%	pCi/L	07/18/16 11:44	13982-63-3	
Radium-228	EPA 904.0	0.152 ± 0.288 (0.632) C:76% T:83%	pCi/L	07/18/16 15:55	15262-20-1	
Total Radium	Total Radium Calculation	0.527 ± 0.732 (1.33)	pCi/L	07/20/16 12:17	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

Sample: MW-303 **Lab ID: 60222210003** Collected: 06/23/16 12:30 Received: 06/25/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0636 ± 0.450 (0.897) C:NA T:92%	pCi/L	07/18/16 11:47	13982-63-3	
Radium-228	EPA 904.0	0.362 ± 0.299 (0.579) C:72% T:81%	pCi/L	07/18/16 15:55	15262-20-1	
Total Radium	Total Radium Calculation	0.426 ± 0.749 (1.48)	pCi/L	07/20/16 12:17	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

Sample: MW-304 **Lab ID: 60222210004** Collected: 06/23/16 13:45 Received: 06/25/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.431 ± 0.401 (0.529) C:NA T:86%	pCi/L	07/18/16 11:55	13982-63-3	
Radium-228	EPA 904.0	1.13 ± 0.445 (0.660) C:75% T:82%	pCi/L	07/18/16 15:43	15262-20-1	
Total Radium	Total Radium Calculation	1.56 ± 0.846 (1.19)	pCi/L	07/20/16 12:17	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

Sample: MW-305 **Lab ID: 60222210005** Collected: 06/23/16 15:55 Received: 06/25/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.127 ± 0.354 (0.686) C:NA T:94%	pCi/L	07/18/16 11:55	13982-63-3	
Radium-228	EPA 904.0	0.589 ± 0.394 (0.749) C:70% T:88%	pCi/L	07/18/16 15:43	15262-20-1	
Total Radium	Total Radium Calculation	0.716 ± 0.748 (1.44)	pCi/L	07/20/16 12:17	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

Sample: MW-306 **Lab ID: 60222210006** Collected: 06/23/16 17:25 Received: 06/25/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.475 ± 0.482 (0.730) C:NA T:88%	pCi/L	07/18/16 12:06	13982-63-3	
Radium-228	EPA 904.0	0.774 ± 0.391 (0.665) C:73% T:83%	pCi/L	07/18/16 15:43	15262-20-1	
Total Radium	Total Radium Calculation	1.25 ± 0.873 (1.40)	pCi/L	07/20/16 12:17	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

Sample: FIELD BLANK **Lab ID: 60222210007** Collected: 06/23/16 10:45 Received: 06/25/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0581 ± 0.410 (0.819) C:NA T:97%	pCi/L	07/18/16 12:09	13982-63-3	
Radium-228	EPA 904.0	0.525 ± 0.303 (0.527) C:78% T:86%	pCi/L	07/18/16 15:43	15262-20-1	
Total Radium	Total Radium Calculation	0.583 ± 0.713 (1.35)	pCi/L	07/20/16 12:17	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

QC Batch: 225572

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60222210001, 60222210002, 60222210003, 60222210004, 60222210005, 60222210006, 60222210007

METHOD BLANK: 1104860

Matrix: Water

Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.231 ± 0.288 (0.609) C:78% T:92%	pCi/L	07/18/16 15:57	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

QC Batch: 225552 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60222210001, 60222210002, 60222210003, 60222210004, 60222210005, 60222210006, 60222210007

METHOD BLANK: 1104840 Matrix: Water

Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.325 ± 0.339 (0.478) C:NA T:92%	pCi/L	07/18/16 11:43	

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

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60222210

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60222210001	MW-301	EPA 903.1	225552		
60222210002	MW-302	EPA 903.1	225552		
60222210003	MW-303	EPA 903.1	225552		
60222210004	MW-304	EPA 903.1	225552		
60222210005	MW-305	EPA 903.1	225552		
60222210006	MW-306	EPA 903.1	225552		
60222210007	FIELD BLANK	EPA 903.1	225552		
60222210001	MW-301	EPA 904.0	225572		
60222210002	MW-302	EPA 904.0	225572		
60222210003	MW-303	EPA 904.0	225572		
60222210004	MW-304	EPA 904.0	225572		
60222210005	MW-305	EPA 904.0	225572		
60222210006	MW-306	EPA 904.0	225572		
60222210007	FIELD BLANK	EPA 904.0	225572		
60222210001	MW-301	Total Radium Calculation	226926		
60222210002	MW-302	Total Radium Calculation	226926		
60222210003	MW-303	Total Radium Calculation	226926		
60222210004	MW-304	Total Radium Calculation	226926		
60222210005	MW-305	Total Radium Calculation	226926		
60222210006	MW-306	Total Radium Calculation	226926		
60222210007	FIELD BLANK	Total Radium Calculation	226926		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO# : 60222210

 60222210

Client Name: SCS

Courier: FedEx UPS VIA Clay PEX ECI Pace Other Client

Tracking #: 7834 4170 1929 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: CF -0.1 T-239 / CF 0.0 T-262 Type of Ice: Wet Blue None Samples received on ice, cooling process has begun, (circle one)

Cooler Temperature: 0.6

Date and initials of person examining contents: JB 6/25

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>WT</u>		13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:
Additional labels attached to 5035A vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 6.27.16

Chain of Custody

WO#: 30188063



Pace Analytical
www.pacelabs.com

Workorder: 60222210 Workorder Name: Ottumwa Gen. Station/25216072 Subcontract To

Owner Received Date: 6/25/2016 Results Requested By: 7/20/2016

Trudy Gipson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone (913)599-5665

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

Report To		Subcontract To		Requested Analysis											
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers			903.1 Radium-226			904.0 Radium-228			LAB USE ONLY
Transfers	Released By	Date/Time	Received	Custody Seal		Y or N	Received on Ice	Y or N	Samples Intact		Y or N	Comments			
1	MW-301	PS	6/23/2016 09:45	60222210001	Water	2				X	X	X	X	001	
2	MW-302	PS	6/23/2016 11:05	60222210002	Water	2				X	X	X	X	002	
3	MW-303	PS	6/23/2016 12:30	60222210003	Water	2				X	X	X	X	003	
4	MW-304	PS	6/23/2016 13:45	60222210004	Water	2				X	X	X	X	004	
5	MW-305	PS	6/23/2016 15:55	60222210005	Water	2				X	X	X	X	005	
6	MW-306	PS	6/23/2016 17:25	60222210006	Water	2				X	X	X	X	006	
7	FIELD BLANK	PS	6/23/2016 10:45	60222210007	Water	2				X	X	X	X	007	
1	Released By: <i>[Signature]</i>	Date/Time: 6/23/16	Received: <i>[Signature]</i>	Custody Seal: <i>[Signature]</i>		N	Received on Ice: <i>[Signature]</i>	N	Samples Intact: <i>[Signature]</i>		Y or N: <i>[Signature]</i>	Comments: 6-28-16 10:30			
2															
3															

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Pittsburgh



Client Name: Face Kansas Project # 30188063

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: 6703 1645 4608

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Thermometer Used N/A Type of Ice: Wet Blue None

Cooler Temperature Observed Temp N/A °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Date and initials of person examining contents: BLM 6-28-10

Comments:	Yes	No	N/A	
Chain of Custody Present:	/			1.
Chain of Custody Filled Out:	/			2.
Chain of Custody Relinquished:	/			3.
Sampler Name & Signature on COC:		/		4.
Sample Labels match COC:				5.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	/			6.
Short Hold Time Analysis (<72hr remaining):		/		7.
Rush Turn Around Time Requested:		/		8.
Sufficient Volume:	/			9.
Correct Containers Used:	/			10.
-Pace Containers Used:	/			
Containers Intact:	/			11.
Filtered volume received for Dissolved tests			/	12.
All containers needing preservation have been checked.	/			13.
All containers needing preservation are found to be in compliance with EPA recommendation.	/			<u>Ph 42</u>
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed <u>BLM</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			/	14.
Trip Blank Present:			/	15.
Trip Blank Custody Seals Present			/	

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

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

A3 Round 3 Background Sampling, Analytical Laboratory Report

August 24, 2016

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

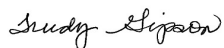
RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60225567

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on August 12, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60225567001	MW-301	Water	08/10/16 15:30	08/12/16 08:30
60225567002	MW-302	Water	08/10/16 16:35	08/12/16 08:30
60225567003	MW-303	Water	08/10/16 18:25	08/12/16 08:30
60225567004	MW-304	Water	08/11/16 10:00	08/12/16 08:30
60225567005	MW-305	Water	08/11/16 10:40	08/12/16 08:30
60225567006	MW-306	Water	08/11/16 11:20	08/12/16 08:30
60225567007	FIELD BLANK	Water	08/11/16 10:25	08/12/16 08:30

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60225567001	MW-301	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60225567002	MW-302	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60225567003	MW-303	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60225567004	MW-304	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60225567005	MW-305	EPA 6010	JGP	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60225567006	MW-306	EPA 6010	JGP, NDJ	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K
60225567007	FIELD BLANK	EPA 6010	JGP	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HAC	1	PASI-K
		EPA 9056	OL	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Sample: MW-301		Lab ID: 60225567001		Collected: 08/10/16 15:30		Received: 08/12/16 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		08/10/16 15:30		
Field pH	6.08	Std. Units	0.10	0.050	1		08/10/16 15:30		
Field Temperature	19.9	deg C	0.50	0.25	1		08/10/16 15:30		
Field Specific Conductance	807	umhos/cm	1.0	1.0	1		08/10/16 15:30		
Field Oxidation Potential	58.6	mV			1		08/10/16 15:30		
Oxygen, Dissolved	3.43	mg/L			1		08/10/16 15:30	7782-44-7	
Turbidity	0.52	NTU	1.0	1.0	1		08/10/16 15:30		
Groundwater Elevation	682.27	feet			1		08/10/16 15:30		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	597	ug/L	100	50.0	1	08/12/16 13:15	08/15/16 11:18	7440-42-8	
Calcium	65.6	mg/L	0.10	0.0081	1	08/12/16 13:15	08/15/16 11:18	7440-70-2	M1
Lithium	27.6	ug/L	10.0	4.9	1	08/12/16 13:15	08/15/16 11:18	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.12J	ug/L	1.0	0.058	1	08/12/16 13:15	08/19/16 11:46	7440-36-0	B
Arsenic	0.26J	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 11:46	7440-38-2	
Barium	52.3	ug/L	1.0	0.14	1	08/12/16 13:15	08/19/16 11:46	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	08/12/16 13:15	08/19/16 11:46	7440-41-7	
Cadmium	0.12J	ug/L	0.50	0.029	1	08/12/16 13:15	08/19/16 11:46	7440-43-9	B
Chromium	0.64J	ug/L	1.0	0.34	1	08/12/16 13:15	08/19/16 11:46	7440-47-3	B
Cobalt	1.8	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 11:46	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	08/12/16 13:15	08/19/16 11:46	7439-92-1	
Molybdenum	0.89J	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 11:46	7439-98-7	
Selenium	6.1	ug/L	1.0	0.18	1	08/12/16 13:15	08/19/16 11:46	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 11:46	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	08/16/16 10:40	08/16/16 14:17	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	576	mg/L	5.0	5.0	1		08/17/16 14:19		
9040 pH		Analytical Method: EPA 9040							
pH	6.5	Std. Units	0.10	0.10	1		08/15/16 11:05		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	73.3	mg/L	10.0	5.0	10		08/19/16 15:36	16887-00-6	
Fluoride	0.44	mg/L	0.20	0.027	1		08/16/16 18:25	16984-48-8	
Sulfate	159	mg/L	10.0	1.5	10		08/19/16 15:36	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Sample: MW-302		Lab ID: 60225567002		Collected: 08/10/16 16:35		Received: 08/12/16 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		08/10/16 16:35		
Field pH	8.72	Std. Units	0.10	0.050	1		08/10/16 16:35		
Field Temperature	14.4	deg C	0.50	0.25	1		08/10/16 16:35		
Field Specific Conductance	2222	umhos/cm	1.0	1.0	1		08/10/16 16:35		
Field Oxidation Potential	6.7	mV			1		08/10/16 16:35		
Oxygen, Dissolved	0.07	mg/L			1		08/10/16 16:35	7782-44-7	
Turbidity	3.41	NTU	1.0	1.0	1		08/10/16 16:35		
Groundwater Elevation	655.52	feet			1		08/10/16 16:35		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	1110	ug/L	100	50.0	1	08/12/16 13:15	08/15/16 11:29	7440-42-8	
Calcium	171	mg/L	0.10	0.0081	1	08/12/16 13:15	08/15/16 11:29	7440-70-2	
Lithium	12.2	ug/L	10.0	4.9	1	08/12/16 13:15	08/15/16 11:29	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.10J	ug/L	1.0	0.058	1	08/12/16 13:15	08/19/16 11:51	7440-36-0	B
Arsenic	0.17J	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 11:51	7440-38-2	
Barium	20.7	ug/L	1.0	0.14	1	08/12/16 13:15	08/19/16 11:51	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	08/12/16 13:15	08/19/16 11:51	7440-41-7	
Cadmium	0.28J	ug/L	0.50	0.029	1	08/12/16 13:15	08/19/16 11:51	7440-43-9	B
Chromium	0.64J	ug/L	1.0	0.34	1	08/12/16 13:15	08/19/16 11:51	7440-47-3	B
Cobalt	1.1	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 11:51	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	08/12/16 13:15	08/19/16 11:51	7439-92-1	
Molybdenum	0.46J	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 11:51	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	08/12/16 13:15	08/19/16 11:51	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 11:51	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	08/16/16 10:40	08/16/16 14:19	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1770	mg/L	5.0	5.0	1		08/17/16 14:20		
9040 pH		Analytical Method: EPA 9040							
pH	6.7	Std. Units	0.10	0.10	1		08/15/16 11:05		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	276	mg/L	20.0	10.0	20		08/19/16 15:51	16887-00-6	
Fluoride	0.21	mg/L	0.20	0.027	1		08/16/16 18:39	16984-48-8	
Sulfate	835	mg/L	100	15.4	100		08/19/16 16:05	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Sample: MW-303		Lab ID: 60225567003		Collected: 08/10/16 18:25		Received: 08/12/16 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		08/10/16 18:25		
Field pH	6.51	Std. Units	0.10	0.050	1		08/10/16 18:25		
Field Temperature	17.7	deg C	0.50	0.25	1		08/10/16 18:25		
Field Specific Conductance	1655	umhos/cm	1.0	1.0	1		08/10/16 18:25		
Field Oxidation Potential	31.5	mV			1		08/10/16 18:25		
Oxygen, Dissolved	0.05	mg/L			1		08/10/16 18:25	7782-44-7	
Turbidity	4.42	NTU	1.0	1.0	1		08/10/16 18:25		
Groundwater Elevation	651.76	feet			1		08/10/16 18:25		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	726	ug/L	100	50.0	1	08/12/16 13:15	08/15/16 11:32	7440-42-8	
Calcium	180	mg/L	0.10	0.0081	1	08/12/16 13:15	08/15/16 11:32	7440-70-2	
Lithium	5.0J	ug/L	10.0	4.9	1	08/12/16 13:15	08/15/16 11:32	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.25J	ug/L	1.0	0.058	1	08/12/16 13:15	08/19/16 12:04	7440-36-0	B
Arsenic	0.51J	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 12:04	7440-38-2	
Barium	88.1	ug/L	1.0	0.14	1	08/12/16 13:15	08/19/16 12:04	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	08/12/16 13:15	08/19/16 12:04	7440-41-7	
Cadmium	0.47J	ug/L	0.50	0.029	1	08/12/16 13:15	08/19/16 12:04	7440-43-9	B
Chromium	0.73J	ug/L	1.0	0.34	1	08/12/16 13:15	08/19/16 12:04	7440-47-3	B
Cobalt	2.6	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 12:04	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	08/12/16 13:15	08/19/16 12:04	7439-92-1	
Molybdenum	0.77J	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 12:04	7439-98-7	
Selenium	0.36J	ug/L	1.0	0.18	1	08/12/16 13:15	08/19/16 12:04	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 12:04	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	08/16/16 10:40	08/16/16 14:21	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1170	mg/L	5.0	5.0	1		08/17/16 14:21		
9040 pH		Analytical Method: EPA 9040							
pH	6.8	Std. Units	0.10	0.10	1		08/15/16 11:05		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	234	mg/L	20.0	10.0	20		08/19/16 16:19	16887-00-6	
Fluoride	0.42	mg/L	0.20	0.027	1		08/16/16 18:53	16984-48-8	
Sulfate	200	mg/L	20.0	3.1	20		08/19/16 16:19	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: MW-304									
Lab ID: 60225567004									
Collected: 08/11/16 10:00									
Received: 08/12/16 08:30									
Matrix: Water									
Field Data									
Analytical Method:									
Collected By	Client				1		08/11/16 10:00		
Field pH	7.34	Std. Units	0.10	0.050	1		08/11/16 10:00		
Field Temperature	13.4	deg C	0.50	0.25	1		08/11/16 10:00		
Field Specific Conductance	1948	umhos/cm	1.0	1.0	1		08/11/16 10:00		
Field Oxidation Potential	67.9	mV			1		08/11/16 10:00		
Oxygen, Dissolved	0.06	mg/L			1		08/11/16 10:00	7782-44-7	
Turbidity	2.66	NTU	1.0	1.0	1		08/11/16 10:00		
Groundwater Elevation	653.79	feet			1		08/11/16 10:00		
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	911	ug/L	100	50.0	1	08/12/16 13:15	08/15/16 11:36	7440-42-8	
Calcium	112	mg/L	0.10	0.0081	1	08/12/16 13:15	08/15/16 11:36	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	08/12/16 13:15	08/15/16 11:36	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.10J	ug/L	1.0	0.058	1	08/12/16 13:15	08/19/16 12:08	7440-36-0	B
Arsenic	0.78J	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 12:08	7440-38-2	
Barium	86.4	ug/L	1.0	0.14	1	08/12/16 13:15	08/19/16 12:08	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	08/12/16 13:15	08/19/16 12:08	7440-41-7	
Cadmium	0.072J	ug/L	0.50	0.029	1	08/12/16 13:15	08/19/16 12:08	7440-43-9	B
Chromium	0.92J	ug/L	1.0	0.34	1	08/12/16 13:15	08/19/16 12:08	7440-47-3	B
Cobalt	ND	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 12:08	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	08/12/16 13:15	08/19/16 12:08	7439-92-1	
Molybdenum	1.6	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 12:08	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	08/12/16 13:15	08/19/16 12:08	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 12:08	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.039	1	08/16/16 10:40	08/16/16 14:23	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	1180	mg/L	5.0	5.0	1		08/18/16 13:18		
9040 pH									
Analytical Method: EPA 9040									
pH	7.1	Std. Units	0.10	0.10	1		08/15/16 11:05		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	336	mg/L	20.0	10.0	20		08/19/16 16:34	16887-00-6	
Fluoride	0.95	mg/L	0.20	0.027	1		08/16/16 19:07	16984-48-8	
Sulfate	225	mg/L	20.0	3.1	20		08/19/16 16:34	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Sample: MW-305		Lab ID: 60225567005		Collected: 08/11/16 10:40		Received: 08/12/16 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		08/11/16 10:40		
Field pH	7.18	Std. Units	0.10	0.050	1		08/11/16 10:40		
Field Temperature	13.1	deg C	0.50	0.25	1		08/11/16 10:40		
Field Specific Conductance	1769	umhos/cm	1.0	1.0	1		08/11/16 10:40		
Field Oxidation Potential	-38.9	mV			1		08/11/16 10:40		
Oxygen, Dissolved	0.07	mg/L			1		08/11/16 10:40	7782-44-7	
Turbidity	1.32	NTU	1.0	1.0	1		08/11/16 10:40		
Groundwater Elevation	660.78	feet			1		08/11/16 10:40		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	832	ug/L	100	50.0	1	08/12/16 13:15	08/15/16 11:40	7440-42-8	
Calcium	88.8	mg/L	0.10	0.0081	1	08/12/16 13:15	08/15/16 11:40	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	08/12/16 13:15	08/15/16 11:40	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.19J	ug/L	1.0	0.058	1	08/12/16 13:15	08/19/16 12:12	7440-36-0	B
Arsenic	0.57J	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 12:12	7440-38-2	
Barium	108	ug/L	1.0	0.14	1	08/12/16 13:15	08/19/16 12:12	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	08/12/16 13:15	08/19/16 12:12	7440-41-7	
Cadmium	0.10J	ug/L	0.50	0.029	1	08/12/16 13:15	08/19/16 12:12	7440-43-9	B
Chromium	0.62J	ug/L	1.0	0.34	1	08/12/16 13:15	08/19/16 12:12	7440-47-3	B
Cobalt	13.7	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 12:12	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	08/12/16 13:15	08/19/16 12:12	7439-92-1	
Molybdenum	4.9	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 12:12	7439-98-7	
Selenium	0.28J	ug/L	1.0	0.18	1	08/12/16 13:15	08/19/16 12:12	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 12:12	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	08/16/16 10:40	08/16/16 14:26	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1040	mg/L	5.0	5.0	1		08/18/16 13:19		
9040 pH		Analytical Method: EPA 9040							
pH	7.1	Std. Units	0.10	0.10	1		08/15/16 11:05		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	316	mg/L	20.0	10.0	20		08/19/16 17:31	16887-00-6	
Fluoride	0.33	mg/L	0.20	0.027	1		08/16/16 19:21	16984-48-8	
Sulfate	74.0	mg/L	5.0	0.77	5		08/19/16 17:17	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Sample: MW-306		Lab ID: 60225567006		Collected: 08/11/16 11:20		Received: 08/12/16 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		08/11/16 11:20		
Field pH	6.72	Std. Units	0.10	0.050	1		08/11/16 11:20		
Field Temperature	12.8	deg C	0.50	0.25	1		08/11/16 11:20		
Field Specific Conductance	1228	umhos/cm	1.0	1.0	1		08/11/16 11:20		
Field Oxidation Potential	8.6	mV			1		08/11/16 11:20		
Oxygen, Dissolved	0.02	mg/L			1		08/11/16 11:20	7782-44-7	
Turbidity	1.89	NTU	1.0	1.0	1		08/11/16 11:20		
Groundwater Elevation	670.35	feet			1		08/11/16 11:20		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	574	ug/L	100	50.0	1	08/12/16 13:15	08/15/16 12:00	7440-42-8	
Calcium	85.0	mg/L	0.10	0.0081	1	08/12/16 13:15	08/15/16 12:00	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	08/12/16 13:15	08/15/16 16:45	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.18J	ug/L	1.0	0.058	1	08/12/16 13:15	08/19/16 12:17	7440-36-0	B
Arsenic	0.44J	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 12:17	7440-38-2	
Barium	58.0	ug/L	1.0	0.14	1	08/12/16 13:15	08/19/16 12:17	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	08/12/16 13:15	08/19/16 12:17	7440-41-7	
Cadmium	0.93	ug/L	0.50	0.029	1	08/12/16 13:15	08/19/16 12:17	7440-43-9	
Chromium	0.82J	ug/L	1.0	0.34	1	08/12/16 13:15	08/19/16 12:17	7440-47-3	B
Cobalt	6.4	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 12:17	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	08/12/16 13:15	08/19/16 12:17	7439-92-1	
Molybdenum	4.5	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 12:17	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	08/12/16 13:15	08/19/16 12:17	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 12:17	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	08/16/16 10:40	08/16/16 14:32	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	846	mg/L	5.0	5.0	1		08/18/16 13:19		
9040 pH		Analytical Method: EPA 9040							
pH	6.6	Std. Units	0.10	0.10	1		08/15/16 11:05		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	67.9	mg/L	5.0	2.5	5		08/19/16 17:46	16887-00-6	
Fluoride	0.086J	mg/L	0.20	0.027	1		08/16/16 20:04	16984-48-8	
Sulfate	266	mg/L	20.0	3.1	20		08/19/16 18:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Sample: FIELD BLANK									
Lab ID: 60225567007									
Collected: 08/11/16 10:25									
Received: 08/12/16 08:30									
Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	ND	ug/L	100	50.0	1	08/12/16 13:15	08/15/16 11:56	7440-42-8	
Calcium	ND	mg/L	0.10	0.0081	1	08/12/16 13:15	08/15/16 11:56	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	08/12/16 13:15	08/15/16 11:56	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.078J	ug/L	1.0	0.058	1	08/12/16 13:15	08/19/16 12:30	7440-36-0	B
Arsenic	ND	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 12:30	7440-38-2	
Barium	ND	ug/L	1.0	0.14	1	08/12/16 13:15	08/19/16 12:30	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	08/12/16 13:15	08/19/16 12:30	7440-41-7	
Cadmium	0.069J	ug/L	0.50	0.029	1	08/12/16 13:15	08/19/16 12:30	7440-43-9	B
Chromium	0.64J	ug/L	1.0	0.34	1	08/12/16 13:15	08/19/16 12:30	7440-47-3	B
Cobalt	ND	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 12:30	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	08/12/16 13:15	08/19/16 12:30	7439-92-1	
Molybdenum	ND	ug/L	1.0	0.10	1	08/12/16 13:15	08/19/16 12:30	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	08/12/16 13:15	08/19/16 12:30	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	08/12/16 13:15	08/19/16 12:30	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.039	1	08/16/16 10:40	08/16/16 14:35	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	ND	mg/L	5.0	5.0	1		08/18/16 13:20		
9040 pH									
Analytical Method: EPA 9040									
pH	6.1	Std. Units	0.10	0.10	1		08/15/16 11:05		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	ND	mg/L	1.0	0.50	1		08/16/16 20:18	16887-00-6	
Fluoride	ND	mg/L	0.20	0.027	1		08/16/16 20:18	16984-48-8	
Sulfate	ND	mg/L	1.0	0.15	1		08/16/16 20:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

QC Batch:	442867	Analysis Method:	EPA 7470
QC Batch Method:	EPA 7470	Analysis Description:	7470 Mercury
Associated Lab Samples:	60225567001, 60225567002, 60225567003, 60225567004, 60225567005, 60225567006, 60225567007		

METHOD BLANK:	1811228	Matrix:	Water
Associated Lab Samples:	60225567001, 60225567002, 60225567003, 60225567004, 60225567005, 60225567006, 60225567007		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.039	08/16/16 13:50	

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	99	80-120	

Parameter	Units	1811230		1811231		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60225563001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	ug/L	ND	5	5	4.8	4.6	95	93	75-125	2	20

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

QC Batch: 442487 Analysis Method: EPA 6010
 QC Batch Method: EPA 3010 Analysis Description: 6010 MET
 Associated Lab Samples: 60225567001, 60225567002, 60225567003, 60225567004, 60225567005, 60225567006, 60225567007

METHOD BLANK: 1810054 Matrix: Water
 Associated Lab Samples: 60225567001, 60225567002, 60225567003, 60225567004, 60225567005, 60225567006, 60225567007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	50.0	08/15/16 11:07	
Calcium	mg/L	0.0085J	0.10	0.0081	08/15/16 11:07	
Lithium	ug/L	ND	10.0	4.9	08/15/16 11:07	

LABORATORY CONTROL SAMPLE: 1810055

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	915	92	80-120	
Calcium	mg/L	10	9.7	97	80-120	
Lithium	ug/L	1000	981	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1810056 1810057

Parameter	Units	60225567001		1810056		1810057		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec						
Boron	ug/L	597	1000	1000	1550	1590	95	99	75-125	3	20		
Calcium	mg/L	65.6	10	10	79.4	76.7	138	111	75-125	3	20	M1	
Lithium	ug/L	27.6	1000	1000	1060	982	103	95	75-125	7	20		

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

QC Batch: 442489 Analysis Method: EPA 6020
 QC Batch Method: EPA 3010 Analysis Description: 6020 MET
 Associated Lab Samples: 60225567001, 60225567002, 60225567003, 60225567004, 60225567005, 60225567006, 60225567007

METHOD BLANK: 1810063 Matrix: Water
 Associated Lab Samples: 60225567001, 60225567002, 60225567003, 60225567004, 60225567005, 60225567006, 60225567007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	0.076J	1.0	0.058	08/19/16 11:38	
Arsenic	ug/L	ND	1.0	0.10	08/19/16 11:38	
Barium	ug/L	ND	1.0	0.14	08/19/16 11:38	
Beryllium	ug/L	ND	0.50	0.080	08/19/16 11:38	
Cadmium	ug/L	0.067J	0.50	0.029	08/19/16 11:38	
Chromium	ug/L	0.39J	1.0	0.34	08/19/16 11:38	
Cobalt	ug/L	ND	1.0	0.50	08/19/16 11:38	
Lead	ug/L	ND	1.0	0.19	08/19/16 11:38	
Molybdenum	ug/L	ND	1.0	0.10	08/19/16 11:38	
Selenium	ug/L	ND	1.0	0.18	08/19/16 11:38	
Thallium	ug/L	ND	1.0	0.50	08/19/16 11:38	

LABORATORY CONTROL SAMPLE: 1810064

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	41.8	104	80-120	
Arsenic	ug/L	40	42.4	106	80-120	
Barium	ug/L	40	39.8	99	80-120	
Beryllium	ug/L	40	42.9	107	80-120	
Cadmium	ug/L	40	41.9	105	80-120	
Chromium	ug/L	40	41.2	103	80-120	
Cobalt	ug/L	40	40.8	102	80-120	
Lead	ug/L	40	40.7	102	80-120	
Molybdenum	ug/L	40	42.3	106	80-120	
Selenium	ug/L	40	43.1	108	80-120	
Thallium	ug/L	40	38.4	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1810065 1810066

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		60225567002	Spike Conc.	Spike Conc.	Result							Result
Antimony	ug/L	0.10J	40	40	38.1	37.4	95	93	75-125	2	20	
Arsenic	ug/L	0.17J	40	40	39.5	38.8	98	97	75-125	2	20	
Barium	ug/L	20.7	40	40	58.5	57.9	94	93	75-125	1	20	
Beryllium	ug/L	ND	40	40	37.2	37.1	93	93	75-125	0	20	
Cadmium	ug/L	0.28J	40	40	35.1	34.5	87	86	75-125	2	20	
Chromium	ug/L	0.64J	40	40	41.1	40.3	101	99	75-125	2	20	
Cobalt	ug/L	1.1	40	40	39.0	38.2	95	93	75-125	2	20	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Parameter	Units	60225567002		1810065		1810066		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS Result	MSD Result							
Lead	ug/L	ND	40	40	35.9	35.9	89	89	75-125	0	20			
Molybdenum	ug/L	0.46J	40	40	43.0	42.4	106	105	75-125	1	20			
Selenium	ug/L	ND	40	40	38.8	37.5	97	94	75-125	3	20			
Thallium	ug/L	ND	40	40	35.0	35.2	88	88	75-125	1	20			

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

QC Batch: 443024

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60225567001, 60225567002, 60225567003

METHOD BLANK: 1811778

Matrix: Water

Associated Lab Samples: 60225567001, 60225567002, 60225567003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	08/17/16 13:28	

LABORATORY CONTROL SAMPLE: 1811779

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	986	99	80-120	

SAMPLE DUPLICATE: 1811780

Parameter	Units	60225430012 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3920	4060	4	10	

SAMPLE DUPLICATE: 1811781

Parameter	Units	60225501005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	866	878	1	10	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

QC Batch: 443338

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60225567004, 60225567005, 60225567006, 60225567007

METHOD BLANK: 1812898

Matrix: Water

Associated Lab Samples: 60225567004, 60225567005, 60225567006, 60225567007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	08/18/16 13:17	

LABORATORY CONTROL SAMPLE: 1812899

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	986	99	80-120	

SAMPLE DUPLICATE: 1812900

Parameter	Units	60225567004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1180	1210	2	10	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

QC Batch: 442736

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Associated Lab Samples: 60225567001, 60225567002, 60225567003, 60225567004, 60225567005, 60225567006, 60225567007

SAMPLE DUPLICATE: 1810948

Parameter	Units	60225563001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	6.2	6.2	1	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

QC Batch: 442844 Analysis Method: EPA 9056
 QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
 Associated Lab Samples: 60225567001, 60225567002, 60225567003, 60225567004, 60225567005, 60225567006, 60225567007

METHOD BLANK: 1811165 Matrix: Water
 Associated Lab Samples: 60225567001, 60225567002, 60225567003, 60225567004, 60225567005, 60225567006, 60225567007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	08/16/16 15:22	
Fluoride	mg/L	ND	0.20	0.027	08/16/16 15:22	
Sulfate	mg/L	ND	1.0	0.15	08/16/16 15:22	

LABORATORY CONTROL SAMPLE: 1811166

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	80-120	
Fluoride	mg/L	2.5	2.3	92	80-120	
Sulfate	mg/L	5	4.7	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1811167 1811168

Parameter	Units	60225563001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.55	2.5	2.5	2.7	2.9	86	93	80-120	7	15	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

QC Batch: 443014

Analysis Method: EPA 9056

QC Batch Method: EPA 9056

Analysis Description: 9056 IC Anions

Associated Lab Samples: 60225567001, 60225567002, 60225567003, 60225567004, 60225567005, 60225567006

METHOD BLANK: 1811757

Matrix: Water

Associated Lab Samples: 60225567001, 60225567002, 60225567003, 60225567004, 60225567005, 60225567006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	08/19/16 08:57	
Sulfate	mg/L	ND	1.0	0.15	08/19/16 08:57	

LABORATORY CONTROL SAMPLE: 1811758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	80-120	
Sulfate	mg/L	5	4.7	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1811759 1811760

Parameter	Units	60225499005		1811760		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chloride	mg/L	40.6	25	25	65.4	65.6	99	100	80-120	0	15
Sulfate	mg/L	22.0	10	10	32.6	32.3	106	103	80-120	1	15

SAMPLE DUPLICATE: 1811761

Parameter	Units	60225499006 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	35.3	35.0	1	15	

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60225567001	MW-301		443779		
60225567002	MW-302		443779		
60225567003	MW-303		443779		
60225567004	MW-304		443779		
60225567005	MW-305		443779		
60225567006	MW-306		443779		
60225567001	MW-301	EPA 3010	442487	EPA 6010	442568
60225567002	MW-302	EPA 3010	442487	EPA 6010	442568
60225567003	MW-303	EPA 3010	442487	EPA 6010	442568
60225567004	MW-304	EPA 3010	442487	EPA 6010	442568
60225567005	MW-305	EPA 3010	442487	EPA 6010	442568
60225567006	MW-306	EPA 3010	442487	EPA 6010	442568
60225567007	FIELD BLANK	EPA 3010	442487	EPA 6010	442568
60225567001	MW-301	EPA 3010	442489	EPA 6020	442569
60225567002	MW-302	EPA 3010	442489	EPA 6020	442569
60225567003	MW-303	EPA 3010	442489	EPA 6020	442569
60225567004	MW-304	EPA 3010	442489	EPA 6020	442569
60225567005	MW-305	EPA 3010	442489	EPA 6020	442569
60225567006	MW-306	EPA 3010	442489	EPA 6020	442569
60225567007	FIELD BLANK	EPA 3010	442489	EPA 6020	442569
60225567001	MW-301	EPA 7470	442867	EPA 7470	442895
60225567002	MW-302	EPA 7470	442867	EPA 7470	442895
60225567003	MW-303	EPA 7470	442867	EPA 7470	442895
60225567004	MW-304	EPA 7470	442867	EPA 7470	442895
60225567005	MW-305	EPA 7470	442867	EPA 7470	442895
60225567006	MW-306	EPA 7470	442867	EPA 7470	442895
60225567007	FIELD BLANK	EPA 7470	442867	EPA 7470	442895
60225567001	MW-301	SM 2540C	443024		
60225567002	MW-302	SM 2540C	443024		
60225567003	MW-303	SM 2540C	443024		
60225567004	MW-304	SM 2540C	443338		
60225567005	MW-305	SM 2540C	443338		
60225567006	MW-306	SM 2540C	443338		
60225567007	FIELD BLANK	SM 2540C	443338		
60225567001	MW-301	EPA 9040	442736		
60225567002	MW-302	EPA 9040	442736		
60225567003	MW-303	EPA 9040	442736		
60225567004	MW-304	EPA 9040	442736		
60225567005	MW-305	EPA 9040	442736		
60225567006	MW-306	EPA 9040	442736		
60225567007	FIELD BLANK	EPA 9040	442736		
60225567001	MW-301	EPA 9056	442844		
60225567001	MW-301	EPA 9056	443014		
60225567002	MW-302	EPA 9056	442844		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225567

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60225567002	MW-302	EPA 9056	443014		
60225567003	MW-303	EPA 9056	442844		
60225567003	MW-303	EPA 9056	443014		
60225567004	MW-304	EPA 9056	442844		
60225567004	MW-304	EPA 9056	443014		
60225567005	MW-305	EPA 9056	442844		
60225567005	MW-305	EPA 9056	443014		
60225567006	MW-306	EPA 9056	442844		
60225567006	MW-306	EPA 9056	443014		
60225567007	FIELD BLANK	EPA 9056	442844		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60225567



Client Name: SCS Aquatica

Courier: FedEx UPS VIA Clay PEX ECI Pace Other Client

Tracking #: 6102 8965 9696 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: CF +1.1 T-266 CF -0.1 T-239 Type of Ice: Wet Blue None Samples received on ice, cooling process has begun. (circle one)

Cooler Temperature: 21

Date and initials of person examining contents: JSA/12

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <u>PH</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix:	<u>WT</u>	13.
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:
Additional labels attached to 5035A vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: G

Date: 8/12

September 07, 2016

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

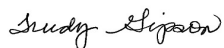
RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60225571

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on August 12, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60225571001	MW-301	Water	08/10/16 15:30	08/12/16 08:30
60225571002	MW-302	Water	08/10/16 16:35	08/12/16 08:30
60225571003	MW-303	Water	08/10/16 18:25	08/12/16 08:30
60225571004	MW-304	Water	08/11/16 10:00	08/12/16 08:30
60225571005	MW-305	Water	08/11/16 10:40	08/12/16 08:30
60225571006	MW-306	Water	08/11/16 11:20	08/12/16 08:30
60225571007	FIELD BLANK	Water	08/11/16 10:25	08/12/16 08:30

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60225571001	MW-301	EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60225571002	MW-302	EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60225571003	MW-303	EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60225571004	MW-304	EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60225571005	MW-305	EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60225571006	MW-306	EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60225571007	FIELD BLANK	EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

Sample: MW-301 **Lab ID: 60225571001** Collected: 08/10/16 15:30 Received: 08/12/16 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.831 ± 0.582 (0.768) C:NA T:86%	pCi/L	09/02/16 00:04	13982-63-3	
Radium-228	EPA 904.0	0.732 ± 0.409 (0.726) C:68% T:83%	pCi/L	08/31/16 12:06	15262-20-1	
Total Radium	Total Radium Calculation	1.56 ± 0.991 (1.49)	pCi/L	09/07/16 13:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

Sample: MW-302 **Lab ID: 60225571002** Collected: 08/10/16 16:35 Received: 08/12/16 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.260 ± 0.313 (0.478) C:NA T:89%	pCi/L	09/01/16 23:43	13982-63-3	
Radium-228	EPA 904.0	0.346 ± 0.294 (0.577) C:68% T:92%	pCi/L	08/31/16 12:06	15262-20-1	
Total Radium	Total Radium Calculation	0.606 ± 0.607 (1.06)	pCi/L	09/07/16 13:20	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

Sample: MW-303 **Lab ID: 60225571003** Collected: 08/10/16 18:25 Received: 08/12/16 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.716 ± 0.501 (0.605) C:NA T:89%	pCi/L	09/02/16 00:13	13982-63-3	
Radium-228	EPA 904.0	0.842 ± 0.433 (0.752) C:70% T:83%	pCi/L	08/31/16 12:06	15262-20-1	
Total Radium	Total Radium Calculation	1.56 ± 0.934 (1.36)	pCi/L	09/07/16 13:20	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

Sample: MW-304 **Lab ID: 60225571004** Collected: 08/11/16 10:00 Received: 08/12/16 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.465 ± 0.472 (0.714) C:NA T:85%	pCi/L	09/02/16 00:32	13982-63-3	
Radium-228	EPA 904.0	1.92 ± 0.601 (0.752) C:68% T:85%	pCi/L	08/31/16 12:06	15262-20-1	
Total Radium	Total Radium Calculation	2.39 ± 1.07 (1.47)	pCi/L	09/07/16 13:20	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

Sample: MW-305 **Lab ID: 60225571005** Collected: 08/11/16 10:40 Received: 08/12/16 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.583 ± 0.463 (0.602) C:NA T:85%	pCi/L	09/02/16 00:13	13982-63-3	
Radium-228	EPA 904.0	1.59 ± 0.553 (0.774) C:71% T:83%	pCi/L	08/31/16 12:06	15262-20-1	
Total Radium	Total Radium Calculation	2.17 ± 1.02 (1.38)	pCi/L	09/07/16 13:20	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

Sample: MW-306 **Lab ID: 60225571006** Collected: 08/11/16 11:20 Received: 08/12/16 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.311 (0.632) C:NA T:85%	pCi/L	09/02/16 00:23	13982-63-3	
Radium-228	EPA 904.0	0.958 ± 0.464 (0.790) C:65% T:87%	pCi/L	08/31/16 12:07	15262-20-1	
Total Radium	Total Radium Calculation	0.958 ± 0.775 (1.42)	pCi/L	09/07/16 13:20	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: FIELD BLANK Lab ID: 60225571007 Collected: 08/11/16 10:25 Received: 08/12/16 08:30 Matrix: Water PWS: Site ID: Sample Type:						
Radium-226	EPA 903.1	0.000 ± 0.290 (0.468) C:NA T:90%	pCi/L	09/02/16 00:24	13982-63-3	
Radium-228	EPA 904.0	0.000 ± 0.354 (0.829) C:62% T:85%	pCi/L	08/31/16 12:07	15262-20-1	
Total Radium	Total Radium Calculation	0.000 ± 0.644 (1.30)	pCi/L	09/07/16 13:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

QC Batch: 231099

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60225571001, 60225571002, 60225571003, 60225571004, 60225571005, 60225571006, 60225571007

METHOD BLANK: 1132288

Matrix: Water

Associated Lab Samples: 60225571001, 60225571002, 60225571003, 60225571004, 60225571005, 60225571006, 60225571007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.283 (0.635) C:NA T:90%	pCi/L	09/01/16 23:00	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

QC Batch:	231100	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	60225571001, 60225571002, 60225571003, 60225571004, 60225571005, 60225571006, 60225571007		

METHOD BLANK:	1132292	Matrix:	Water
Associated Lab Samples:	60225571001, 60225571002, 60225571003, 60225571004, 60225571005, 60225571006, 60225571007		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.543 ± 0.335 (0.614) C:77% T:86%	pCi/L	08/31/16 12:05	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60225571

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60225571001	MW-301	EPA 903.1	231099		
60225571002	MW-302	EPA 903.1	231099		
60225571003	MW-303	EPA 903.1	231099		
60225571004	MW-304	EPA 903.1	231099		
60225571005	MW-305	EPA 903.1	231099		
60225571006	MW-306	EPA 903.1	231099		
60225571007	FIELD BLANK	EPA 903.1	231099		
60225571001	MW-301	EPA 904.0	231100		
60225571002	MW-302	EPA 904.0	231100		
60225571003	MW-303	EPA 904.0	231100		
60225571004	MW-304	EPA 904.0	231100		
60225571005	MW-305	EPA 904.0	231100		
60225571006	MW-306	EPA 904.0	231100		
60225571007	FIELD BLANK	EPA 904.0	231100		
60225571001	MW-301	Total Radium Calculation	232347		
60225571002	MW-302	Total Radium Calculation	232347		
60225571003	MW-303	Total Radium Calculation	232347		
60225571004	MW-304	Total Radium Calculation	232347		
60225571005	MW-305	Total Radium Calculation	232347		
60225571006	MW-306	Total Radium Calculation	232347		
60225571007	FIELD BLANK	Total Radium Calculation	232347		

REPORT OF LABORATORY ANALYSIS

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WO#: 60225571



60225571



Sample Condition Upon Receipt

Client Name: SCS

Courier: FedEx UPS VIA Clay PEX ECI Pace Other Client

Tracking #: 783806851833 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T/266 / T-239 Type of Ice: Wet Blue None Samples received on ice, cooling process has begun. (circle one)

Cooler Temperature: 2.4

Date and initials of person examining contents: PMB/12/16

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody filled out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler name & signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.
Sample labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Includes date/time/ID/analyses Matrix: <u>WT</u>		13.
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Lot # of added preservative
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Project sampled in USDA Regulated Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	17. List State:
Additional labels attached to 5035A vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	18.

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature] Date: 8/12



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: _____ of _____

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: SCS Engineers	Report To: Meghan Blodgett	Attention: Meghan Blodgett/Jess Valcheff		Company Name: SCS Engineers	
Address: 2830 Dairy Drive Madison WI 53718	Copy To: Tom Karwaski	Purchase Order No.:		Address:	
Email To: mblodgett@scsengineers.com	Project Name: Oltumwa Generating Station	Project Number: 25216072		Pace Quote Reference:	
Phone: 608-216-7362	Fax:	Pace Project Manager: Trudy Gipson 913-563-1405		Pace Project Manager:	
Requested Due Date/TAT:		Pace Profile #: 6696 Line 2		Site Location STATE: IA	

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW WASTE WATER PRODUCT P SOIL/SOLID SL OIL OL WIPE WIP AIR AR OTHER OT TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives Unpreserved H ₂ O ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
					COMPOSITE START	COMPOSITE END/GRAB						
1			WT	G	DATE	TIME	15:58	2				60225571
2			WT	G	DATE	TIME	16:35	2				DBPIN
3			WT	G	DATE	TIME	18:25	2				
4			WT	G	DATE	TIME	8-11-16 10:00	2				
5			WT	G	DATE	TIME	10:40	2				
6			WT	G	DATE	TIME	11:20	2				
7			WT	G	DATE	TIME	10:25	2				
8												
9												
10												
11												
12												

ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION		DATE		TIME		SAMPLE CONDITIONS	
Ship To: 9608 Lorret Boulevard, Lenexa, KS 66219		Paul A. Lohr		8/11/16		19:30		Pharmare		8/12/16		083024		X Y X	
SAMPLER NAME AND SIGNATURE		PRINT Name of SAMPLER:		SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY):		Temp in °C		Received on		Custody Sealed		Samples In tact	

Chain of Custody



Workorder: 60225571 Workorder Name: Ottumwa Gen. Station/25216072 Owner Received Date: 8/12/2016 Results Requested By: 9/7/2016

Report To:		Subcontract To:		904.0 Radium-228 Requested Analysis							
Trudy Gipson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665		Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600		903.1 Radium-226 904.0 Radium-228							
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	NO3	Preserved Containers	903.1 Radium-226	904.0 Radium-228	Total Radium	LAB USE ONLY
1	MW-301	PS	8/10/2016 15:30	60225571001	Water	2		X	X	X	001
2	MW-302	PS	8/10/2016 16:35	60225571002	Water	2		X	X	X	002
3	MW-303	PS	8/10/2016 18:25	60225571003	Water	2		X	X	X	003
4	MW-304	PS	8/11/2016 10:00	60225571004	Water	2		X	X	X	004
5	MW-305	PS	8/11/2016 10:40	60225571005	Water	2		X	X	X	005
6	MW-306	PS	8/11/2016 11:20	60225571006	Water	2		X	X	X	006
7	FIELD BLANK	PS	8/11/2016 10:25	60225571007	Water	2		X	X	X	007
Comments											
Transfers		Released By	Date/Time	Received	Date/Time						
1		<i>[Signature]</i>	8/15/16	Joe Krum Z. Hill	8/16/16 10:00						
2											
3											
Cooler Temperature on Receipt			N/A °C	Custody Seal	Y or N	Received on Ice	Y or N	Samples Intact	Y or N		
					N		N	X	N		

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Pittsburgh



Client Name: Pace Kansas

Project # 30193247

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: 070316476874

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Thermometer Used NIA Type of Ice: Wet Blue None

Cooler Temperature Observed Temp NIA °C Correction Factor: NIA °C Final Temp: NIA °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: KA 8/16/16

Comments:

	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: <u>WT</u>	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Filtered volume received for Dissolved tests			✓	12.
All containers needing preservation have been checked.	✓			13. <u>pH < 2</u>
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: <u>KA</u> Date/time of preservation: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):			✓	14.
Trip Blank Present:			✓	15.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: <u>KA</u> Date: <u>8/16/16</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)
 *PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

A4 Round 4 Background Sampling, Analytical Laboratory Report

November 11, 2016

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

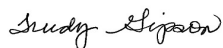
RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60231109

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 29, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60231109001	MW-301	Water	10/26/16 17:10	10/29/16 08:25
60231109002	MW-302	Water	10/26/16 17:55	10/29/16 08:25
60231109003	MW-303	Water	10/26/16 18:45	10/29/16 08:25
60231109004	MW-304	Water	10/27/16 07:55	10/29/16 08:25
60231109005	MW-305	Water	10/27/16 11:40	10/29/16 08:25
60231109006	MW-306	Water	10/27/16 13:55	10/29/16 08:25
60231109007	FIELD BLANK	Water	10/27/16 13:45	10/29/16 08:25

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60231109001	MW-301	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60231109002	MW-302	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60231109003	MW-303	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60231109004	MW-304	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60231109005	MW-305	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60231109006	MW-306	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K
60231109007	FIELD BLANK	EPA 6010	SMW	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	AGO	1	PASI-K
		EPA 9056	OL	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Sample: MW-301		Lab ID: 60231109001		Collected: 10/26/16 17:10		Received: 10/29/16 08:25		Matrix: Water	
Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	620	ug/L	100	50.0	1	10/31/16 10:00	10/31/16 18:00	7440-42-8	
Calcium	71.9	mg/L	0.10	0.0081	1	10/31/16 10:00	10/31/16 18:00	7440-70-2	
Lithium	25.5	ug/L	10.0	4.9	1	10/31/16 10:00	10/31/16 18:00	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	ND	ug/L	1.0	0.058	1	10/31/16 10:00	11/09/16 18:58	7440-36-0	
Arsenic	0.14J	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 18:58	7440-38-2	
Barium	53.3	ug/L	1.0	0.14	1	10/31/16 10:00	11/09/16 18:58	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	10/31/16 10:00	11/09/16 18:58	7440-41-7	
Cadmium	0.038J	ug/L	0.50	0.029	1	10/31/16 10:00	11/09/16 18:58	7440-43-9	
Chromium	ND	ug/L	1.0	0.34	1	10/31/16 10:00	11/09/16 18:58	7440-47-3	
Cobalt	1.8	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 18:58	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	10/31/16 10:00	11/09/16 18:58	7439-92-1	
Molybdenum	1.0	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 18:58	7439-98-7	
Selenium	6.5	ug/L	1.0	0.18	1	10/31/16 10:00	11/10/16 11:34	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 18:58	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	11/04/16 16:30	11/07/16 11:26	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	545	mg/L	5.0	5.0	1		11/01/16 10:55		
9040 pH		Analytical Method: EPA 9040							
pH	6.7	Std. Units	0.10	0.10	1		11/07/16 14:10		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	76.3	mg/L	10.0	5.0	10		11/10/16 10:00	16887-00-6	
Fluoride	0.27	mg/L	0.20	0.027	1		11/09/16 17:27	16984-48-8	
Sulfate	169	mg/L	10.0	1.5	10		11/10/16 10:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Sample: MW-302 **Lab ID: 60231109002** Collected: 10/26/16 17:55 Received: 10/29/16 08:25 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	1180	ug/L	100	50.0	1	10/31/16 10:00	10/31/16 18:04	7440-42-8	
Calcium	184	mg/L	0.10	0.0081	1	10/31/16 10:00	10/31/16 18:04	7440-70-2	
Lithium	11.9	ug/L	10.0	4.9	1	10/31/16 10:00	10/31/16 18:04	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	0.058	1	10/31/16 10:00	11/09/16 19:03	7440-36-0	
Arsenic	ND	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 19:03	7440-38-2	
Barium	21.2	ug/L	1.0	0.14	1	10/31/16 10:00	11/09/16 19:03	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	10/31/16 10:00	11/09/16 19:03	7440-41-7	
Cadmium	0.24J	ug/L	0.50	0.029	1	10/31/16 10:00	11/09/16 19:03	7440-43-9	
Chromium	0.64J	ug/L	1.0	0.34	1	10/31/16 10:00	11/09/16 19:03	7440-47-3	
Cobalt	1.0	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 19:03	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	10/31/16 10:00	11/09/16 19:03	7439-92-1	
Molybdenum	0.46J	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 19:03	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	10/31/16 10:00	11/10/16 11:36	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 19:03	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	11/04/16 16:30	11/07/16 11:29	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1650	mg/L	5.0	5.0	1		11/01/16 10:56		
9040 pH		Analytical Method: EPA 9040							
pH	6.7	Std. Units	0.10	0.10	1		11/07/16 14:10		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	270	mg/L	20.0	10.0	20		11/10/16 10:57	16887-00-6	
Fluoride	0.21	mg/L	0.20	0.027	1		11/09/16 17:41	16984-48-8	
Sulfate	819	mg/L	100	15.4	100		11/10/16 11:11	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Sample: MW-303 **Lab ID: 60231109003** Collected: 10/26/16 18:45 Received: 10/29/16 08:25 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	811	ug/L	100	50.0	1	10/31/16 10:00	10/31/16 18:07	7440-42-8	
Calcium	204	mg/L	0.10	0.0081	1	10/31/16 10:00	10/31/16 18:07	7440-70-2	
Lithium	5.8J	ug/L	10.0	4.9	1	10/31/16 10:00	10/31/16 18:07	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.14J	ug/L	1.0	0.058	1	10/31/16 10:00	11/09/16 19:07	7440-36-0	
Arsenic	0.46J	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 19:07	7440-38-2	
Barium	98.8	ug/L	1.0	0.14	1	10/31/16 10:00	11/09/16 19:07	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	10/31/16 10:00	11/09/16 19:07	7440-41-7	
Cadmium	0.59	ug/L	0.50	0.029	1	10/31/16 10:00	11/09/16 19:07	7440-43-9	
Chromium	ND	ug/L	1.0	0.34	1	10/31/16 10:00	11/09/16 19:07	7440-47-3	
Cobalt	3.1	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 19:07	7440-48-4	
Lead	0.20J	ug/L	1.0	0.19	1	10/31/16 10:00	11/09/16 19:07	7439-92-1	
Molybdenum	0.87J	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 19:07	7439-98-7	
Selenium	0.28J	ug/L	1.0	0.18	1	10/31/16 10:00	11/10/16 11:38	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 19:07	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.039	1	11/04/16 16:30	11/07/16 11:35	7439-97-6	M1
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	1120	mg/L	5.0	5.0	1		11/01/16 10:57		
9040 pH Analytical Method: EPA 9040									
pH	6.9	Std. Units	0.10	0.10	1		11/07/16 14:10		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	230	mg/L	20.0	10.0	20		11/10/16 11:25	16887-00-6	
Fluoride	0.23	mg/L	0.20	0.027	1		11/09/16 17:55	16984-48-8	
Sulfate	208	mg/L	20.0	3.1	20		11/10/16 11:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Sample: MW-304 **Lab ID: 60231109004** Collected: 10/27/16 07:55 Received: 10/29/16 08:25 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	991	ug/L	100	50.0	1	10/31/16 10:00	10/31/16 18:11	7440-42-8	
Calcium	125	mg/L	0.10	0.0081	1	10/31/16 10:00	10/31/16 18:11	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	10/31/16 10:00	10/31/16 18:11	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.058	1	10/31/16 10:00	11/09/16 19:11	7440-36-0	
Arsenic	0.69J	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 19:11	7440-38-2	
Barium	97.6	ug/L	1.0	0.14	1	10/31/16 10:00	11/09/16 19:11	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	10/31/16 10:00	11/09/16 19:11	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	10/31/16 10:00	11/09/16 19:11	7440-43-9	
Chromium	0.79J	ug/L	1.0	0.34	1	10/31/16 10:00	11/09/16 19:11	7440-47-3	
Cobalt	ND	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 19:11	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	10/31/16 10:00	11/09/16 19:11	7439-92-1	
Molybdenum	1.4	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 19:11	7439-98-7	
Selenium	0.19J	ug/L	1.0	0.18	1	10/31/16 10:00	11/10/16 11:41	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 19:11	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.039	1	11/04/16 16:30	11/07/16 11:42	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	1270	mg/L	5.0	5.0	1		11/01/16 11:06		
9040 pH Analytical Method: EPA 9040									
pH	7.0	Std. Units	0.10	0.10	1		11/07/16 14:10		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	364	mg/L	50.0	25.0	50		11/10/16 11:39	16887-00-6	
Fluoride	0.89	mg/L	0.20	0.027	1		11/09/16 18:09	16984-48-8	
Sulfate	241	mg/L	50.0	7.7	50		11/10/16 11:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Sample: MW-305		Lab ID: 60231109005		Collected: 10/27/16 11:40		Received: 10/29/16 08:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	878	ug/L	100	50.0	1	10/31/16 10:00	10/31/16 18:15	7440-42-8	
Calcium	93.2	mg/L	0.10	0.0081	1	10/31/16 10:00	10/31/16 18:15	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	10/31/16 10:00	10/31/16 18:15	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.094J	ug/L	1.0	0.058	1	10/31/16 10:00	11/09/16 19:16	7440-36-0	
Arsenic	0.52J	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 19:16	7440-38-2	
Barium	115	ug/L	1.0	0.14	1	10/31/16 10:00	11/09/16 19:16	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	10/31/16 10:00	11/09/16 19:16	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	10/31/16 10:00	11/09/16 19:16	7440-43-9	
Chromium	1.3	ug/L	1.0	0.34	1	10/31/16 10:00	11/09/16 19:16	7440-47-3	
Cobalt	14.8	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 19:16	7440-48-4	
Lead	0.25J	ug/L	1.0	0.19	1	10/31/16 10:00	11/09/16 19:16	7439-92-1	
Molybdenum	5.6	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 19:16	7439-98-7	
Selenium	0.32J	ug/L	1.0	0.18	1	10/31/16 10:00	11/10/16 11:43	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 19:16	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	11/04/16 16:30	11/07/16 11:44	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1010	mg/L	5.0	5.0	1		11/01/16 11:06		
9040 pH		Analytical Method: EPA 9040							
pH	7.2	Std. Units	0.10	0.10	1		11/10/16 13:15		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	325	mg/L	50.0	25.0	50		11/10/16 12:08	16887-00-6	
Fluoride	0.37	mg/L	0.20	0.027	1		11/09/16 18:23	16984-48-8	
Sulfate	79.5	mg/L	10.0	1.5	10		11/10/16 11:54	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Sample: MW-306		Lab ID: 60231109006		Collected: 10/27/16 13:55		Received: 10/29/16 08:25		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	702	ug/L	100	50.0	1	10/31/16 10:00	10/31/16 18:19	7440-42-8	
Calcium	90.0	mg/L	0.10	0.0081	1	10/31/16 10:00	10/31/16 18:19	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	10/31/16 10:00	11/01/16 16:05	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	0.12J	ug/L	1.0	0.058	1	10/31/16 10:00	11/09/16 19:20	7440-36-0	
Arsenic	0.40J	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 19:20	7440-38-2	
Barium	60.5	ug/L	1.0	0.14	1	10/31/16 10:00	11/09/16 19:20	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	10/31/16 10:00	11/09/16 19:20	7440-41-7	
Cadmium	0.91	ug/L	0.50	0.029	1	10/31/16 10:00	11/09/16 19:20	7440-43-9	
Chromium	0.60J	ug/L	1.0	0.34	1	10/31/16 10:00	11/09/16 19:20	7440-47-3	
Cobalt	6.6	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 19:20	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	10/31/16 10:00	11/09/16 19:20	7439-92-1	
Molybdenum	4.8	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 19:20	7439-98-7	
Selenium	0.24J	ug/L	1.0	0.18	1	10/31/16 10:00	11/10/16 11:46	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 19:20	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.039	1	11/04/16 16:30	11/07/16 11:46	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	864	mg/L	5.0	5.0	1		11/01/16 11:07		
9040 pH		Analytical Method: EPA 9040							
pH	6.7	Std. Units	0.10	0.10	1		11/10/16 13:15		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	64.9	mg/L	5.0	2.5	5		11/10/16 12:22	16887-00-6	
Fluoride	0.11J	mg/L	0.20	0.027	1		11/09/16 18:38	16984-48-8	
Sulfate	277	mg/L	20.0	3.1	20		11/10/16 12:36	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Sample: FIELD BLANK Lab ID: 60231109007 Collected: 10/27/16 13:45 Received: 10/29/16 08:25 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	ND	ug/L	100	50.0	1	10/31/16 10:00	10/31/16 18:23	7440-42-8	
Calcium	0.021J	mg/L	0.10	0.0081	1	10/31/16 10:00	10/31/16 18:23	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	10/31/16 10:00	10/31/16 18:23	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.058	1	10/31/16 10:00	11/09/16 18:54	7440-36-0	
Arsenic	ND	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 18:54	7440-38-2	
Barium	ND	ug/L	1.0	0.14	1	10/31/16 10:00	11/09/16 18:54	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	10/31/16 10:00	11/09/16 18:54	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	10/31/16 10:00	11/09/16 18:54	7440-43-9	
Chromium	ND	ug/L	1.0	0.34	1	10/31/16 10:00	11/09/16 18:54	7440-47-3	
Cobalt	ND	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 18:54	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	10/31/16 10:00	11/09/16 18:54	7439-92-1	
Molybdenum	ND	ug/L	1.0	0.10	1	10/31/16 10:00	11/09/16 18:54	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	10/31/16 10:00	11/10/16 11:31	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	10/31/16 10:00	11/09/16 18:54	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.039	1	11/04/16 16:30	11/07/16 11:49	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	ND	mg/L	5.0	5.0	1		11/01/16 11:07		
9040 pH Analytical Method: EPA 9040									
pH	6.4	Std. Units	0.10	0.10	1		11/10/16 13:15		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	ND	mg/L	1.0	0.50	1		11/09/16 18:52	16887-00-6	
Fluoride	ND	mg/L	0.20	0.027	1		11/09/16 18:52	16984-48-8	
Sulfate	0.47J	mg/L	1.0	0.15	1		11/09/16 18:52	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

QC Batch: 453535

Analysis Method: EPA 7470

QC Batch Method: EPA 7470

Analysis Description: 7470 Mercury

Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006, 60231109007

METHOD BLANK: 1856607

Matrix: Water

Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006, 60231109007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.039	11/07/16 11:09	

LABORATORY CONTROL SAMPLE: 1856608

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1856609 1856610

Parameter	Units	60231109003 Result	MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
			Spike Conc.	Conc.	Spike Conc.	Conc.							
Mercury	ug/L	ND	5	5	3.6	3.5	73	70	75-125	3	20	M1	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

QC Batch: 452700 Analysis Method: EPA 6010
 QC Batch Method: EPA 3010 Analysis Description: 6010 MET
 Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006, 60231109007

METHOD BLANK: 1853412 Matrix: Water
 Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006, 60231109007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	50.0	10/31/16 17:19	
Calcium	mg/L	ND	0.10	0.0081	10/31/16 17:19	
Lithium	ug/L	ND	10.0	4.9	10/31/16 17:19	

LABORATORY CONTROL SAMPLE: 1853413

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	946	95	80-120	
Calcium	mg/L	10	9.8	98	80-120	
Lithium	ug/L	1000	1020	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1853414 1853415

Parameter	Units	60231107002		1853414		1853415		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Boron	ug/L	4140	1000	1000	5210	5160	107	102	75-125	1	20		
Calcium	mg/L	146	10	10	156	157	103	112	75-125	1	20		
Lithium	ug/L	ND	1000	1000	1060	1070	106	107	75-125	1	20		

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

QC Batch: 452698 Analysis Method: EPA 6020
 QC Batch Method: EPA 3010 Analysis Description: 6020 MET
 Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006, 60231109007

METHOD BLANK: 1853408 Matrix: Water
 Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006, 60231109007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	0.058	11/09/16 17:57	
Arsenic	ug/L	ND	1.0	0.10	11/09/16 17:57	
Barium	ug/L	0.21J	1.0	0.14	11/09/16 17:57	
Beryllium	ug/L	ND	0.50	0.080	11/09/16 17:57	
Cadmium	ug/L	ND	0.50	0.029	11/09/16 17:57	
Chromium	ug/L	ND	1.0	0.34	11/09/16 17:57	
Cobalt	ug/L	ND	1.0	0.50	11/09/16 17:57	
Lead	ug/L	ND	1.0	0.19	11/09/16 17:57	
Molybdenum	ug/L	ND	1.0	0.10	11/09/16 17:57	
Selenium	ug/L	ND	1.0	0.18	11/10/16 11:01	
Thallium	ug/L	ND	1.0	0.50	11/09/16 17:57	

LABORATORY CONTROL SAMPLE: 1853409

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.7	102	80-120	
Arsenic	ug/L	40	39.6	99	80-120	
Barium	ug/L	40	40.7	102	80-120	
Beryllium	ug/L	40	38.6	97	80-120	
Cadmium	ug/L	40	40.4	101	80-120	
Chromium	ug/L	40	41.3	103	80-120	
Cobalt	ug/L	40	40.8	102	80-120	
Lead	ug/L	40	41.0	103	80-120	
Molybdenum	ug/L	40	42.6	106	80-120	
Selenium	ug/L	40	40.2	100	80-120	
Thallium	ug/L	40	39.6	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1853410 1853411

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		60231107001 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Antimony	ug/L	ND	40	40	41.0	41.0	102	103	75-125	0	20	
Arsenic	ug/L	0.19J	40	40	39.8	40.2	99	100	75-125	1	20	
Barium	ug/L	44.6	40	40	85.6	86.2	102	104	75-125	1	20	
Beryllium	ug/L	ND	40	40	36.4	37.1	91	93	75-125	2	20	
Cadmium	ug/L	ND	40	40	39.8	39.5	99	99	75-125	1	20	
Chromium	ug/L	0.81J	40	40	41.9	41.8	103	102	75-125	0	20	
Cobalt	ug/L	ND	40	40	39.9	39.8	100	100	75-125	0	20	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Parameter	Units	60231107001		1853410		1853411		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
Lead	ug/L	ND	40	40	41.0	41.2	102	103	75-125	0	20			
Molybdenum	ug/L	0.31J	40	40	43.6	44.1	108	109	75-125	1	20			
Selenium	ug/L	0.54J	40	40	38.4	39.3	95	97	75-125	2	20			
Thallium	ug/L	ND	40	40	39.7	40.0	99	100	75-125	1	20			

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

QC Batch: 452910

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006, 60231109007

METHOD BLANK: 1853994

Matrix: Water

Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006, 60231109007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	11/01/16 10:49	

LABORATORY CONTROL SAMPLE: 1853995

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1090	109	80-120	

SAMPLE DUPLICATE: 1853996

Parameter	Units	60231107002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	783	799	2	10	

SAMPLE DUPLICATE: 1853997

Parameter	Units	60231110003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1500	1440	4	10	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

QC Batch: 453716 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004

SAMPLE DUPLICATE: 1857878

Parameter	Units	60231110002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.4	7.4	1	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

QC Batch: 454320 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 60231109005, 60231109006, 60231109007

SAMPLE DUPLICATE: 1860443

Parameter	Units	60231107006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	5.8	5.9	1	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60231109

QC Batch: 454107 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006, 60231109007

METHOD BLANK: 1859354 Matrix: Water
Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006, 60231109007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	11/09/16 14:22	
Fluoride	mg/L	ND	0.20	0.027	11/09/16 14:22	
Sulfate	mg/L	ND	1.0	0.15	11/09/16 14:22	

LABORATORY CONTROL SAMPLE: 1859355

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	80-120	
Fluoride	mg/L	2.5	2.6	103	80-120	
Sulfate	mg/L	5	5.1	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1859356 1859357

Parameter	Units	60231107001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
Chloride	mg/L	6.8	5	5	12.5	12.7	115	119	80-120	2	15	
Fluoride	mg/L	0.12J	2.5	2.5	3.0	3.2	116	121	80-120	4	15 M1	

SAMPLE DUPLICATE: 1859358

Parameter	Units	60231107002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	1.8	1.7	0	15	
Fluoride	mg/L	0.45	0.45	1	15	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

QC Batch: 454221

Analysis Method: EPA 9056

QC Batch Method: EPA 9056

Analysis Description: 9056 IC Anions

Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006

METHOD BLANK: 1859893

Matrix: Water

Associated Lab Samples: 60231109001, 60231109002, 60231109003, 60231109004, 60231109005, 60231109006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	11/10/16 07:10	
Sulfate	mg/L	ND	1.0	0.15	11/10/16 07:10	

LABORATORY CONTROL SAMPLE: 1859894

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	80-120	
Sulfate	mg/L	5	5.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1859895 1859896

Parameter	Units	60231107001		60231107002		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	% Rec	% Rec					
Chloride	mg/L	6.8			17.2	17.3					0	15	
Sulfate	mg/L	25.2	10	10	36.6	36.6	114	114	80-120	0	15		

SAMPLE DUPLICATE: 1859897

Parameter	Units	60231107002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	1.8	ND			
Sulfate	mg/L	545	326	50	15 D6	

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

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

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60231109001	MW-301	EPA 3010	452700	EPA 6010	452750
60231109002	MW-302	EPA 3010	452700	EPA 6010	452750
60231109003	MW-303	EPA 3010	452700	EPA 6010	452750
60231109004	MW-304	EPA 3010	452700	EPA 6010	452750
60231109005	MW-305	EPA 3010	452700	EPA 6010	452750
60231109006	MW-306	EPA 3010	452700	EPA 6010	452750
60231109007	FIELD BLANK	EPA 3010	452700	EPA 6010	452750
60231109001	MW-301	EPA 3010	452698	EPA 6020	452751
60231109002	MW-302	EPA 3010	452698	EPA 6020	452751
60231109003	MW-303	EPA 3010	452698	EPA 6020	452751
60231109004	MW-304	EPA 3010	452698	EPA 6020	452751
60231109005	MW-305	EPA 3010	452698	EPA 6020	452751
60231109006	MW-306	EPA 3010	452698	EPA 6020	452751
60231109007	FIELD BLANK	EPA 3010	452698	EPA 6020	452751
60231109001	MW-301	EPA 7470	453535	EPA 7470	453628
60231109002	MW-302	EPA 7470	453535	EPA 7470	453628
60231109003	MW-303	EPA 7470	453535	EPA 7470	453628
60231109004	MW-304	EPA 7470	453535	EPA 7470	453628
60231109005	MW-305	EPA 7470	453535	EPA 7470	453628
60231109006	MW-306	EPA 7470	453535	EPA 7470	453628
60231109007	FIELD BLANK	EPA 7470	453535	EPA 7470	453628
60231109001	MW-301	SM 2540C	452910		
60231109002	MW-302	SM 2540C	452910		
60231109003	MW-303	SM 2540C	452910		
60231109004	MW-304	SM 2540C	452910		
60231109005	MW-305	SM 2540C	452910		
60231109006	MW-306	SM 2540C	452910		
60231109007	FIELD BLANK	SM 2540C	452910		
60231109001	MW-301	EPA 9040	453716		
60231109002	MW-302	EPA 9040	453716		
60231109003	MW-303	EPA 9040	453716		
60231109004	MW-304	EPA 9040	453716		
60231109005	MW-305	EPA 9040	454320		
60231109006	MW-306	EPA 9040	454320		
60231109007	FIELD BLANK	EPA 9040	454320		
60231109001	MW-301	EPA 9056	454107		
60231109001	MW-301	EPA 9056	454221		
60231109002	MW-302	EPA 9056	454107		
60231109002	MW-302	EPA 9056	454221		
60231109003	MW-303	EPA 9056	454107		
60231109003	MW-303	EPA 9056	454221		
60231109004	MW-304	EPA 9056	454107		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231109

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60231109004	MW-304	EPA 9056	454221		
60231109005	MW-305	EPA 9056	454107		
60231109005	MW-305	EPA 9056	454221		
60231109006	MW-306	EPA 9056	454107		
60231109006	MW-306	EPA 9056	454221		
60231109007	FIELD BLANK	EPA 9056	454107		

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Sample Condition Upon Receipt

WO#: 60231109



Client Name: SCS

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: 7844 9338 3336 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T-266 CF +0.7 T-239 CF -0.5 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 0.8 Corr. Factor CF +0.7 CF -0.5 Corrected 1.5

Date and initials of person examining contents: 10/31/16

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<u>pH</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Cyanide water sample checks: <input checked="" type="checkbox"/> N/A		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 10-31-16

November 28, 2016

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60231120

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 29, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60231120001	MW-301	Water	10/26/16 17:10	10/29/16 08:25
60231120002	MW-302	Water	10/26/16 17:55	10/29/16 08:25
60231120003	MW-303	Water	10/26/16 18:45	10/29/16 08:25
60231120004	MW-304	Water	10/27/16 07:55	10/29/16 08:25
60231120005	MW-305	Water	10/27/16 11:40	10/29/16 08:25
60231120006	MW-306	Water	10/27/16 13:55	10/29/16 08:25
60231120007	FIELD BLANK	Water	10/27/16 13:45	10/29/16 08:25

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60231120001	MW-301	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60231120002	MW-302	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60231120003	MW-303	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60231120004	MW-304	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60231120005	MW-305	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60231120006	MW-306	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60231120007	FIELD BLANK	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

Sample: MW-301 **Lab ID: 60231120001** Collected: 10/26/16 17:10 Received: 10/29/16 08:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.130 ± 0.312 (0.779) C:NA T:87%	pCi/L	11/23/16 20:58	13982-63-3	
Radium-228	EPA 904.0	1.24 ± 0.530 (0.859) C:71% T:77%	pCi/L	11/27/16 13:07	15262-20-1	
Total Radium	Total Radium Calculation	1.24 ± 0.842 (1.64)	pCi/L	11/28/16 16:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

Sample: MW-302 **Lab ID: 60231120002** Collected: 10/26/16 17:55 Received: 10/29/16 08:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.211 ± 0.365 (0.652) C:NA T:79%	pCi/L	11/23/16 20:58	13982-63-3	
Radium-228	EPA 904.0	-0.0147 ± 0.313 (0.737) C:71% T:84%	pCi/L	11/27/16 13:08	15262-20-1	
Total Radium	Total Radium Calculation	0.211 ± 0.678 (1.39)	pCi/L	11/28/16 16:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

Sample: MW-303 **Lab ID: 60231120003** Collected: 10/26/16 18:45 Received: 10/29/16 08:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.295 (0.662) C:NA T:95%	pCi/L	11/23/16 20:58	13982-63-3	
Radium-228	EPA 904.0	0.944 ± 0.459 (0.773) C:64% T:85%	pCi/L	11/27/16 13:08	15262-20-1	
Total Radium	Total Radium Calculation	0.944 ± 0.754 (1.44)	pCi/L	11/28/16 16:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

Sample: MW-304 **Lab ID: 60231120004** Collected: 10/27/16 07:55 Received: 10/29/16 08:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.327 ± 0.341 (0.481) C:NA T:85%	pCi/L	11/23/16 20:58	13982-63-3	
Radium-228	EPA 904.0	1.19 ± 0.454 (0.642) C:64% T:88%	pCi/L	11/27/16 13:08	15262-20-1	
Total Radium	Total Radium Calculation	1.52 ± 0.795 (1.12)	pCi/L	11/28/16 16:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

Sample: MW-305 **Lab ID: 60231120005** Collected: 10/27/16 11:40 Received: 10/29/16 08:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.714 ± 0.530 (0.663) C:NA T:83%	pCi/L	11/23/16 20:58	13982-63-3	
Radium-228	EPA 904.0	0.589 ± 0.355 (0.644) C:73% T:83%	pCi/L	11/27/16 13:08	15262-20-1	
Total Radium	Total Radium Calculation	1.30 ± 0.885 (1.31)	pCi/L	11/28/16 16:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

Sample: MW-306 **Lab ID: 60231120006** Collected: 10/27/16 13:55 Received: 10/29/16 08:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.253 ± 0.305 (0.465) C:NA T:88%	pCi/L	11/23/16 21:19	13982-63-3	
Radium-228	EPA 904.0	0.615 ± 0.383 (0.715) C:73% T:85%	pCi/L	11/27/16 13:08	15262-20-1	
Total Radium	Total Radium Calculation	0.868 ± 0.688 (1.18)	pCi/L	11/28/16 16:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: FIELD BLANK Lab ID: 60231120007 Collected: 10/27/16 13:45 Received: 10/29/16 08:25 Matrix: Water PWS: Site ID: Sample Type:						
Radium-226	EPA 903.1	0.0567 ± 0.259 (0.417) C:NA T:100%	pCi/L	11/23/16 21:19	13982-63-3	
Radium-228	EPA 904.0	0.626 ± 0.351 (0.620) C:75% T:84%	pCi/L	11/27/16 13:08	15262-20-1	
Total Radium	Total Radium Calculation	0.683 ± 0.610 (1.04)	pCi/L	11/28/16 16:40	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

QC Batch:	240364	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	60231120001, 60231120002, 60231120003, 60231120004, 60231120005, 60231120006, 60231120007		

METHOD BLANK:	1181263	Matrix:	Water
Associated Lab Samples:	60231120001, 60231120002, 60231120003, 60231120004, 60231120005, 60231120006, 60231120007		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.265 ± 0.410 (0.887) C:75% T:73%	pCi/L	11/27/16 13:06	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

QC Batch:	240362	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
Associated Lab Samples:	60231120001, 60231120002, 60231120003, 60231120004, 60231120005, 60231120006, 60231120007		

METHOD BLANK:	1181256	Matrix:	Water
Associated Lab Samples:	60231120001, 60231120002, 60231120003, 60231120004, 60231120005, 60231120006, 60231120007		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.196 ± 0.340 (0.607) C:NA T:92%	pCi/L	11/23/16 20:09	

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

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60231120

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60231120001	MW-301	EPA 903.1	240362		
60231120002	MW-302	EPA 903.1	240362		
60231120003	MW-303	EPA 903.1	240362		
60231120004	MW-304	EPA 903.1	240362		
60231120005	MW-305	EPA 903.1	240362		
60231120006	MW-306	EPA 903.1	240362		
60231120007	FIELD BLANK	EPA 903.1	240362		
60231120001	MW-301	EPA 904.0	240364		
60231120002	MW-302	EPA 904.0	240364		
60231120003	MW-303	EPA 904.0	240364		
60231120004	MW-304	EPA 904.0	240364		
60231120005	MW-305	EPA 904.0	240364		
60231120006	MW-306	EPA 904.0	240364		
60231120007	FIELD BLANK	EPA 904.0	240364		
60231120001	MW-301	Total Radium Calculation	241514		
60231120002	MW-302	Total Radium Calculation	241514		
60231120003	MW-303	Total Radium Calculation	241514		
60231120004	MW-304	Total Radium Calculation	241514		
60231120005	MW-305	Total Radium Calculation	241514		
60231120006	MW-306	Total Radium Calculation	241514		
60231120007	FIELD BLANK	Total Radium Calculation	241514		

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Sample Condition Upon Receipt

WO#: 60231120



Client Name: SCS

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: 7844 9338 9336 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T-266 / T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 2.1 Corr. Factor CF +0.7 / CF -0.5 Corrected 2.8

Date and initials of person examining contents: JD 10/29

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Chain of Custody relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Cyanide water sample checks:	<input checked="" type="checkbox"/> N/A
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Client Notification/ Resolution: Copy COC to Client? Y / Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 10-31-16



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information: Company: SCS Engineers Address: 2830 Dairy Drive Madison WI 53718
 Section B Required Project Information: Report To: Meghan Blodgett Copy To: Tom Kanwaski
 Section C Invoice Information: Attention: Meghan Blodgett/Jess Vaicheff Company Name: SCS Engineers
 Regulatory Agency: NPDES GROUND WATER DRINKING WATER
 UST RCRA OTHER

Site Location: IA STATE: IA
 Pace Profile #: 6696 Line 2
 Project Name: Ottumwa Generating Station
 Project Number: 25216072
 Purchase Order No.:
 Project Manager: Trudy Gipson 913-563-1405
 Reference: Pace Profile # 6696 Line 2

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW WASTE WATER PRODUCT P SOILSOLID SL OIL OL WIPE WP AIR AR OTHER OT TISSUE TS	MATRIX CODE (see valid codes to left)	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	# OF CONTAINERS	PRESERVATIVES		Analysis Test ↑	Requested Analysis Filtered (Y/N)	Pace Project No./ Lab I.D.
			COMPOSITE START	COMPOSITE END/GRAB			DATE	TIME			
1	MW-301	WT	G	WT	G	2	H ₂ SO ₄		903.1 Radium-226		60231120
2	MW-302	WT	G	WT	G	2	HCl		904.0 Radium-226		
3	MW-303	WT	G	WT	G	2	HNO ₃				
4	MW-304	WT	G	WT	G	2	NaOH				
5	MW-305	WT	G	WT	G	2	Na ₂ S ₂ O ₈				
6	MW-306	WT	G	WT	G	2	Methanol				
7	FIELD BLANK	WT	G	WT	G	2	Other				
8											
9											
10											
11											
12											

ADDITIONAL COMMENTS: Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219

RELINQUISHED BY / AFFILIATION: DATE: 10/29/08 TIME: 0855

ACCEPTED BY / AFFILIATION: DATE: 10/29/08 TIME: 0855

SAMPLE CONDITIONS: Received on Ice (Y/N) Custody Sealed (Y/N) Samples Intact (Y/N)

Temp in °C: 2.8

SAMPLER NAME AND SIGNATURE: PRINT Name of SAMPLER: SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Chain of Custody

WO#: 30201161



Workorder: 60231120

Workorder Name: Ottumwa Gen. Station/25216072

Owner Received Date: 10/29/2016 Results Requested By: 11/22/2016

Report To		Subcontract To		Total Radium Requested Analysis																						
Trudy Gipson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665		Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600																								
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers				903.1 Radium-226		904.0 Radium-228		LAB USE ONLY												
1	MW-301	PS	10/26/2016 17:10	60231120001	Water	2					X	X			001											
2	MW-302	PS	10/26/2016 17:55	60231120002	Water	2					X	X			002											
3	MW-303	PS	10/26/2016 18:45	60231120003	Water	2					X	X			003											
4	MW-304	PS	10/27/2016 07:55	60231120004	Water	2					X	X			004											
5	MW-305	PS	10/27/2016 11:40	60231120005	Water	2					X	X			005											
6	MW-306	PS	10/27/2016 13:55	60231120006	Water	2					X	X			006											
7	FIELD BLANK	PS	10/27/2016 13:45	60231120007	Water	2					X	X			007											
Transfers													Comments													
1	Released By: <i>[Signature]</i>		Date/Time	Received	Date/Time																					
2			10/27/16 17:00	<i>[Signature]</i>	11-1-16 10:00																					
3																										
Cooler Temperature on Receipt													°C		Custody Seal		Y or N		Received on Ice		Y or N		Samples Intact		Y or N	

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Pittsburgh



Client Name: Pace KS

Project # 30201161

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ML 11-1-16

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC:	X			5.
-Includes date/time/ID/Analysis Matrix: <u>WFT</u>				
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked.	X			13.
All containers needing preservation are found to be in compliance with EPA recommendation.	X			<u>PH < 2</u>
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: <u>ML</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):			X	14.
Trip Blank Present:		X		15.
Trip Blank Custody Seals Present		X		
Rad Aqueous Samples Screened > 0.5 mrem/hr		X		Initial when completed: <u>ML</u> Date: <u>11-1-16</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)
 *PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

A5 Round 5 Background Sampling, Analytical Laboratory Report

February 02, 2017

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60236558

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on January 24, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60236558001	MW-301	Water	01/18/17 11:55	01/24/17 08:40
60236558002	MW-302	Water	01/18/17 13:05	01/24/17 08:40
60236558003	MW-303	Water	01/18/17 14:15	01/24/17 08:40
60236558004	MW-304	Water	01/18/17 15:15	01/24/17 08:40
60236558005	MW-305	Water	01/18/17 16:20	01/24/17 08:40
60236558006	MW-306	Water	01/18/17 17:10	01/24/17 08:40
60236558007	FIELD BLANK	Water	01/19/17 13:15	01/24/17 08:40
60236558008	MW-307	Water	01/19/17 10:55	01/24/17 08:40
60236558009	MW-308	Water	01/19/17 11:45	01/24/17 08:40
60236558010	MW-309	Water	01/19/17 13:30	01/24/17 08:40

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60236558001	MW-301	EPA 6010	ZBM	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236558002	MW-302	EPA 6010	ZBM	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236558003	MW-303	EPA 6010	ZBM	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236558004	MW-304	EPA 6010	ZBM	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236558005	MW-305	EPA 6010	ZBM	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236558006	MW-306	EPA 6010	ZBM	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236558007	FIELD BLANK	EPA 6010	ZBM	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60236558008	MW-307	EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
		EPA 6010	ZBM	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60236558009	MW-308	EPA 6010	ZBM	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
		EPA 6010	ZBM	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
60236558010	MW-309	EPA 9056	OL	3	PASI-K
		EPA 6010	ZBM	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
		EPA 6010	ZBM	3	PASI-K
		EPA 6020	SMW	11	PASI-K
		EPA 7470	ZBM	1	PASI-K
		SM 2540C	JSS	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Sample: MW-301		Lab ID: 60236558001		Collected: 01/18/17 11:55		Received: 01/24/17 08:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		02/01/17 09:40		
Field pH	6.47	Std. Units	0.10	0.050	1		02/01/17 09:40		
Field Temperature	6.8	deg C	0.50	0.25	1		02/01/17 09:40		
Field Specific Conductance	834	umhos/cm	1.0	1.0	1		02/01/17 09:40		
Oxygen, Dissolved	487	mg/L			1		02/01/17 09:40	7782-44-7	
REDOX	30.2	mV			1		02/01/17 09:40		
Turbidity	0.60	NTU	1.0	1.0	1		02/01/17 09:40		
Groundwater Elevation	681.67	feet			1		02/01/17 09:40		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	599	ug/L	100	50.0	1	01/25/17 09:15	01/26/17 12:30	7440-42-8	
Calcium	74.1	mg/L	0.10	0.0081	1	01/25/17 09:15	01/26/17 12:30	7440-70-2	
Lithium	20.1	ug/L	10.0	4.9	1	01/25/17 09:15	01/26/17 12:30	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.11J	ug/L	1.0	0.058	1	01/25/17 09:15	01/30/17 13:43	7440-36-0	B
Arsenic	0.23J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 13:43	7440-38-2	
Barium	42.4	ug/L	1.0	0.14	1	01/25/17 09:15	01/30/17 13:43	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	01/25/17 09:15	01/30/17 13:43	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	01/25/17 09:15	01/30/17 13:43	7440-43-9	
Chromium	0.59J	ug/L	1.0	0.34	1	01/25/17 09:15	01/30/17 13:43	7440-47-3	
Cobalt	1.3	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 13:43	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	01/25/17 09:15	01/30/17 13:43	7439-92-1	
Molybdenum	0.76J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 13:43	7439-98-7	
Selenium	5.9	ug/L	1.0	0.18	1	01/25/17 09:15	01/30/17 13:43	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 13:43	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	02/01/17 08:35	02/01/17 14:23	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	545	mg/L	5.0	5.0	1		01/25/17 15:06		
9040 pH		Analytical Method: EPA 9040							
pH	6.8	Std. Units	0.10	0.10	1		02/01/17 12:42		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	71.6	mg/L	10.0	5.0	10		01/31/17 13:04	16887-00-6	
Fluoride	0.17J	mg/L	0.20	0.027	1		01/29/17 10:52	16984-48-8	
Sulfate	171	mg/L	10.0	1.5	10		01/31/17 13:04	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Sample: MW-302		Lab ID: 60236558002		Collected: 01/18/17 13:05		Received: 01/24/17 08:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		02/01/17 09:46		
Field pH	6.62	Std. Units	0.10	0.050	1		02/01/17 09:46		
Field Temperature	12.9	deg C	0.50	0.25	1		02/01/17 09:46		
Field Specific Conductance	2247	umhos/cm	1.0	1.0	1		02/01/17 09:46		
Oxygen, Dissolved	0.18	mg/L			1		02/01/17 09:46	7782-44-7	
REDOX	38.7	mV			1		02/01/17 09:46		
Turbidity	3.11	NTU	1.0	1.0	1		02/01/17 09:46		
Groundwater Elevation	655.46	feet			1		02/01/17 09:46		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	1250	ug/L	100	50.0	1	01/25/17 09:15	01/26/17 12:37	7440-42-8	
Calcium	188	mg/L	0.10	0.0081	1	01/25/17 09:15	01/26/17 12:37	7440-70-2	
Lithium	9.7J	ug/L	10.0	4.9	1	01/25/17 09:15	01/26/17 12:37	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.11J	ug/L	1.0	0.058	1	01/25/17 09:15	01/30/17 13:56	7440-36-0	B
Arsenic	0.23J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 13:56	7440-38-2	
Barium	20.4	ug/L	1.0	0.14	1	01/25/17 09:15	01/30/17 13:56	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	01/25/17 09:15	01/30/17 13:56	7440-41-7	
Cadmium	0.15J	ug/L	0.50	0.029	1	01/25/17 09:15	01/30/17 13:56	7440-43-9	
Chromium	0.58J	ug/L	1.0	0.34	1	01/25/17 09:15	01/30/17 13:56	7440-47-3	
Cobalt	0.94J	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 13:56	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	01/25/17 09:15	01/30/17 13:56	7439-92-1	
Molybdenum	0.50J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 13:56	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	01/25/17 09:15	01/30/17 13:56	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 13:56	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	02/01/17 08:35	02/01/17 14:30	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1660	mg/L	5.0	5.0	1		01/25/17 15:07		
9040 pH		Analytical Method: EPA 9040							
pH	6.8	Std. Units	0.10	0.10	1		02/01/17 12:43		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	259	mg/L	20.0	10.0	20		01/31/17 15:07	16887-00-6	
Fluoride	0.21	mg/L	0.20	0.027	1		01/29/17 11:33	16984-48-8	
Sulfate	777	mg/L	100	15.4	100		01/31/17 15:38	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Sample: MW-303		Lab ID: 60236558003		Collected: 01/18/17 14:15		Received: 01/24/17 08:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		02/01/17 09:47		
Field pH	6.77	Std. Units	0.10	0.050	1		02/01/17 09:47		
Field Temperature	10.6	deg C	0.50	0.25	1		02/01/17 09:47		
Field Specific Conductance	1611	umhos/cm	1.0	1.0	1		02/01/17 09:47		
Oxygen, Dissolved	0.17	mg/L			1		02/01/17 09:47	7782-44-7	
REDOX	21.3	mV			1		02/01/17 09:47		
Turbidity	3.3	NTU	1.0	1.0	1		02/01/17 09:47		
Groundwater Elevation	651.74	feet			1		02/01/17 09:47		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	738	ug/L	100	50.0	1	01/25/17 09:15	01/26/17 12:39	7440-42-8	
Calcium	173	mg/L	0.10	0.0081	1	01/25/17 09:15	01/26/17 12:39	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	01/25/17 09:15	01/26/17 12:39	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.19J	ug/L	1.0	0.058	1	01/25/17 09:15	01/30/17 14:00	7440-36-0	B
Arsenic	0.54J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:00	7440-38-2	
Barium	75.3	ug/L	1.0	0.14	1	01/25/17 09:15	01/30/17 14:00	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	01/25/17 09:15	01/30/17 14:00	7440-41-7	
Cadmium	0.31J	ug/L	0.50	0.029	1	01/25/17 09:15	01/30/17 14:00	7440-43-9	
Chromium	0.52J	ug/L	1.0	0.34	1	01/25/17 09:15	01/30/17 14:00	7440-47-3	
Cobalt	2.6	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:00	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	01/25/17 09:15	01/30/17 14:00	7439-92-1	
Molybdenum	0.64J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:00	7439-98-7	
Selenium	0.80J	ug/L	1.0	0.18	1	01/25/17 09:15	01/30/17 14:00	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:00	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	02/01/17 08:35	02/01/17 14:32	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1030	mg/L	5.0	5.0	1		01/25/17 15:07		
9040 pH		Analytical Method: EPA 9040							
pH	7.1	Std. Units	0.10	0.10	1		02/01/17 12:45		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	190	mg/L	20.0	10.0	20		01/31/17 16:08	16887-00-6	
Fluoride	0.21	mg/L	0.20	0.027	1		01/29/17 12:28	16984-48-8	
Sulfate	168	mg/L	20.0	3.1	20		01/31/17 16:08	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Sample: MW-304		Lab ID: 60236558004		Collected: 01/18/17 15:15		Received: 01/24/17 08:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		02/01/17 09:48		
Field pH	7.05	Std. Units	0.10	0.050	1		02/01/17 09:48		
Field Temperature	12.9	deg C	0.50	0.25	1		02/01/17 09:48		
Field Specific Conductance	2052	umhos/cm	1.0	1.0	1		02/01/17 09:48		
Oxygen, Dissolved	0.16	mg/L			1		02/01/17 09:48	7782-44-7	
REDOX	-79.3	mV			1		02/01/17 09:48		
Turbidity	1.17	NTU	1.0	1.0	1		02/01/17 09:48		
Groundwater Elevation	654.50	feet			1		02/01/17 09:48		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	995	ug/L	100	50.0	1	01/25/17 09:15	01/26/17 12:41	7440-42-8	
Calcium	122	mg/L	0.10	0.0081	1	01/25/17 09:15	01/26/17 12:41	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	01/25/17 09:15	01/26/17 12:41	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.10J	ug/L	1.0	0.058	1	01/25/17 09:15	01/30/17 14:04	7440-36-0	B
Arsenic	0.82J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:04	7440-38-2	
Barium	92.4	ug/L	1.0	0.14	1	01/25/17 09:15	01/30/17 14:04	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	01/25/17 09:15	01/30/17 14:04	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	01/25/17 09:15	01/30/17 14:04	7440-43-9	
Chromium	0.69J	ug/L	1.0	0.34	1	01/25/17 09:15	01/30/17 14:04	7440-47-3	
Cobalt	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:04	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	01/25/17 09:15	01/30/17 14:04	7439-92-1	
Molybdenum	1.5	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:04	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	01/25/17 09:15	01/30/17 14:04	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:04	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	02/01/17 08:35	02/01/17 14:34	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1230	mg/L	5.0	5.0	1		01/25/17 15:08		
9040 pH		Analytical Method: EPA 9040							
pH	7.2	Std. Units	0.10	0.10	1		02/01/17 12:47		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	383	mg/L	20.0	10.0	20		01/31/17 16:24	16887-00-6	
Fluoride	0.82	mg/L	0.20	0.027	1		01/29/17 12:41	16984-48-8	
Sulfate	204	mg/L	20.0	3.1	20		01/31/17 16:24	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Sample: MW-305		Lab ID: 60236558005		Collected: 01/18/17 16:20		Received: 01/24/17 08:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		02/01/17 09:59		
Field pH	6.96	Std. Units	0.10	0.050	1		02/01/17 09:59		
Field Temperature	12.8	deg C	0.50	0.25	1		02/01/17 09:59		
Field Specific Conductance	1794	umhos/cm	1.0	1.0	1		02/01/17 09:59		
Oxygen, Dissolved	0.09	mg/L			1		02/01/17 09:59	7782-44-7	
REDOX	24.2	mV			1		02/01/17 09:59		
Turbidity	0.5	NTU	1.0	1.0	1		02/01/17 09:59		
Groundwater Elevation	660.87	feet			1		02/01/17 09:59		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	956	ug/L	100	50.0	1	01/25/17 09:15	01/26/17 12:43	7440-42-8	
Calcium	98.5	mg/L	0.10	0.0081	1	01/25/17 09:15	01/26/17 12:43	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	01/25/17 09:15	01/26/17 12:43	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.18J	ug/L	1.0	0.058	1	01/25/17 09:15	01/30/17 14:08	7440-36-0	B
Arsenic	0.57J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:08	7440-38-2	
Barium	117	ug/L	1.0	0.14	1	01/25/17 09:15	01/30/17 14:08	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	01/25/17 09:15	01/30/17 14:08	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	01/25/17 09:15	01/30/17 14:08	7440-43-9	
Chromium	ND	ug/L	1.0	0.34	1	01/25/17 09:15	01/30/17 14:08	7440-47-3	
Cobalt	15.2	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:08	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	01/25/17 09:15	01/30/17 14:08	7439-92-1	
Molybdenum	5.9	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:08	7439-98-7	
Selenium	0.34J	ug/L	1.0	0.18	1	01/25/17 09:15	01/30/17 14:08	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:08	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	02/01/17 08:35	02/01/17 14:37	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1020	mg/L	5.0	5.0	1		01/25/17 15:08		
9040 pH		Analytical Method: EPA 9040							
pH	7.3	Std. Units	0.10	0.10	1		02/01/17 12:48		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	289	mg/L	20.0	10.0	20		01/31/17 17:10	16887-00-6	
Fluoride	0.35	mg/L	0.20	0.027	1		01/29/17 12:55	16984-48-8	
Sulfate	90.0	mg/L	10.0	1.5	10		01/31/17 16:55	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Sample: MW-306 Lab ID: 60236558006 Collected: 01/18/17 17:10 Received: 01/24/17 08:40 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data Analytical Method:									
Collected By	Client				1		02/01/17 10:00		
Field pH	6.51	Std. Units	0.10	0.050	1		02/01/17 10:00		
Field Temperature	13.6	deg C	0.50	0.25	1		02/01/17 10:00		
Field Specific Conductance	1215	umhos/cm	1.0	1.0	1		02/01/17 10:00		
Oxygen, Dissolved	0.13	mg/L			1		02/01/17 10:00	7782-44-7	
REDOX	44.2	mV			1		02/01/17 10:00		
Turbidity	0.49	NTU	1.0	1.0	1		02/01/17 10:00		
Groundwater Elevation	669.89	feet			1		02/01/17 10:00		
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	809	ug/L	100	50.0	1	01/25/17 09:15	01/26/17 12:46	7440-42-8	
Calcium	85.9	mg/L	0.10	0.0081	1	01/25/17 09:15	01/26/17 12:46	7440-70-2	
Lithium	ND	ug/L	10.0	4.9	1	01/25/17 09:15	01/26/17 12:46	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.18J	ug/L	1.0	0.058	1	01/25/17 09:15	01/30/17 14:13	7440-36-0	B
Arsenic	0.47J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:13	7440-38-2	
Barium	56.4	ug/L	1.0	0.14	1	01/25/17 09:15	01/30/17 14:13	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	01/25/17 09:15	01/30/17 14:13	7440-41-7	
Cadmium	0.74	ug/L	0.50	0.029	1	01/25/17 09:15	01/30/17 14:13	7440-43-9	
Chromium	0.68J	ug/L	1.0	0.34	1	01/25/17 09:15	01/30/17 14:13	7440-47-3	
Cobalt	6.0	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:13	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	01/25/17 09:15	01/30/17 14:13	7439-92-1	
Molybdenum	4.7	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:13	7439-98-7	
Selenium	0.20J	ug/L	1.0	0.18	1	01/25/17 09:15	01/30/17 14:13	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:13	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.039	1	02/01/17 08:35	02/01/17 14:39	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	828	mg/L	5.0	5.0	1		01/25/17 15:09		
9040 pH Analytical Method: EPA 9040									
pH	6.9	Std. Units	0.10	0.10	1		02/01/17 12:50		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	57.2	mg/L	5.0	2.5	5		01/31/17 17:56	16887-00-6	
Fluoride	0.087J	mg/L	0.20	0.027	1		01/29/17 13:09	16984-48-8	
Sulfate	285	mg/L	20.0	3.1	20		01/31/17 18:12	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Sample: FIELD BLANK Lab ID: 60236558007 Collected: 01/19/17 13:15 Received: 01/24/17 08:40 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	ND	ug/L	100	50.0	1	01/25/17 09:15	01/26/17 12:52	7440-42-8	
Calcium	0.012J	mg/L	0.10	0.0081	1	01/25/17 09:15	01/26/17 12:52	7440-70-2	B
Lithium	ND	ug/L	10.0	4.9	1	01/25/17 09:15	01/26/17 12:52	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.078J	ug/L	1.0	0.058	1	01/25/17 09:15	01/30/17 14:26	7440-36-0	B
Arsenic	ND	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:26	7440-38-2	
Barium	ND	ug/L	1.0	0.14	1	01/25/17 09:15	01/30/17 14:26	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	01/25/17 09:15	01/30/17 14:26	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	01/25/17 09:15	01/30/17 14:26	7440-43-9	
Chromium	0.44J	ug/L	1.0	0.34	1	01/25/17 09:15	01/30/17 14:26	7440-47-3	
Cobalt	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:26	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	01/25/17 09:15	01/30/17 14:26	7439-92-1	
Molybdenum	ND	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:26	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	01/25/17 09:15	01/30/17 14:26	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:26	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.039	1	02/01/17 08:35	02/01/17 14:41	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	ND	mg/L	5.0	5.0	1		01/25/17 15:14		
9040 pH Analytical Method: EPA 9040									
pH	5.5	Std. Units	0.10	0.10	1		02/01/17 12:55		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	ND	mg/L	1.0	0.50	1		01/31/17 18:27	16887-00-6	
Fluoride	ND	mg/L	0.20	0.027	1		01/31/17 18:27	16984-48-8	
Sulfate	ND	mg/L	1.0	0.15	1		01/31/17 18:27	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Sample: MW-307		Lab ID: 60236558008		Collected: 01/19/17 10:55		Received: 01/24/17 08:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		02/01/17 10:00		
Field pH	6.70	Std. Units	0.10	0.050	1		02/01/17 10:00		
Field Temperature	12.9	deg C	0.50	0.25	1		02/01/17 10:00		
Field Specific Conductance	1640	umhos/cm	1.0	1.0	1		02/01/17 10:00		
Oxygen, Dissolved	0.16	mg/L			1		02/01/17 10:00	7782-44-7	
REDOX	-42.0	mV			1		02/01/17 10:00		
Turbidity	9.01	NTU	1.0	1.0	1		02/01/17 10:00		
Groundwater Elevation	648.81	feet			1		02/01/17 10:00		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	207	ug/L	100	50.0	1	01/25/17 09:15	01/26/17 12:54	7440-42-8	
Calcium	230	mg/L	0.10	0.0081	1	01/25/17 09:15	01/26/17 12:54	7440-70-2	
Lithium	10.0	ug/L	10.0	4.9	1	01/25/17 09:15	01/26/17 12:54	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.10J	ug/L	1.0	0.058	1	01/25/17 09:15	01/30/17 14:34	7440-36-0	B
Arsenic	1.1	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:34	7440-38-2	
Barium	127	ug/L	1.0	0.14	1	01/25/17 09:15	01/30/17 14:34	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	01/25/17 09:15	01/30/17 14:34	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	01/25/17 09:15	01/30/17 14:34	7440-43-9	
Chromium	0.59J	ug/L	1.0	0.34	1	01/25/17 09:15	01/30/17 14:34	7440-47-3	
Cobalt	0.62J	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:34	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	01/25/17 09:15	01/30/17 14:34	7439-92-1	
Molybdenum	0.50J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:34	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	01/25/17 09:15	01/30/17 14:34	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:34	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	02/01/17 08:35	02/01/17 14:43	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1050	mg/L	5.0	5.0	1		01/25/17 15:15		
9040 pH		Analytical Method: EPA 9040							
pH	7.0	Std. Units	0.10	0.10	1		02/01/17 12:51		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	210	mg/L	20.0	10.0	20		01/31/17 18:58	16887-00-6	
Fluoride	0.12J	mg/L	0.20	0.027	1		01/29/17 13:36	16984-48-8	
Sulfate	105	mg/L	10.0	1.5	10		01/31/17 18:42	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Sample: MW-308		Lab ID: 60236558009		Collected: 01/19/17 11:45		Received: 01/24/17 08:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		02/01/17 10:01		
Field pH	6.85	Std. Units	0.10	0.050	1		02/01/17 10:01		
Field Temperature	12.6	deg C	0.50	0.25	1		02/01/17 10:01		
Field Specific Conductance	1559	umhos/cm	1.0	1.0	1		02/01/17 10:01		
Oxygen, Dissolved	0.15	mg/L			1		02/01/17 10:01	7782-44-7	
REDOX	-44.4	mV			1		02/01/17 10:01		
Turbidity	1.65	NTU	1.0	1.0	1		02/01/17 10:01		
Groundwater Elevation	647.42	feet			1		02/01/17 10:01		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	218	ug/L	100	50.0	1	01/25/17 09:15	01/26/17 12:57	7440-42-8	
Calcium	212	mg/L	0.10	0.0081	1	01/25/17 09:15	01/26/17 12:57	7440-70-2	
Lithium	10.3	ug/L	10.0	4.9	1	01/25/17 09:15	01/26/17 12:57	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.11J	ug/L	1.0	0.058	1	01/25/17 09:15	01/30/17 14:39	7440-36-0	B
Arsenic	0.44J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:39	7440-38-2	
Barium	118	ug/L	1.0	0.14	1	01/25/17 09:15	01/30/17 14:39	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	01/25/17 09:15	01/30/17 14:39	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	01/25/17 09:15	01/30/17 14:39	7440-43-9	
Chromium	0.57J	ug/L	1.0	0.34	1	01/25/17 09:15	01/30/17 14:39	7440-47-3	
Cobalt	0.52J	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:39	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	01/25/17 09:15	01/30/17 14:39	7439-92-1	
Molybdenum	0.95J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:39	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	01/25/17 09:15	01/30/17 14:39	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:39	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	02/01/17 08:35	02/01/17 14:50	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1060	mg/L	5.0	5.0	1		01/25/17 15:16		
9040 pH		Analytical Method: EPA 9040							
pH	7.2	Std. Units	0.10	0.10	1		02/01/17 12:52		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	151	mg/L	10.0	5.0	10		01/31/17 19:13	16887-00-6	
Fluoride	0.11J	mg/L	0.20	0.027	1		01/29/17 13:50	16984-48-8	
Sulfate	296	mg/L	50.0	7.7	50		01/31/17 19:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Sample: MW-309		Lab ID: 60236558010		Collected: 01/19/17 13:30		Received: 01/24/17 08:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		02/01/17 10:02		
Field pH	7.18	Std. Units	0.10	0.050	1		02/01/17 10:02		
Field Temperature	12.7	deg C	0.50	0.25	1		02/01/17 10:02		
Field Specific Conductance	1426	umhos/cm	1.0	1.0	1		02/01/17 10:02		
Oxygen, Dissolved	0.09	mg/L			1		02/01/17 10:02	7782-44-7	
REDOX	-42.1	mV			1		02/01/17 10:02		
Turbidity	8.56	NTU	1.0	1.0	1		02/01/17 10:02		
Groundwater Elevation	646.66	feet			1		02/01/17 10:02		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	1300	ug/L	100	50.0	1	01/25/17 09:15	01/26/17 12:59	7440-42-8	
Calcium	134	mg/L	0.10	0.0081	1	01/25/17 09:15	01/26/17 12:59	7440-70-2	
Lithium	5.8J	ug/L	10.0	4.9	1	01/25/17 09:15	01/26/17 12:59	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.095J	ug/L	1.0	0.058	1	01/25/17 09:15	01/30/17 14:43	7440-36-0	B
Arsenic	0.66J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:43	7440-38-2	
Barium	48.7	ug/L	1.0	0.14	1	01/25/17 09:15	01/30/17 14:43	7440-39-3	
Beryllium	ND	ug/L	0.50	0.080	1	01/25/17 09:15	01/30/17 14:43	7440-41-7	
Cadmium	ND	ug/L	0.50	0.029	1	01/25/17 09:15	01/30/17 14:43	7440-43-9	
Chromium	1.4	ug/L	1.0	0.34	1	01/25/17 09:15	01/30/17 14:43	7440-47-3	
Cobalt	2.0	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:43	7440-48-4	
Lead	ND	ug/L	1.0	0.19	1	01/25/17 09:15	01/30/17 14:43	7439-92-1	
Molybdenum	0.57J	ug/L	1.0	0.10	1	01/25/17 09:15	01/30/17 14:43	7439-98-7	
Selenium	ND	ug/L	1.0	0.18	1	01/25/17 09:15	01/30/17 14:43	7782-49-2	
Thallium	ND	ug/L	1.0	0.50	1	01/25/17 09:15	01/30/17 14:43	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.039	1	02/01/17 08:35	02/01/17 14:52	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1030	mg/L	5.0	5.0	1		01/25/17 15:16		
9040 pH		Analytical Method: EPA 9040							
pH	7.4	Std. Units	0.10	0.10	1		02/01/17 12:56		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	73.1	mg/L	10.0	5.0	10		01/31/17 19:44	16887-00-6	
Fluoride	0.12J	mg/L	0.20	0.027	1		01/29/17 14:03	16984-48-8	
Sulfate	406	mg/L	50.0	7.7	50		01/31/17 19:59	14808-79-8	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

QC Batch: 463894 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Associated Lab Samples: 60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558007, 60236558008, 60236558009, 60236558010

METHOD BLANK: 1898803 Matrix: Water
 Associated Lab Samples: 60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558007, 60236558008, 60236558009, 60236558010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.039	02/01/17 14:14	

LABORATORY CONTROL SAMPLE: 1898804

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1898805 1898806

Parameter	Units	60236558001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.4	5.6	108	112	75-125	3	20	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

QC Batch:	463142	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3010	Analysis Description:	6010 MET
Associated Lab Samples:	60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558007, 60236558008, 60236558009, 60236558010		

METHOD BLANK:	1896141	Matrix:	Water
Associated Lab Samples:	60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558007, 60236558008, 60236558009, 60236558010		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	50.0	01/26/17 12:28	
Calcium	mg/L	0.016J	0.10	0.0081	01/26/17 12:28	
Lithium	ug/L	ND	10.0	4.9	01/26/17 12:28	

LABORATORY CONTROL SAMPLE: 1896142						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1020	102	80-120	
Calcium	mg/L	10	10.5	105	80-120	
Lithium	ug/L	1000	1130	113	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1896143												1896144	
Parameter	Units	60236558001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Boron	ug/L	599	1000	1000	1620	1580	102	98	75-125	2	20		
Calcium	mg/L	74.1	10	10	83.4	82.4	92	82	75-125	1	20		
Lithium	ug/L	20.1	1000	1000	1110	1070	109	105	75-125	4	20		

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

QC Batch:	463143	Analysis Method:	EPA 6020
QC Batch Method:	EPA 3010	Analysis Description:	6020 MET
Associated Lab Samples:	60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558007, 60236558008, 60236558009, 60236558010		

METHOD BLANK:	1896145	Matrix:	Water
Associated Lab Samples:	60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558007, 60236558008, 60236558009, 60236558010		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	0.075J	1.0	0.058	01/30/17 13:34	
Arsenic	ug/L	ND	1.0	0.10	01/30/17 13:34	
Barium	ug/L	ND	1.0	0.14	01/30/17 13:34	
Beryllium	ug/L	ND	0.50	0.080	01/30/17 13:34	
Cadmium	ug/L	ND	0.50	0.029	01/30/17 13:34	
Chromium	ug/L	ND	1.0	0.34	01/30/17 13:34	
Cobalt	ug/L	ND	1.0	0.50	01/30/17 13:34	
Lead	ug/L	ND	1.0	0.19	01/30/17 13:34	
Molybdenum	ug/L	ND	1.0	0.10	01/30/17 13:34	
Selenium	ug/L	ND	1.0	0.18	01/30/17 13:34	
Thallium	ug/L	ND	1.0	0.50	01/30/17 13:34	

LABORATORY CONTROL SAMPLE: 1896146

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.3	101	80-120	
Arsenic	ug/L	40	41.4	104	80-120	
Barium	ug/L	40	39.9	100	80-120	
Beryllium	ug/L	40	39.8	100	80-120	
Cadmium	ug/L	40	40.7	102	80-120	
Chromium	ug/L	40	41.3	103	80-120	
Cobalt	ug/L	40	40.8	102	80-120	
Lead	ug/L	40	39.2	98	80-120	
Molybdenum	ug/L	40	41.5	104	80-120	
Selenium	ug/L	40	40.3	101	80-120	
Thallium	ug/L	40	40.8	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1896147 1896148

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		Spike Conc.	Result	Spike Conc.	Result							
Antimony	ug/L	0.11J	40	40	39.3	40.2	98	100	75-125	2	20	
Arsenic	ug/L	0.23J	40	40	40.0	40.6	99	101	75-125	2	20	
Barium	ug/L	42.4	40	40	80.7	83.3	96	102	75-125	3	20	
Beryllium	ug/L	ND	40	40	37.7	37.6	94	94	75-125	0	20	
Cadmium	ug/L	ND	40	40	38.2	38.8	96	97	75-125	1	20	
Chromium	ug/L	0.59J	40	40	40.2	41.0	99	101	75-125	2	20	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Parameter	Units	1896147		1896148		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		60236558001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Cobalt	ug/L	1.3	40	40	39.6	39.7	96	96	75-125	0	20		
Lead	ug/L	ND	40	40	36.3	36.7	91	92	75-125	1	20		
Molybdenum	ug/L	0.76J	40	40	42.2	42.0	104	103	75-125	1	20		
Selenium	ug/L	5.9	40	40	43.6	44.1	94	96	75-125	1	20		
Thallium	ug/L	ND	40	40	38.6	38.7	96	96	75-125	0	20		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

QC Batch:	463213	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
Associated Lab Samples:	60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558007, 60236558008, 60236558009, 60236558010		

METHOD BLANK:	1896349	Matrix:	Water
Associated Lab Samples:	60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558007, 60236558008, 60236558009, 60236558010		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	01/25/17 15:02	

LABORATORY CONTROL SAMPLE: 1896350

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	972	97	80-120	

SAMPLE DUPLICATE: 1896351

Parameter	Units	60236433001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	324	322	1	10	

SAMPLE DUPLICATE: 1896352

Parameter	Units	60236559005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	14100	14500	2	10	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

QC Batch: 464025 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558007, 60236558008, 60236558009, 60236558010

SAMPLE DUPLICATE: 1899241

Parameter	Units	60236559002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.6	7.6	0	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

QC Batch: 463615 Analysis Method: EPA 9056
 QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
 Associated Lab Samples: 60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558008, 60236558009, 60236558010

METHOD BLANK: 1898028 Matrix: Water
 Associated Lab Samples: 60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558008, 60236558009, 60236558010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	ND	0.20	0.027	01/29/17 10:25	

LABORATORY CONTROL SAMPLE: 1898029

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1898030 1898031

Parameter	Units	60236558001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.17J	2.5	2.5	2.8	2.9	107	111	80-120	4	15	

SAMPLE DUPLICATE: 1898032

Parameter	Units	60236558002 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	0.21	0.22	6	15	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

QC Batch:	463899	Analysis Method:	EPA 9056
QC Batch Method:	EPA 9056	Analysis Description:	9056 IC Anions
Associated Lab Samples:	60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558007, 60236558008, 60236558009, 60236558010		

METHOD BLANK:	1898811	Matrix:	Water
Associated Lab Samples:	60236558001, 60236558002, 60236558003, 60236558004, 60236558005, 60236558006, 60236558007, 60236558008, 60236558009, 60236558010		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	01/31/17 10:25	
Fluoride	mg/L	ND	0.20	0.027	01/31/17 10:25	
Sulfate	mg/L	ND	1.0	0.15	01/31/17 10:25	

LABORATORY CONTROL SAMPLE: 1898812

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	99	80-120	
Fluoride	mg/L	2.5	2.6	104	80-120	
Sulfate	mg/L	5	5.0	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1898813 1898814

Parameter	Units	60236558001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	71.6	50	50	127	126	111	109	80-120	1	15	

SAMPLE DUPLICATE: 1898815

Parameter	Units	60236558002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	259	253	3	15	
Sulfate	mg/L	777	775	0	15	

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60236558001	MW-301		464023		
60236558002	MW-302		464023		
60236558003	MW-303		464023		
60236558004	MW-304		464023		
60236558005	MW-305		464023		
60236558006	MW-306		464023		
60236558008	MW-307		464023		
60236558009	MW-308		464023		
60236558010	MW-309		464023		
60236558001	MW-301	EPA 3010	463142	EPA 6010	463178
60236558002	MW-302	EPA 3010	463142	EPA 6010	463178
60236558003	MW-303	EPA 3010	463142	EPA 6010	463178
60236558004	MW-304	EPA 3010	463142	EPA 6010	463178
60236558005	MW-305	EPA 3010	463142	EPA 6010	463178
60236558006	MW-306	EPA 3010	463142	EPA 6010	463178
60236558007	FIELD BLANK	EPA 3010	463142	EPA 6010	463178
60236558008	MW-307	EPA 3010	463142	EPA 6010	463178
60236558009	MW-308	EPA 3010	463142	EPA 6010	463178
60236558010	MW-309	EPA 3010	463142	EPA 6010	463178
60236558001	MW-301	EPA 3010	463143	EPA 6020	463177
60236558002	MW-302	EPA 3010	463143	EPA 6020	463177
60236558003	MW-303	EPA 3010	463143	EPA 6020	463177
60236558004	MW-304	EPA 3010	463143	EPA 6020	463177
60236558005	MW-305	EPA 3010	463143	EPA 6020	463177
60236558006	MW-306	EPA 3010	463143	EPA 6020	463177
60236558007	FIELD BLANK	EPA 3010	463143	EPA 6020	463177
60236558008	MW-307	EPA 3010	463143	EPA 6020	463177
60236558009	MW-308	EPA 3010	463143	EPA 6020	463177
60236558010	MW-309	EPA 3010	463143	EPA 6020	463177
60236558001	MW-301	EPA 7470	463894	EPA 7470	464001
60236558002	MW-302	EPA 7470	463894	EPA 7470	464001
60236558003	MW-303	EPA 7470	463894	EPA 7470	464001
60236558004	MW-304	EPA 7470	463894	EPA 7470	464001
60236558005	MW-305	EPA 7470	463894	EPA 7470	464001
60236558006	MW-306	EPA 7470	463894	EPA 7470	464001
60236558007	FIELD BLANK	EPA 7470	463894	EPA 7470	464001
60236558008	MW-307	EPA 7470	463894	EPA 7470	464001
60236558009	MW-308	EPA 7470	463894	EPA 7470	464001
60236558010	MW-309	EPA 7470	463894	EPA 7470	464001
60236558001	MW-301	SM 2540C	463213		
60236558002	MW-302	SM 2540C	463213		
60236558003	MW-303	SM 2540C	463213		
60236558004	MW-304	SM 2540C	463213		
60236558005	MW-305	SM 2540C	463213		
60236558006	MW-306	SM 2540C	463213		
60236558007	FIELD BLANK	SM 2540C	463213		
60236558008	MW-307	SM 2540C	463213		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236558

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60236558009	MW-308	SM 2540C	463213		
60236558010	MW-309	SM 2540C	463213		
60236558001	MW-301	EPA 9040	464025		
60236558002	MW-302	EPA 9040	464025		
60236558003	MW-303	EPA 9040	464025		
60236558004	MW-304	EPA 9040	464025		
60236558005	MW-305	EPA 9040	464025		
60236558006	MW-306	EPA 9040	464025		
60236558007	FIELD BLANK	EPA 9040	464025		
60236558008	MW-307	EPA 9040	464025		
60236558009	MW-308	EPA 9040	464025		
60236558010	MW-309	EPA 9040	464025		
60236558001	MW-301	EPA 9056	463615		
60236558001	MW-301	EPA 9056	463899		
60236558002	MW-302	EPA 9056	463615		
60236558002	MW-302	EPA 9056	463899		
60236558003	MW-303	EPA 9056	463615		
60236558003	MW-303	EPA 9056	463899		
60236558004	MW-304	EPA 9056	463615		
60236558004	MW-304	EPA 9056	463899		
60236558005	MW-305	EPA 9056	463615		
60236558005	MW-305	EPA 9056	463899		
60236558006	MW-306	EPA 9056	463615		
60236558006	MW-306	EPA 9056	463899		
60236558007	FIELD BLANK	EPA 9056	463899		
60236558008	MW-307	EPA 9056	463615		
60236558008	MW-307	EPA 9056	463899		
60236558009	MW-308	EPA 9056	463615		
60236558009	MW-308	EPA 9056	463899		
60236558010	MW-309	EPA 9056	463615		
60236558010	MW-309	EPA 9056	463899		

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Sample Condition Upon Receipt

WO#: 60236558



60236558

Client Name: SCS

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: 8102 8915 9891 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T-266 T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 0.5 Corr. Factor CF +1.5 CF +0.9 Corrected 2.0

Date and initials of person examining contents: 1/24

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<u>pH</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Cyanide water sample checks: <input checked="" type="checkbox"/> N/A		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 1-24-17

February 15, 2017

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60236563

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on January 24, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60236563001	MW-301	Water	01/18/17 11:55	01/24/17 08:40
60236563002	MW-302	Water	01/18/17 13:05	01/24/17 08:40
60236563003	MW-303	Water	01/18/17 14:15	01/24/17 08:40
60236563004	MW-304	Water	01/18/17 15:15	01/24/17 08:40
60236563005	MW-305	Water	01/18/17 16:20	01/24/17 08:40
60236563006	MW-306	Water	01/18/17 17:10	01/24/17 08:40
60236563007	FIELD BLANK	Water	01/19/17 13:15	01/24/17 08:40
60236563008	MW-307	Water	01/19/17 10:55	01/24/17 08:40
60236563009	MW-308	Water	01/19/17 11:45	01/24/17 08:40
60236563010	MW-309	Water	01/19/17 13:30	01/24/17 08:40

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60236563001	MW-301	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236563002	MW-302	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236563003	MW-303	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236563004	MW-304	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236563005	MW-305	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236563006	MW-306	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236563007	FIELD BLANK	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236563008	MW-307	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236563009	MW-308	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60236563010	MW-309	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Sample: MW-301 **Lab ID: 60236563001** Collected: 01/18/17 11:55 Received: 01/24/17 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.143 ± 0.396 (0.768) C:NA T:86%	pCi/L	02/14/17 20:49	13982-63-3	
Radium-228	EPA 904.0	-0.403 ± 0.454 (1.13) C:63% T:88%	pCi/L	02/14/17 13:15	15262-20-1	
Total Radium	Total Radium Calculation	0.143 ± 0.850 (1.90)	pCi/L	02/15/17 14:04	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Sample: MW-302 **Lab ID: 60236563002** Collected: 01/18/17 13:05 Received: 01/24/17 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.136 ± 0.328 (0.633) C:NA T:93%	pCi/L	02/14/17 21:23	13982-63-3	
Radium-228	EPA 904.0	-0.0781 ± 0.896 (2.11) C:34% T:82%	pCi/L	02/14/17 13:48	15262-20-1	
Total Radium	Total Radium Calculation	0.136 ± 1.22 (2.74)	pCi/L	02/15/17 14:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Sample: MW-303 **Lab ID: 60236563003** Collected: 01/18/17 14:15 Received: 01/24/17 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.145 ± 0.449 (0.870) C:NA T:83%	pCi/L	02/14/17 21:23	13982-63-3	
Radium-228	EPA 904.0	0.660 ± 0.422 (0.781) C:94% T:75%	pCi/L	02/14/17 14:46	15262-20-1	
Total Radium	Total Radium Calculation	0.805 ± 0.871 (1.65)	pCi/L	02/15/17 14:04	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Sample: MW-304 **Lab ID: 60236563004** Collected: 01/18/17 15:15 Received: 01/24/17 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.33 ± 0.667 (0.545) C:NA T:86%	pCi/L	02/14/17 21:23	13982-63-3	
Radium-228	EPA 904.0	1.61 ± 0.589 (0.853) C:73% T:74%	pCi/L	02/14/17 12:06	15262-20-1	
Total Radium	Total Radium Calculation	2.94 ± 1.26 (1.40)	pCi/L	02/15/17 14:04	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Sample: MW-305 **Lab ID: 60236563005** Collected: 01/18/17 16:20 Received: 01/24/17 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.162 ± 0.448 (0.869) C:NA T:79%	pCi/L	02/14/17 21:23	13982-63-3	
Radium-228	EPA 904.0	1.30 ± 0.511 (0.750) C:66% T:81%	pCi/L	02/14/17 12:06	15262-20-1	
Total Radium	Total Radium Calculation	1.46 ± 0.959 (1.62)	pCi/L	02/15/17 14:04	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Sample: MW-306 **Lab ID: 60236563006** Collected: 01/18/17 17:10 Received: 01/24/17 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.150 ± 0.360 (0.899) C:NA T:85%	pCi/L	02/14/17 21:23	13982-63-3	
Radium-228	EPA 904.0	0.435 ± 0.255 (0.463) C:111% T:84%	pCi/L	02/14/17 12:07	15262-20-1	
Total Radium	Total Radium Calculation	0.435 ± 0.615 (1.36)	pCi/L	02/15/17 14:04	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Sample: FIELD BLANK **Lab ID: 60236563007** Collected: 01/19/17 13:15 Received: 01/24/17 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.074 ± 0.384 (0.889) C:NA T:83%	pCi/L	02/14/17 21:23	13982-63-3	
Radium-228	EPA 904.0	0.576 ± 0.808 (1.73) C:34% T:76%	pCi/L	02/14/17 12:07	15262-20-1	
Total Radium	Total Radium Calculation	0.576 ± 1.19 (2.62)	pCi/L	02/15/17 14:04	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Sample: MW-307 **Lab ID: 60236563008** Collected: 01/19/17 10:55 Received: 01/24/17 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.55 ± 0.751 (0.757) C:NA T:86%	pCi/L	02/14/17 21:52	13982-63-3	
Radium-228	EPA 904.0	1.11 ± 0.484 (0.772) C:71% T:79%	pCi/L	02/14/17 12:07	15262-20-1	
Total Radium	Total Radium Calculation	2.66 ± 1.24 (1.53)	pCi/L	02/15/17 14:04	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Sample: MW-308 **Lab ID: 60236563009** Collected: 01/19/17 11:45 Received: 01/24/17 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.282 ± 0.438 (0.759) C:NA T:87%	pCi/L	02/14/17 21:52	13982-63-3	
Radium-228	EPA 904.0	1.17 ± 0.448 (0.628) C:73% T:81%	pCi/L	02/14/17 12:07	15262-20-1	
Total Radium	Total Radium Calculation	1.45 ± 0.886 (1.39)	pCi/L	02/15/17 14:04	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Sample: MW-309 **Lab ID: 60236563010** Collected: 01/19/17 13:30 Received: 01/24/17 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.143 ± 0.327 (0.526) C:NA T:86%	pCi/L	02/14/17 21:52	13982-63-3	
Radium-228	EPA 904.0	0.463 ± 0.371 (0.733) C:78% T:78%	pCi/L	02/14/17 12:07	15262-20-1	
Total Radium	Total Radium Calculation	0.606 ± 0.698 (1.26)	pCi/L	02/15/17 14:04	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

QC Batch:	248442	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
Associated Lab Samples:	60236563001, 60236563002, 60236563003, 60236563004, 60236563005, 60236563006, 60236563007, 60236563008, 60236563009, 60236563010		

METHOD BLANK:	1222155	Matrix:	Water
Associated Lab Samples:	60236563001, 60236563002, 60236563003, 60236563004, 60236563005, 60236563006, 60236563007, 60236563008, 60236563009, 60236563010		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.351 ± 0.497 (0.843) C:NA T:90%	pCi/L	02/14/17 20:21	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

QC Batch:	248443	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	60236563001, 60236563002, 60236563003, 60236563004, 60236563005, 60236563006, 60236563007, 60236563008, 60236563009, 60236563010		

METHOD BLANK:	1222156	Matrix:	Water
Associated Lab Samples:	60236563001, 60236563002, 60236563003, 60236563004, 60236563005, 60236563006, 60236563007, 60236563008, 60236563009, 60236563010		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.181 ± 0.313 (0.784) C:62% T:85%	pCi/L	02/14/17 11:56	

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

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60236563

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60236563001	MW-301	EPA 903.1	248442		
60236563002	MW-302	EPA 903.1	248442		
60236563003	MW-303	EPA 903.1	248442		
60236563004	MW-304	EPA 903.1	248442		
60236563005	MW-305	EPA 903.1	248442		
60236563006	MW-306	EPA 903.1	248442		
60236563007	FIELD BLANK	EPA 903.1	248442		
60236563008	MW-307	EPA 903.1	248442		
60236563009	MW-308	EPA 903.1	248442		
60236563010	MW-309	EPA 903.1	248442		
60236563001	MW-301	EPA 904.0	248443		
60236563002	MW-302	EPA 904.0	248443		
60236563003	MW-303	EPA 904.0	248443		
60236563004	MW-304	EPA 904.0	248443		
60236563005	MW-305	EPA 904.0	248443		
60236563006	MW-306	EPA 904.0	248443		
60236563007	FIELD BLANK	EPA 904.0	248443		
60236563008	MW-307	EPA 904.0	248443		
60236563009	MW-308	EPA 904.0	248443		
60236563010	MW-309	EPA 904.0	248443		
60236563001	MW-301	Total Radium Calculation	249404		
60236563002	MW-302	Total Radium Calculation	249404		
60236563003	MW-303	Total Radium Calculation	249404		
60236563004	MW-304	Total Radium Calculation	249404		
60236563005	MW-305	Total Radium Calculation	249404		
60236563006	MW-306	Total Radium Calculation	249404		
60236563007	FIELD BLANK	Total Radium Calculation	249404		
60236563008	MW-307	Total Radium Calculation	249404		
60236563009	MW-308	Total Radium Calculation	249404		
60236563010	MW-309	Total Radium Calculation	249404		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60236563



Client Name: SCS Eng

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: 9102 8965 9891 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: CF +1.5 T-266 CF +0.9 T-239 Type of Ice: Water Blue None

Cooler Temperature (°C): As-read 3.7 Corr. Factor CF +1.5 CF +0.9 Corrected 5.270

Date and initials of person examining contents: 9/5/17 JES

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples contain multiple phases? Matrix: <u>water</u>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Cyanide water sample checks: <input checked="" type="checkbox"/> N/A	
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: JES

Date: 2-24-17



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

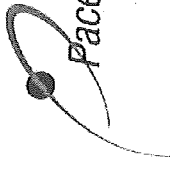
Page: _____ of _____

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: SCS Engineers	Report To: Meghan Blodgett	Company Name: SCS Engineers	Attention: Meghan Blodgett/Jess Valcheff	Company Name: SCS Engineers	REGULATORY AGENCY
Address: 2830 Dairy Drive	Copy To: Tom Karwaski	Address:		Address:	<input type="checkbox"/> NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER
Email To: mblodgett@scsengineers.com	Purchase Order No.:	Madison WI 53718		Face Quote Reference:	<input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER
Phone: 608-216-7362	Project Name: Ottumwa Generating Station		Trudy Gipson 913-563-1405	Face Project Manager:	Site Location
Requested Due Date/TAT:	Project Number: 25216072		6696 Line 2	Face Profile #:	STATE: IA

ITEM #	Section D Required Client Information	Valid Matrix Codes	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		PRESERVATIVES	# OF CONTAINERS	UNPRESERVED	ANALYSIS TESTS	Y/N	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No / Lab I.D.
					COMPOSITE START	COMPOSITE END/GRAB								
1	MW-301	DRINKING WATER	WT G	G	1-18-17	11:55	H2SO4 HNO3 HCl NaOH Na2S2O3 Methanol Other	2	2	603.1 Radium-226 604.0 Radium-228 Total Radium	X X X			600736563
2	MW-302	WASTE WATER	WT G	G		13:05		2	2		X X X			022
3	MW-303	WASTE WATER	WT G	G		14:15		2	2		X X X			003
4	MW-304	WASTE WATER	WT G	G		15:15		2	2		X X X			004
5	MW-305	WASTE WATER	WT G	G		16:20		2	2		X X X			005
6	MW-306	WASTE WATER	WT G	G		17:10		2	2		X X X			006
7	FIELD BLANK		WT G	G	1-19-17	13:15		2	2		X X X			007
8	MW-307		WT G	G		10:55		2	2		X X X			008
9	MW-308		WT G	G		11:45		2	2		X X X			009
10	MW-309		WT G	G		13:30		2	2		X X X			010
11														
12														

ADDITIONAL COMMENTS		RELINQUISHED BY / AFFIDAVIT		ACCEPTED BY / AFFILIATION		DATE		TIME		DATE		TIME		SAMPLE CONDITIONS													
Ship To: 6608 Loiret Boulevard, Lenexa, KS 66219		Paul A. Grotter		Paul A. Grotter		1-23-17		16:30		1/24/17		8:40		Y Y Y													
<table border="1"> <tr> <td colspan="2">SAMPLER NAME AND SIGNATURE</td> <td colspan="2">DATE Signed (MM/DD/YY):</td> </tr> <tr> <td colspan="2">PRINT Name of SAMPLER: Paul A. Grotter</td> <td colspan="2">1-20-17</td> </tr> <tr> <td colspan="2">SIGNATURE of SAMPLER: Paul A. Grotter</td> <td colspan="2"></td> </tr> </table>																SAMPLER NAME AND SIGNATURE		DATE Signed (MM/DD/YY):		PRINT Name of SAMPLER: Paul A. Grotter		1-20-17		SIGNATURE of SAMPLER: Paul A. Grotter			
SAMPLER NAME AND SIGNATURE		DATE Signed (MM/DD/YY):																									
PRINT Name of SAMPLER: Paul A. Grotter		1-20-17																									
SIGNATURE of SAMPLER: Paul A. Grotter																											
Temp in °C		Received on		Cooler (Y/N)		Samples Intact (Y/N)																					

Chain of Custody



30208960

Pace Analytical
www.pacelabs.com

Workorder: 60236563 Workorder Name: Ottumwa Gen. Station/25216072 Owner Received Date: 1/24/2017 Results Requested By: 2/16/2017

Report To: Subcontract To

Trudy Gipson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone (913)599-5665

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Requested Analysis		LAB USE ONLY
						HNO3		903.1 Radium-226	904.0 Radium-228	
1	MW-301	PS	1/18/2017 11:55	60236563001	Water	2		X	X	001
2	MW-302	PS	1/18/2017 13:05	60236563002	Water	2		X	X	002
3	MW-303	PS	1/18/2017 14:15	60236563003	Water	2		X	X	003
4	MW-304	PS	1/18/2017 15:15	60236563004	Water	2		X	X	004
5	MW-305	PS	1/18/2017 16:20	60236563005	Water	2		X	X	005
6	MW-306	PS	1/18/2017 17:10	60236563006	Water	2		X	X	006
7	FIELD BLANK	PS	1/19/2017 13:15	60236563007	Water	2		X	X	007
8	MW-307	PS	1/19/2017 10:55	60236563008	Water	2		X	X	008
9	MW-308	PS	1/19/2017 11:45	60236563009	Water	2		X	X	009
10	MW-309	PS	1/19/2017 13:30	60236563010	Water	2		X	X	010

Transfers Released By: [Signature] Date/Time: 1/24/17 13:00 Received Date/Time: 1/25/17 10:30

Cooler Temperature on Receipt: NA °C Custody Seal: Y or N Received on Ice: Y or N Samples Intact: Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner's document.

WO#: 30208960



Sample Condition Upon Receipt Pittsburgh

30208960



Client Name: PaceXS Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: 7044605879165

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Thermometer Used N/A Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ARM 1/25/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	/			1.
Chain of Custody Filled Out:	/			2.
Chain of Custody Relinquished:	/			3.
Sampler Name & Signature on COC:		/		4.
Sample Labels match COC:	/			5.
-Includes date/time/ID Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	/			6.
Short Hold Time Analysis (<72hr remaining):		/		7.
Rush Turn Around Time Requested:		/		8.
Sufficient Volume:	/			9.
Correct Containers Used:	/			10.
-Pace Containers Used:		/		
Containers Intact:	/			11.
Orthophosphate field filtered			/	12.
Organic Samples checked for dechlorination:			/	13.
Filtered volume received for Dissolved tests			/	14.
All containers have been checked for preservation.	/			15.
All containers needing preservation are found to be in compliance with EPA recommendation.	/			<u>PH/2</u>
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: <u>ARM</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			/	16.
Trip Blank Present:			/	17.
Trip Blank Custody Seals Present			/	
Rad Aqueous Samples Screened > 0.5 mrem/hr	/			Initial when completed: <u>ARM</u> Date: <u>1/25/17</u>

Client Notification/ Resolution:
 Person Contacted: _____ Date/Time: _____ Contacted By: _____
 Comments/ Resolution: _____

A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)
 *PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

A6 Round 6 Background Sampling, Analytical Laboratory Report

May 04, 2017

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60242499

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 21, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60242499001	MW-301	Water	04/19/17 17:10	04/21/17 09:20
60242499002	MW-302	Water	04/19/17 17:55	04/21/17 09:20
60242499003	MW-303	Water	04/19/17 18:45	04/21/17 09:20
60242499004	MW-304	Water	04/19/17 19:25	04/21/17 09:20
60242499005	MW-305	Water	04/19/17 20:10	04/21/17 09:20
60242499006	MW-306	Water	04/19/17 21:00	04/21/17 09:20
60242499007	FIELD BLANK	Water	04/20/17 12:50	04/21/17 09:20
60242499008	MW-307	Water	04/20/17 12:15	04/21/17 09:20
60242499009	MW-308	Water	04/20/17 13:35	04/21/17 09:20
60242499010	MW-309	Water	04/20/17 14:40	04/21/17 09:20

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60242499001	MW-301	EPA 6010	ZBM	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242499002	MW-302	EPA 6010	ZBM	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242499003	MW-303	EPA 6010	ZBM	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242499004	MW-304	EPA 6010	ZBM	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242499005	MW-305	EPA 6010	ZBM	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242499006	MW-306	EPA 6010	ZBM	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242499007	FIELD BLANK	EPA 6010	ZBM	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60242499008	MW-307	EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
		EPA 6010	ZBM	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60242499009	MW-308	EPA 6010	ZBM	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
		EPA 6010	ZBM	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
60242499010	MW-309	EPA 9056	RAD	3	PASI-K
		EPA 6010	ZBM	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Sample: MW-301 Lab ID: **60242499001** Collected: 04/19/17 17:10 Received: 04/21/17 09:20 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
Field Data									
Analytical Method:									
Collected By	Client				1		04/19/17 17:00		
Field pH	6.64	Std. Units	0.10	0.050	1		04/19/17 17:00		
Field Temperature	10.8	deg C	0.50	0.25	1		04/19/17 17:00		
Field Specific Conductance	742	umhos/cm	1.0	1.0	1		04/19/17 17:00		
Field Oxidation Potential	148	mV			1		04/19/17 17:00		
Oxygen, Dissolved	5.74	mg/L			1		04/19/17 17:00	7782-44-7	
Turbidity	0.47	NTU	1.0	1.0	1		04/19/17 17:00		
Groundwater Elevation	682.15	feet			1		04/19/17 17:00		
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	565	ug/L	100	3.5	1	04/24/17 16:50	04/25/17 16:54	7440-42-8	
Calcium	61.5	mg/L	0.10	0.036	1	04/24/17 16:50	04/25/17 16:54	7440-70-2	
Lithium	21.8	ug/L	10.0	2.9	1	04/24/17 16:50	04/25/17 16:54	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.026	1	04/24/17 16:50	05/03/17 17:33	7440-36-0	
Arsenic	0.22J	ug/L	1.0	0.052	1	04/24/17 16:50	05/03/17 17:33	7440-38-2	
Barium	35.5	ug/L	1.0	0.095	1	04/24/17 16:50	05/03/17 17:33	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	04/24/17 16:50	05/03/17 17:33	7440-41-7	
Cadmium	0.035J	ug/L	0.50	0.018	1	04/24/17 16:50	05/03/17 17:33	7440-43-9	
Chromium	0.49J	ug/L	1.0	0.054	1	04/24/17 16:50	05/03/17 17:33	7440-47-3	B
Cobalt	0.97J	ug/L	1.0	0.014	1	04/24/17 16:50	05/03/17 17:33	7440-48-4	
Lead	0.060J	ug/L	1.0	0.033	1	04/24/17 16:50	05/03/17 17:33	7439-92-1	
Molybdenum	0.54J	ug/L	1.0	0.058	1	04/24/17 16:50	05/03/17 17:33	7439-98-7	
Selenium	4.2	ug/L	1.0	0.086	1	04/24/17 16:50	05/03/17 17:33	7782-49-2	
Thallium	0.14J	ug/L	1.0	0.036	1	04/24/17 16:50	05/03/17 17:33	7440-28-0	B
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	04/27/17 16:30	04/28/17 11:29	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	499	mg/L	5.0	5.0	1		04/24/17 12:48		
9040 pH									
Analytical Method: EPA 9040									
pH	6.7	Std. Units	0.10	0.10	1		04/26/17 12:12		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	54.8	mg/L	10.0	5.0	10		04/25/17 23:48	16887-00-6	
Fluoride	0.24	mg/L	0.20	0.10	1		04/25/17 23:18	16984-48-8	
Sulfate	190	mg/L	10.0	5.0	10		04/25/17 23:48	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Sample: MW-302		Lab ID: 60242499002		Collected: 04/19/17 17:55		Received: 04/21/17 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		04/19/17 17:55		
Field pH	6.78	Std. Units	0.10	0.050	1		04/19/17 17:55		
Field Temperature	12.8	deg C	0.50	0.25	1		04/19/17 17:55		
Field Specific Conductance	2220	umhos/cm	1.0	1.0	1		04/19/17 17:55		
Field Oxidation Potential	121.1	mV			1		04/19/17 17:55		
Oxygen, Dissolved	0.18	mg/L			1		04/19/17 17:55	7782-44-7	
Turbidity	2.32	NTU	1.0	1.0	1		04/19/17 17:55		
Groundwater Elevation	656.35	feet			1		04/19/17 17:55		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	1200	ug/L	100	3.5	1	04/24/17 16:50	04/25/17 17:00	7440-42-8	
Calcium	184	mg/L	0.10	0.036	1	04/24/17 16:50	04/25/17 17:00	7440-70-2	
Lithium	10.1	ug/L	10.0	2.9	1	04/24/17 16:50	04/25/17 17:00	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	0.026	1	04/24/17 16:50	05/03/17 17:42	7440-36-0	
Arsenic	0.25J	ug/L	1.0	0.052	1	04/24/17 16:50	05/03/17 17:42	7440-38-2	
Barium	19.4	ug/L	1.0	0.095	1	04/24/17 16:50	05/03/17 17:42	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	04/24/17 16:50	05/03/17 17:42	7440-41-7	
Cadmium	0.20J	ug/L	0.50	0.018	1	04/24/17 16:50	05/03/17 17:42	7440-43-9	
Chromium	1.0	ug/L	1.0	0.054	1	04/24/17 16:50	05/03/17 17:42	7440-47-3	B
Cobalt	0.95J	ug/L	1.0	0.014	1	04/24/17 16:50	05/03/17 17:42	7440-48-4	
Lead	0.20J	ug/L	1.0	0.033	1	04/24/17 16:50	05/03/17 17:42	7439-92-1	
Molybdenum	0.44J	ug/L	1.0	0.058	1	04/24/17 16:50	05/03/17 17:42	7439-98-7	
Selenium	ND	ug/L	1.0	0.086	1	04/24/17 16:50	05/03/17 17:42	7782-49-2	
Thallium	0.049J	ug/L	1.0	0.036	1	04/24/17 16:50	05/03/17 17:42	7440-28-0	B
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	04/27/17 16:30	04/28/17 11:52	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1670	mg/L	5.0	5.0	1		04/24/17 12:49		
9040 pH		Analytical Method: EPA 9040							
pH	6.8	Std. Units	0.10	0.10	1		04/26/17 13:01		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	281	mg/L	20.0	10.0	20		04/26/17 00:33	16887-00-6	
Fluoride	0.20J	mg/L	0.20	0.10	1		04/26/17 00:18	16984-48-8	
Sulfate	907	mg/L	100	50.0	100		04/26/17 00:48	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Sample: MW-303		Lab ID: 60242499003		Collected: 04/19/17 18:45		Received: 04/21/17 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		04/19/17 18:45		
Field pH	7.02	Std. Units	0.10	0.050	1		04/19/17 18:45		
Field Temperature	10.6	deg C	0.50	0.25	1		04/19/17 18:45		
Field Specific Conductance	1687	umhos/cm	1.0	1.0	1		04/19/17 18:45		
Field Oxidation Potential	99.5	mV			1		04/19/17 18:45		
Oxygen, Dissolved	0.56	mg/L			1		04/19/17 18:45	7782-44-7	
Turbidity	2.2	NTU	1.0	1.0	1		04/19/17 18:45		
Groundwater Elevation	654.57	feet			1		04/19/17 18:45		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	577	ug/L	100	3.5	1	04/24/17 16:50	04/25/17 17:02	7440-42-8	
Calcium	226	mg/L	0.10	0.036	1	04/24/17 16:50	04/25/17 17:02	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	04/24/17 16:50	04/25/17 17:02	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.16J	ug/L	1.0	0.026	1	04/24/17 16:50	05/03/17 17:55	7440-36-0	
Arsenic	0.47J	ug/L	1.0	0.052	1	04/24/17 16:50	05/03/17 17:55	7440-38-2	
Barium	79.1	ug/L	1.0	0.095	1	04/24/17 16:50	05/03/17 17:55	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	04/24/17 16:50	05/03/17 17:55	7440-41-7	
Cadmium	0.81	ug/L	0.50	0.018	1	04/24/17 16:50	05/03/17 17:55	7440-43-9	
Chromium	0.27J	ug/L	1.0	0.054	1	04/24/17 16:50	05/03/17 17:55	7440-47-3	B
Cobalt	1.8	ug/L	1.0	0.014	1	04/24/17 16:50	05/03/17 17:55	7440-48-4	
Lead	0.068J	ug/L	1.0	0.033	1	04/24/17 16:50	05/03/17 17:55	7439-92-1	
Molybdenum	3.9	ug/L	1.0	0.058	1	04/24/17 16:50	05/03/17 17:55	7439-98-7	
Selenium	1.1	ug/L	1.0	0.086	1	04/24/17 16:50	05/03/17 17:55	7782-49-2	
Thallium	0.16J	ug/L	1.0	0.036	1	04/24/17 16:50	05/03/17 17:55	7440-28-0	B
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	04/27/17 16:30	04/28/17 11:54	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1170	mg/L	5.0	5.0	1		04/24/17 12:50		
9040 pH		Analytical Method: EPA 9040							
pH	7.2	Std. Units	0.10	0.10	1		04/26/17 13:02		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	141	mg/L	20.0	10.0	20		04/26/17 01:17	16887-00-6	
Fluoride	0.19J	mg/L	0.20	0.10	1		04/26/17 01:02	16984-48-8	
Sulfate	333	mg/L	20.0	10.0	20		04/26/17 01:17	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Sample: MW-304 **Lab ID: 60242499004** Collected: 04/19/17 19:25 Received: 04/21/17 09:20 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
Field Data									
Analytical Method:									
Collected By	Client				1		04/19/17 19:25		
Field pH	7.27	Std. Units	0.10	0.050	1		04/19/17 19:25		
Field Temperature	13.4	deg C	0.50	0.25	1		04/19/17 19:25		
Field Specific Conductance	2139	umhos/cm	1.0	1.0	1		04/19/17 19:25		
Field Oxidation Potential	-40.5	mV			1		04/19/17 19:25		
Oxygen, Dissolved	0.12	mg/L			1		04/19/17 19:25	7782-44-7	
Turbidity	1.95	NTU	1.0	1.0	1		04/19/17 19:25		
Groundwater Elevation	657.48	feet			1		04/19/17 19:25		
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	1030	ug/L	100	3.5	1	04/24/17 16:50	04/25/17 17:05	7440-42-8	
Calcium	129	mg/L	0.10	0.036	1	04/24/17 16:50	04/25/17 17:05	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	04/24/17 16:50	04/25/17 17:05	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.026	1	04/24/17 16:50	05/03/17 18:03	7440-36-0	
Arsenic	0.73J	ug/L	1.0	0.052	1	04/24/17 16:50	05/03/17 18:03	7440-38-2	
Barium	94.9	ug/L	1.0	0.095	1	04/24/17 16:50	05/03/17 18:03	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	04/24/17 16:50	05/03/17 18:03	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	04/24/17 16:50	05/03/17 18:03	7440-43-9	
Chromium	0.56J	ug/L	1.0	0.054	1	04/24/17 16:50	05/03/17 18:03	7440-47-3	B
Cobalt	0.37J	ug/L	1.0	0.014	1	04/24/17 16:50	05/03/17 18:03	7440-48-4	
Lead	0.13J	ug/L	1.0	0.033	1	04/24/17 16:50	05/03/17 18:03	7439-92-1	
Molybdenum	1.5	ug/L	1.0	0.058	1	04/24/17 16:50	05/03/17 18:03	7439-98-7	
Selenium	0.17J	ug/L	1.0	0.086	1	04/24/17 16:50	05/03/17 18:03	7782-49-2	
Thallium	0.042J	ug/L	1.0	0.036	1	04/24/17 16:50	05/03/17 18:03	7440-28-0	B
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	04/27/17 16:30	04/28/17 11:56	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	1310	mg/L	5.0	5.0	1		04/24/17 12:50		
9040 pH									
Analytical Method: EPA 9040									
pH	7.2	Std. Units	0.10	0.10	1		04/26/17 13:04		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	430	mg/L	25.0	12.5	25		04/26/17 02:17	16887-00-6	
Fluoride	0.88	mg/L	0.20	0.10	1		04/26/17 02:02	16984-48-8	
Sulfate	208	mg/L	25.0	12.5	25		04/26/17 02:17	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Sample: MW-305		Lab ID: 60242499005		Collected: 04/19/17 20:10		Received: 04/21/17 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		04/19/17 20:10		
Field pH	7.30	Std. Units	0.10	0.050	1		04/19/17 20:10		
Field Temperature	13.2	deg C	0.50	0.25	1		04/19/17 20:10		
Field Specific Conductance	1822	umhos/cm	1.0	1.0	1		04/19/17 20:10		
Field Oxidation Potential	17.6	mV			1		04/19/17 20:10		
Oxygen, Dissolved	0.15	mg/L			1		04/19/17 20:10	7782-44-7	
Turbidity	0.51	NTU	1.0	1.0	1		04/19/17 20:10		
Groundwater Elevation	663.27	feet			1		04/19/17 20:10		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	907	ug/L	100	3.5	1	04/24/17 16:50	04/25/17 17:07	7440-42-8	
Calcium	96.2	mg/L	0.10	0.036	1	04/24/17 16:50	04/25/17 17:07	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	04/24/17 16:50	04/25/17 17:07	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.063J	ug/L	1.0	0.026	1	04/24/17 16:50	05/03/17 18:20	7440-36-0	
Arsenic	0.61J	ug/L	1.0	0.052	1	04/24/17 16:50	05/03/17 18:20	7440-38-2	
Barium	115	ug/L	1.0	0.095	1	04/24/17 16:50	05/03/17 18:20	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	04/24/17 16:50	05/03/17 18:20	7440-41-7	
Cadmium	0.052J	ug/L	0.50	0.018	1	04/24/17 16:50	05/03/17 18:20	7440-43-9	
Chromium	0.36J	ug/L	1.0	0.054	1	04/24/17 16:50	05/03/17 18:20	7440-47-3	B
Cobalt	14.6	ug/L	1.0	0.014	1	04/24/17 16:50	05/03/17 18:20	7440-48-4	
Lead	0.093J	ug/L	1.0	0.033	1	04/24/17 16:50	05/03/17 18:20	7439-92-1	
Molybdenum	5.8	ug/L	1.0	0.058	1	04/24/17 16:50	05/03/17 18:20	7439-98-7	
Selenium	0.39J	ug/L	1.0	0.086	1	04/24/17 16:50	05/03/17 18:20	7782-49-2	
Thallium	0.34J	ug/L	1.0	0.036	1	04/24/17 16:50	05/03/17 18:20	7440-28-0	B
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	04/27/17 16:30	04/28/17 11:58	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1040	mg/L	5.0	5.0	1		04/24/17 12:51		
9040 pH		Analytical Method: EPA 9040							
pH	7.4	Std. Units	0.10	0.10	1		04/26/17 13:05		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	312	mg/L	20.0	10.0	20		04/26/17 03:02	16887-00-6	
Fluoride	0.38	mg/L	0.20	0.10	1		04/26/17 02:32	16984-48-8	
Sulfate	109	mg/L	10.0	5.0	10		04/26/17 02:47	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Sample: MW-306		Lab ID: 60242499006		Collected: 04/19/17 21:00		Received: 04/21/17 09:20		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		04/19/17 21:00		
Field pH	6.79	Std. Units	0.10	0.050	1		04/19/17 21:00		
Field Temperature	13.2	deg C	0.50	0.25	1		04/19/17 21:00		
Field Specific Conductance	1210	umhos/cm	1.0	1.0	1		04/19/17 21:00		
Field Oxidation Potential	70.9	mV			1		04/19/17 21:00		
Oxygen, Dissolved	0.21	mg/L			1		04/19/17 21:00	7782-44-7	
Turbidity	0.13	NTU	1.0	1.0	1		04/19/17 21:00		
Groundwater Elevation	670.69	feet			1		04/19/17 21:00		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	814	ug/L	100	3.5	1	04/24/17 16:50	04/25/17 17:09	7440-42-8	
Calcium	81.3	mg/L	0.10	0.036	1	04/24/17 16:50	04/25/17 17:09	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	04/24/17 16:50	04/25/17 17:09	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.051J	ug/L	1.0	0.026	1	04/24/17 16:50	05/03/17 18:25	7440-36-0	
Arsenic	0.42J	ug/L	1.0	0.052	1	04/24/17 16:50	05/03/17 18:25	7440-38-2	
Barium	54.3	ug/L	1.0	0.095	1	04/24/17 16:50	05/03/17 18:25	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	04/24/17 16:50	05/03/17 18:25	7440-41-7	
Cadmium	0.72	ug/L	0.50	0.018	1	04/24/17 16:50	05/03/17 18:25	7440-43-9	
Chromium	0.52J	ug/L	1.0	0.054	1	04/24/17 16:50	05/03/17 18:25	7440-47-3	B
Cobalt	5.7	ug/L	1.0	0.014	1	04/24/17 16:50	05/03/17 18:25	7440-48-4	
Lead	0.038J	ug/L	1.0	0.033	1	04/24/17 16:50	05/03/17 18:25	7439-92-1	
Molybdenum	4.7	ug/L	1.0	0.058	1	04/24/17 16:50	05/03/17 18:25	7439-98-7	
Selenium	ND	ug/L	1.0	0.086	1	04/24/17 16:50	05/03/17 18:25	7782-49-2	
Thallium	0.14J	ug/L	1.0	0.036	1	04/24/17 16:50	05/03/17 18:25	7440-28-0	B
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	04/27/17 16:30	04/28/17 12:01	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	819	mg/L	5.0	5.0	1		04/24/17 12:52		
9040 pH		Analytical Method: EPA 9040							
pH	7.0	Std. Units	0.10	0.10	1		04/26/17 13:06		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	58.5	mg/L	5.0	2.5	5		04/26/17 03:32	16887-00-6	
Fluoride	0.11J	mg/L	0.20	0.10	1		04/26/17 03:17	16984-48-8	
Sulfate	300	mg/L	20.0	10.0	20		04/26/17 03:46	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Sample: FIELD BLANK									
Lab ID: 60242499007									
Collected: 04/20/17 12:50									
Received: 04/21/17 09:20									
Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	ND	ug/L	100	3.5	1	04/24/17 16:50	04/25/17 17:16	7440-42-8	
Calcium	ND	mg/L	0.10	0.036	1	04/24/17 16:50	04/25/17 17:16	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	04/24/17 16:50	04/25/17 17:16	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.026	1	04/24/17 16:50	05/03/17 18:16	7440-36-0	
Arsenic	ND	ug/L	1.0	0.052	1	04/24/17 16:50	05/03/17 18:16	7440-38-2	
Barium	0.27J	ug/L	1.0	0.095	1	04/24/17 16:50	05/03/17 18:16	7440-39-3	B
Beryllium	ND	ug/L	0.50	0.012	1	04/24/17 16:50	05/03/17 18:16	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	04/24/17 16:50	05/03/17 18:16	7440-43-9	
Chromium	0.16J	ug/L	1.0	0.054	1	04/24/17 16:50	05/03/17 18:16	7440-47-3	B
Cobalt	ND	ug/L	1.0	0.014	1	04/24/17 16:50	05/03/17 18:16	7440-48-4	
Lead	ND	ug/L	1.0	0.033	1	04/24/17 16:50	05/03/17 18:16	7439-92-1	
Molybdenum	ND	ug/L	1.0	0.058	1	04/24/17 16:50	05/03/17 18:16	7439-98-7	
Selenium	ND	ug/L	1.0	0.086	1	04/24/17 16:50	05/03/17 18:16	7782-49-2	
Thallium	0.066J	ug/L	1.0	0.036	1	04/24/17 16:50	05/03/17 18:16	7440-28-0	B
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	04/27/17 16:30	04/28/17 12:03	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	ND	mg/L	5.0	5.0	1		04/24/17 12:58		
9040 pH									
Analytical Method: EPA 9040									
pH	5.5	Std. Units	0.10	0.10	1		04/27/17 08:41		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	ND	mg/L	1.0	0.50	1		04/25/17 23:03	16887-00-6	
Fluoride	ND	mg/L	0.20	0.10	1		04/25/17 23:03	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		04/25/17 23:03	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Sample: MW-307 **Lab ID: 60242499008** Collected: 04/20/17 12:15 Received: 04/21/17 09:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data Analytical Method:									
Collected By	Client				1		04/20/17 12:15		
Field pH	6.51	Std. Units	0.10	0.050	1		04/20/17 12:15		
Field Temperature	12.0	deg C	0.50	0.25	1		04/20/17 12:15		
Field Specific Conductance	1648	umhos/cm	1.0	1.0	1		04/20/17 12:15		
Field Oxidation Potential	-16.0	mV			1		04/20/17 12:15		
Oxygen, Dissolved	0.20	mg/L			1		04/20/17 12:15	7782-44-7	
Turbidity	66.67	NTU	1.0	1.0	1		04/20/17 12:15		
Groundwater Elevation	653.62	feet			1		04/20/17 12:15		
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	205	ug/L	100	3.5	1	04/24/17 16:50	04/25/17 17:19	7440-42-8	
Calcium	241	mg/L	0.10	0.036	1	04/24/17 16:50	04/25/17 17:19	7440-70-2	
Lithium	9.4J	ug/L	10.0	2.9	1	04/24/17 16:50	04/25/17 17:19	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.026	1	04/24/17 16:50	05/03/17 18:29	7440-36-0	
Arsenic	0.96J	ug/L	1.0	0.052	1	04/24/17 16:50	05/03/17 18:29	7440-38-2	
Barium	139	ug/L	1.0	0.095	1	04/24/17 16:50	05/03/17 18:29	7440-39-3	
Beryllium	0.029J	ug/L	0.50	0.012	1	04/24/17 16:50	05/03/17 18:29	7440-41-7	
Cadmium	0.025J	ug/L	0.50	0.018	1	04/24/17 16:50	05/03/17 18:29	7440-43-9	
Chromium	1.6	ug/L	1.0	0.054	1	04/24/17 16:50	05/03/17 18:29	7440-47-3	
Cobalt	1.6	ug/L	1.0	0.014	1	04/24/17 16:50	05/03/17 18:29	7440-48-4	
Lead	0.49J	ug/L	1.0	0.033	1	04/24/17 16:50	05/03/17 18:29	7439-92-1	
Molybdenum	0.56J	ug/L	1.0	0.058	1	04/24/17 16:50	05/03/17 18:29	7439-98-7	
Selenium	0.12J	ug/L	1.0	0.086	1	04/24/17 16:50	05/03/17 18:29	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	04/24/17 16:50	05/03/17 18:29	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	04/27/17 16:30	04/28/17 12:05	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	1100	mg/L	5.0	5.0	1		04/24/17 12:59		
9040 pH Analytical Method: EPA 9040									
pH	6.9	Std. Units	0.10	0.10	1		04/27/17 09:02		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	201	mg/L	20.0	10.0	20		04/26/17 10:23	16887-00-6	
Fluoride	0.13J	mg/L	0.20	0.10	1		04/26/17 09:54	16984-48-8	
Sulfate	105	mg/L	10.0	5.0	10		04/26/17 10:08	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Sample: MW-308 **Lab ID: 60242499009** Collected: 04/20/17 13:35 Received: 04/21/17 09:20 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
Field Data									
Analytical Method:									
Collected By	Client				1		04/20/17 13:35		
Field pH	6.70	Std. Units	0.10	0.050	1		04/20/17 13:35		
Field Temperature	11.9	deg C	0.50	0.25	1		04/20/17 13:35		
Field Specific Conductance	1509	umhos/cm	1.0	1.0	1		04/20/17 13:35		
Field Oxidation Potential	1.7	mV			1		04/20/17 13:35		
Oxygen, Dissolved	0.21	mg/L			1		04/20/17 13:35	7782-44-7	
Turbidity	4.6	NTU	1.0	1.0	1		04/20/17 13:35		
Groundwater Elevation	651.09	feet			1		04/20/17 13:35		
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	146	ug/L	100	3.5	1	04/24/17 16:50	04/25/17 17:21	7440-42-8	
Calcium	222	mg/L	0.10	0.036	1	04/24/17 16:50	04/25/17 17:21	7440-70-2	
Lithium	13.3	ug/L	10.0	2.9	1	04/24/17 16:50	04/25/17 17:21	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.026	1	04/24/17 16:50	05/03/17 18:33	7440-36-0	
Arsenic	0.34J	ug/L	1.0	0.052	1	04/24/17 16:50	05/03/17 18:33	7440-38-2	
Barium	118	ug/L	1.0	0.095	1	04/24/17 16:50	05/03/17 18:33	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	04/24/17 16:50	05/03/17 18:33	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	04/24/17 16:50	05/03/17 18:33	7440-43-9	
Chromium	0.44J	ug/L	1.0	0.054	1	04/24/17 16:50	05/03/17 18:33	7440-47-3	B
Cobalt	0.43J	ug/L	1.0	0.014	1	04/24/17 16:50	05/03/17 18:33	7440-48-4	
Lead	0.066J	ug/L	1.0	0.033	1	04/24/17 16:50	05/03/17 18:33	7439-92-1	
Molybdenum	0.53J	ug/L	1.0	0.058	1	04/24/17 16:50	05/03/17 18:33	7439-98-7	
Selenium	ND	ug/L	1.0	0.086	1	04/24/17 16:50	05/03/17 18:33	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	04/24/17 16:50	05/03/17 18:33	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	04/27/17 16:30	04/28/17 12:07	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	1100	mg/L	5.0	5.0	1		04/24/17 12:59		
9040 pH									
Analytical Method: EPA 9040									
pH	7.2	Std. Units	0.10	0.10	1		04/27/17 09:04		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	149	mg/L	10.0	5.0	10		04/26/17 11:22	16887-00-6	
Fluoride	0.12J	mg/L	0.20	0.10	1		04/26/17 11:07	16984-48-8	
Sulfate	283	mg/L	25.0	12.5	25		04/26/17 11:37	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Sample: MW-309 Lab ID: 60242499010 Collected: 04/20/17 14:40 Received: 04/21/17 09:20 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data Analytical Method:									
Collected By	Client				1		04/20/17 14:40		
Field pH	7.01	Std. Units	0.10	0.050	1		04/20/17 14:40		
Field Temperature	12.1	deg C	0.50	0.25	1		04/20/17 14:40		
Field Specific Conductance	1430	umhos/cm	1.0	1.0	1		04/20/17 14:40		
Field Oxidation Potential	0.2	mV			1		04/20/17 14:40		
Oxygen, Dissolved	0.16	mg/L			1		04/20/17 14:40	7782-44-7	
Turbidity	77.74	NTU	1.0	1.0	1		04/20/17 14:40		
Groundwater Elevation	650.16	feet			1		04/20/17 14:40		
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	1280	ug/L	100	3.5	1	04/24/17 16:50	04/25/17 17:23	7440-42-8	
Calcium	152	mg/L	0.10	0.036	1	04/24/17 16:50	04/25/17 17:23	7440-70-2	
Lithium	9.3J	ug/L	10.0	2.9	1	04/24/17 16:50	04/25/17 17:23	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.026	1	04/24/17 16:50	05/03/17 18:37	7440-36-0	
Arsenic	1.1	ug/L	1.0	0.052	1	04/24/17 16:50	05/03/17 18:37	7440-38-2	
Barium	62.4	ug/L	1.0	0.095	1	04/24/17 16:50	05/03/17 18:37	7440-39-3	
Beryllium	0.073J	ug/L	0.50	0.012	1	04/24/17 16:50	05/03/17 18:37	7440-41-7	
Cadmium	0.042J	ug/L	0.50	0.018	1	04/24/17 16:50	05/03/17 18:37	7440-43-9	
Chromium	3.2	ug/L	1.0	0.054	1	04/24/17 16:50	05/03/17 18:37	7440-47-3	
Cobalt	3.1	ug/L	1.0	0.014	1	04/24/17 16:50	05/03/17 18:37	7440-48-4	
Lead	1.0	ug/L	1.0	0.033	1	04/24/17 16:50	05/03/17 18:37	7439-92-1	
Molybdenum	0.32J	ug/L	1.0	0.058	1	04/24/17 16:50	05/03/17 18:37	7439-98-7	
Selenium	0.22J	ug/L	1.0	0.086	1	04/24/17 16:50	05/03/17 18:37	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	04/24/17 16:50	05/03/17 18:37	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	04/27/17 16:30	04/28/17 12:14	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	1030	mg/L	5.0	5.0	1		04/25/17 15:00		
9040 pH Analytical Method: EPA 9040									
pH	7.4	Std. Units	0.10	0.10	1		04/27/17 09:05		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	73.7	mg/L	10.0	5.0	10		04/26/17 12:06	16887-00-6	
Fluoride	0.13J	mg/L	0.20	0.10	1		04/26/17 11:51	16984-48-8	
Sulfate	393	mg/L	50.0	25.0	50		04/26/17 12:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

QC Batch: 473999 Analysis Method: EPA 6010
 QC Batch Method: EPA 3010 Analysis Description: 6010 MET
 Associated Lab Samples: 60242499001, 60242499002, 60242499003, 60242499004, 60242499005, 60242499006, 60242499007, 60242499008, 60242499009, 60242499010

METHOD BLANK: 1941428 Matrix: Water
 Associated Lab Samples: 60242499001, 60242499002, 60242499003, 60242499004, 60242499005, 60242499006, 60242499007, 60242499008, 60242499009, 60242499010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	3.6J	100	3.5	04/25/17 16:51	
Calcium	mg/L	ND	0.10	0.036	04/25/17 16:51	
Lithium	ug/L	ND	10.0	2.9	04/25/17 16:51	

LABORATORY CONTROL SAMPLE: 1941429

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	976	98	80-120	
Calcium	mg/L	10	10.1	101	80-120	
Lithium	ug/L	1000	1050	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1941430 1941431

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60242499001 Result	Spike Conc.	Spike Conc.	MS Result						
Boron	ug/L	565	1000	1000	1560	1580	100	101	75-125	1	20
Calcium	mg/L	61.5	10	10	71.6	72.6	102	111	75-125	1	20
Lithium	ug/L	21.8	1000	1000	1100	1110	108	108	75-125	1	20

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60242499

QC Batch: 474000 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60242499001, 60242499002, 60242499003, 60242499004, 60242499005, 60242499006, 60242499007, 60242499008, 60242499009, 60242499010

METHOD BLANK: 1941432 Matrix: Water
Associated Lab Samples: 60242499001, 60242499002, 60242499003, 60242499004, 60242499005, 60242499006, 60242499007, 60242499008, 60242499009, 60242499010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	0.026	05/03/17 17:25	
Arsenic	ug/L	ND	1.0	0.052	05/03/17 17:25	
Barium	ug/L	0.098J	1.0	0.095	05/03/17 17:25	
Beryllium	ug/L	ND	0.50	0.012	05/03/17 17:25	
Cadmium	ug/L	ND	0.50	0.018	05/03/17 17:25	
Chromium	ug/L	0.14J	1.0	0.054	05/03/17 17:25	
Cobalt	ug/L	ND	1.0	0.014	05/03/17 17:25	
Lead	ug/L	ND	1.0	0.033	05/03/17 17:25	
Molybdenum	ug/L	ND	1.0	0.058	05/03/17 17:25	
Selenium	ug/L	ND	1.0	0.086	05/03/17 17:25	
Thallium	ug/L	0.069J	1.0	0.036	05/03/17 17:25	

LABORATORY CONTROL SAMPLE: 1941433

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.0	100	80-120	
Arsenic	ug/L	40	40.0	100	80-120	
Barium	ug/L	40	39.6	99	80-120	
Beryllium	ug/L	40	40.3	101	80-120	
Cadmium	ug/L	40	39.3	98	80-120	
Chromium	ug/L	40	41.0	102	80-120	
Cobalt	ug/L	40	40.0	100	80-120	
Lead	ug/L	40	39.1	98	80-120	
Molybdenum	ug/L	40	41.6	104	80-120	
Selenium	ug/L	40	38.6	96	80-120	
Thallium	ug/L	40	37.6	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1941434 1941435

Parameter	Units	60242499002 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Antimony	ug/L	ND	40	40	40.2	39.8	100	99	75-125	1	20	
Arsenic	ug/L	0.25J	40	40	39.1	39.2	97	97	75-125	0	20	
Barium	ug/L	19.4	40	40	59.4	59.8	100	101	75-125	1	20	
Beryllium	ug/L	ND	40	40	32.6	32.2	82	81	75-125	1	20	
Cadmium	ug/L	0.20J	40	40	36.6	35.8	91	89	75-125	2	20	
Chromium	ug/L	1.0	40	40	40.0	40.7	97	99	75-125	2	20	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Parameter	Units	60242499002		1941434		1941435		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS Result	MSD Result							
Cobalt	ug/L	0.95J	40	40	38.9	38.4	95	94	75-125	1	20			
Lead	ug/L	0.20J	40	40	36.0	35.8	89	89	75-125	0	20			
Molybdenum	ug/L	0.44J	40	40	43.3	42.9	107	106	75-125	1	20			
Selenium	ug/L	ND	40	40	36.6	37.0	91	92	75-125	1	20			
Thallium	ug/L	0.049J	40	40	35.4	35.6	88	89	75-125	0	20			

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

QC Batch: 473939

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60242499001, 60242499002, 60242499003, 60242499004, 60242499005, 60242499006, 60242499007, 60242499008, 60242499009

METHOD BLANK: 1941301

Matrix: Water

Associated Lab Samples: 60242499001, 60242499002, 60242499003, 60242499004, 60242499005, 60242499006, 60242499007, 60242499008, 60242499009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	04/24/17 12:46	

LABORATORY CONTROL SAMPLE: 1941302

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	982	98	80-120	

SAMPLE DUPLICATE: 1941303

Parameter	Units	60242499001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	499	498	0	10	

SAMPLE DUPLICATE: 1941304

Parameter	Units	60242633002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	851	855	0	10	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

QC Batch: 474124

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60242499010

METHOD BLANK: 1941877

Matrix: Water

Associated Lab Samples: 60242499010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	04/25/17 14:57	

LABORATORY CONTROL SAMPLE: 1941878

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	972	97	80-120	

SAMPLE DUPLICATE: 1941879

Parameter	Units	60242499010 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1030	1020	1	10	

SAMPLE DUPLICATE: 1941880

Parameter	Units	60242716004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1710	1670	3	10	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

QC Batch: 473975 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 60242499001, 60242499002, 60242499003, 60242499004, 60242499005, 60242499006

SAMPLE DUPLICATE: 1941389

Parameter	Units	60242633001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.8	7.5	4	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

QC Batch: 474264 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 60242499007, 60242499008, 60242499009, 60242499010

SAMPLE DUPLICATE: 1942399

Parameter	Units	60242501006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	5.3	5.9	10	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

QC Batch: 474065 Analysis Method: EPA 9056
 QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
 Associated Lab Samples: 60242499001, 60242499002, 60242499003, 60242499004, 60242499005, 60242499006, 60242499007

METHOD BLANK: 1941686 Matrix: Water
 Associated Lab Samples: 60242499001, 60242499002, 60242499003, 60242499004, 60242499005, 60242499006, 60242499007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	04/25/17 17:50	
Fluoride	mg/L	ND	0.20	0.10	04/25/17 17:50	
Sulfate	mg/L	ND	1.0	0.50	04/25/17 17:50	

LABORATORY CONTROL SAMPLE: 1941687

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	80-120	
Fluoride	mg/L	2.5	2.5	98	80-120	
Sulfate	mg/L	5	5.1	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1941688 1941689

Parameter	Units	40148600005 Result	MS		MSD		MS		MSD		% Rec Limits	Max RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	1160 ug/L	5	5	6.0	6.2	97	100	80-120	2	15		
Fluoride	mg/L	0.64	2.5	2.5	3.2	3.3	104	105	80-120	1	15		

SAMPLE DUPLICATE: 1941690

Parameter	Units	60242499001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	54.8	53.1	3	15	
Fluoride	mg/L	0.24	0.24	2	15	
Sulfate	mg/L	190	184	3	15	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

QC Batch: 474218 Analysis Method: EPA 9056
 QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
 Associated Lab Samples: 60242499008, 60242499009, 60242499010

METHOD BLANK: 1942227 Matrix: Water

Associated Lab Samples: 60242499008, 60242499009, 60242499010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	04/26/17 08:27	
Fluoride	mg/L	ND	0.20	0.10	04/26/17 08:27	
Sulfate	mg/L	ND	1.0	0.50	04/26/17 08:27	

LABORATORY CONTROL SAMPLE: 1942228

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	80-120	
Fluoride	mg/L	2.5	2.4	98	80-120	
Sulfate	mg/L	5	5.0	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1942229 1942230

Parameter	Units	60242633004		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	Result	MSD Result	% Rec	% Rec					
Chloride	mg/L	12.9	5	5	18.4	18.3	109	109	80-120	0	15		
Fluoride	mg/L	0.22	2.5	2.5	2.9	2.9	107	107	80-120	0	15		
Sulfate	mg/L	ND	5	5	5.2	5.2	104	103	80-120	1	15		

SAMPLE DUPLICATE: 1942231

Parameter	Units	60242652004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	13.5	13.5	0	15	
Fluoride	mg/L	0.13J	0.13J		15	
Sulfate	mg/L	ND	ND		15	

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60242499001	MW-301		475139		
60242499002	MW-302		475139		
60242499003	MW-303		475139		
60242499004	MW-304		475139		
60242499005	MW-305		475139		
60242499006	MW-306		475139		
60242499008	MW-307		475139		
60242499009	MW-308		475139		
60242499010	MW-309		475139		
60242499001	MW-301	EPA 3010	473999	EPA 6010	474020
60242499002	MW-302	EPA 3010	473999	EPA 6010	474020
60242499003	MW-303	EPA 3010	473999	EPA 6010	474020
60242499004	MW-304	EPA 3010	473999	EPA 6010	474020
60242499005	MW-305	EPA 3010	473999	EPA 6010	474020
60242499006	MW-306	EPA 3010	473999	EPA 6010	474020
60242499007	FIELD BLANK	EPA 3010	473999	EPA 6010	474020
60242499008	MW-307	EPA 3010	473999	EPA 6010	474020
60242499009	MW-308	EPA 3010	473999	EPA 6010	474020
60242499010	MW-309	EPA 3010	473999	EPA 6010	474020
60242499001	MW-301	EPA 3010	474000	EPA 6020	474021
60242499002	MW-302	EPA 3010	474000	EPA 6020	474021
60242499003	MW-303	EPA 3010	474000	EPA 6020	474021
60242499004	MW-304	EPA 3010	474000	EPA 6020	474021
60242499005	MW-305	EPA 3010	474000	EPA 6020	474021
60242499006	MW-306	EPA 3010	474000	EPA 6020	474021
60242499007	FIELD BLANK	EPA 3010	474000	EPA 6020	474021
60242499008	MW-307	EPA 3010	474000	EPA 6020	474021
60242499009	MW-308	EPA 3010	474000	EPA 6020	474021
60242499010	MW-309	EPA 3010	474000	EPA 6020	474021
60242499001	MW-301	EPA 7470	474522	EPA 7470	474566
60242499002	MW-302	EPA 7470	474522	EPA 7470	474566
60242499003	MW-303	EPA 7470	474522	EPA 7470	474566
60242499004	MW-304	EPA 7470	474522	EPA 7470	474566
60242499005	MW-305	EPA 7470	474522	EPA 7470	474566
60242499006	MW-306	EPA 7470	474522	EPA 7470	474566
60242499007	FIELD BLANK	EPA 7470	474522	EPA 7470	474566
60242499008	MW-307	EPA 7470	474522	EPA 7470	474566
60242499009	MW-308	EPA 7470	474522	EPA 7470	474566
60242499010	MW-309	EPA 7470	474522	EPA 7470	474566
60242499001	MW-301	SM 2540C	473939		
60242499002	MW-302	SM 2540C	473939		
60242499003	MW-303	SM 2540C	473939		
60242499004	MW-304	SM 2540C	473939		
60242499005	MW-305	SM 2540C	473939		
60242499006	MW-306	SM 2540C	473939		
60242499007	FIELD BLANK	SM 2540C	473939		
60242499008	MW-307	SM 2540C	473939		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242499

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60242499009	MW-308	SM 2540C	473939		
60242499010	MW-309	SM 2540C	474124		
60242499001	MW-301	EPA 9040	473975		
60242499002	MW-302	EPA 9040	473975		
60242499003	MW-303	EPA 9040	473975		
60242499004	MW-304	EPA 9040	473975		
60242499005	MW-305	EPA 9040	473975		
60242499006	MW-306	EPA 9040	473975		
60242499007	FIELD BLANK	EPA 9040	474264		
60242499008	MW-307	EPA 9040	474264		
60242499009	MW-308	EPA 9040	474264		
60242499010	MW-309	EPA 9040	474264		
60242499001	MW-301	EPA 9056	474065		
60242499002	MW-302	EPA 9056	474065		
60242499003	MW-303	EPA 9056	474065		
60242499004	MW-304	EPA 9056	474065		
60242499005	MW-305	EPA 9056	474065		
60242499006	MW-306	EPA 9056	474065		
60242499007	FIELD BLANK	EPA 9056	474065		
60242499008	MW-307	EPA 9056	474218		
60242499009	MW-308	EPA 9056	474218		
60242499010	MW-309	EPA 9056	474218		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60242499



Client Name: SCS

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: 0677 74892820 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T-266 / T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 1.4 Corr. Factor CF +1.5 / CF +0.2 Corrected 2.9

Date and initials of person examining contents:

puh/21/17

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<u>PH</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<u>Added 5.0ml of HNO3 to EB BPIN.</u> <u>PH 6.0/2.0</u>
Cyanide water sample checks: <input checked="" type="checkbox"/> N/A		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

TDG

Comments/ Resolution: _____

Project Manager Review: [Signature] Date: 4-21-17

May 16, 2017

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60242519

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 21, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60242519001	MW-301	Water	04/19/17 17:10	04/21/17 09:20
60242519002	MW-302	Water	04/19/17 17:55	04/21/17 09:20
60242519003	MW-303	Water	04/19/17 18:45	04/21/17 09:20
60242519004	MW-304	Water	04/19/17 19:25	04/21/17 09:20
60242519005	MW-305	Water	04/19/17 20:10	04/21/17 09:20
60242519006	MW-306	Water	04/19/17 21:00	04/21/17 09:20
60242519007	FIELD BLANK	Water	04/20/17 12:50	04/21/17 09:20
60242519008	MW 307	Water	04/20/17 12:15	04/21/17 09:20
60242519009	MW 308	Water	04/20/17 13:35	04/21/17 09:20
60242519010	MW 309	Water	04/20/17 14:40	04/21/17 09:20

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60242519001	MW-301	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242519002	MW-302	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242519003	MW-303	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242519004	MW-304	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242519005	MW-305	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242519006	MW-306	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242519007	FIELD BLANK	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242519008	MW 307	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242519009	MW 308	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60242519010	MW 309	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Sample: MW-301 **Lab ID: 60242519001** Collected: 04/19/17 17:10 Received: 04/21/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.139 ± 0.509 (0.979) C:NA T:92%	pCi/L	05/06/17 19:10	13982-63-3	
Radium-228	EPA 904.0	0.492 ± 0.420 (0.845) C:69% T:86%	pCi/L	05/08/17 18:49	15262-20-1	
Total Radium	Total Radium Calculation	0.631 ± 0.929 (1.82)	pCi/L	05/16/17 15:47	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Sample: MW-302 **Lab ID: 60242519002** Collected: 04/19/17 17:55 Received: 04/21/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.342 ± 0.485 (0.822) C:NA T:92%	pCi/L	05/06/17 19:10	13982-63-3	
Radium-228	EPA 904.0	0.434 ± 0.437 (0.906) C:67% T:84%	pCi/L	05/08/17 18:46	15262-20-1	
Total Radium	Total Radium Calculation	0.776 ± 0.922 (1.73)	pCi/L	05/16/17 15:47	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Sample: MW-303 **Lab ID: 60242519003** Collected: 04/19/17 18:45 Received: 04/21/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.06 ± 0.676 (0.872) C:NA T:92%	pCi/L	05/06/17 19:22	13982-63-3	
Radium-228	EPA 904.0	0.556 ± 0.444 (0.884) C:66% T:84%	pCi/L	05/08/17 18:46	15262-20-1	
Total Radium	Total Radium Calculation	1.62 ± 1.12 (1.76)	pCi/L	05/16/17 15:47	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Sample: MW-304 **Lab ID: 60242519004** Collected: 04/19/17 19:25 Received: 04/21/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.894 ± 0.565 (0.638) C:NA T:86%	pCi/L	05/06/17 19:10	13982-63-3	
Radium-228	EPA 904.0	1.55 ± 0.578 (0.877) C:67% T:85%	pCi/L	05/08/17 18:46	15262-20-1	
Total Radium	Total Radium Calculation	2.44 ± 1.14 (1.52)	pCi/L	05/16/17 15:47	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Sample: MW-305 **Lab ID: 60242519005** Collected: 04/19/17 20:10 Received: 04/21/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.494 ± 0.502 (0.759) C:NA T:91%	pCi/L	05/06/17 19:24	13982-63-3	
Radium-228	EPA 904.0	0.179 ± 0.396 (0.879) C:69% T:78%	pCi/L	05/08/17 18:46	15262-20-1	
Total Radium	Total Radium Calculation	0.673 ± 0.898 (1.64)	pCi/L	05/16/17 15:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Sample: MW-306 **Lab ID: 60242519006** Collected: 04/19/17 21:00 Received: 04/21/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0761 ± 0.347 (0.707) C:NA T:82%	pCi/L	05/06/17 19:24	13982-63-3	
Radium-228	EPA 904.0	0.137 ± 0.401 (0.897) C:68% T:86%	pCi/L	05/08/17 18:46	15262-20-1	
Total Radium	Total Radium Calculation	0.213 ± 0.748 (1.60)	pCi/L	05/16/17 15:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Sample: FIELD BLANK **Lab ID: 60242519007** Collected: 04/20/17 12:50 Received: 04/21/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.332 ± 0.346 (0.488) C:NA T:96%	pCi/L	05/06/17 19:24	13982-63-3	
Radium-228	EPA 904.0	0.130 ± 0.414 (0.930) C:66% T:83%	pCi/L	05/08/17 18:46	15262-20-1	
Total Radium	Total Radium Calculation	0.462 ± 0.760 (1.42)	pCi/L	05/16/17 15:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Sample: MW 307 **Lab ID: 60242519008** Collected: 04/20/17 12:15 Received: 04/21/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.72 ± 0.663 (0.499) C:NA T:94%	pCi/L	05/08/17 19:47	13982-63-3	
Radium-228	EPA 904.0	1.05 ± 0.649 (1.22) C:77% T:52%	pCi/L	05/08/17 18:46	15262-20-1	
Total Radium	Total Radium Calculation	2.77 ± 1.31 (1.72)	pCi/L	05/16/17 15:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Sample: MW 308 **Lab ID: 60242519009** Collected: 04/20/17 13:35 Received: 04/21/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.173 ± 0.409 (0.916) C:NA T:88%	pCi/L	05/08/17 19:47	13982-63-3	
Radium-228	EPA 904.0	0.496 ± 0.456 (0.936) C:76% T:76%	pCi/L	05/08/17 18:46	15262-20-1	
Total Radium	Total Radium Calculation	0.496 ± 0.865 (1.85)	pCi/L	05/16/17 15:48	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Sample: MW 309 **Lab ID: 60242519010** Collected: 04/20/17 14:40 Received: 04/21/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.968 ± 0.591 (0.726) C:NA T:84%	pCi/L	05/08/17 19:47	13982-63-3	
Radium-228	EPA 904.0	1.26 ± 0.741 (1.37) C:68% T:51%	pCi/L	05/08/17 18:46	15262-20-1	
Total Radium	Total Radium Calculation	2.23 ± 1.33 (2.10)	pCi/L	05/16/17 15:48	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

QC Batch:	256704	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	60242519001, 60242519002, 60242519003, 60242519004, 60242519005, 60242519006, 60242519007, 60242519008, 60242519009, 60242519010		

METHOD BLANK:	1264281	Matrix:	Water
Associated Lab Samples:	60242519001, 60242519002, 60242519003, 60242519004, 60242519005, 60242519006, 60242519007, 60242519008, 60242519009, 60242519010		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.162 ± 0.408 (0.911) C:60% T:80%	pCi/L	05/08/17 14:58	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

QC Batch:	256703	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
Associated Lab Samples:	60242519001, 60242519002, 60242519003, 60242519004, 60242519005, 60242519006, 60242519007, 60242519008, 60242519009, 60242519010		

METHOD BLANK:	1264280	Matrix:	Water
Associated Lab Samples:	60242519001, 60242519002, 60242519003, 60242519004, 60242519005, 60242519006, 60242519007, 60242519008, 60242519009, 60242519010		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.319 ± 0.385 (0.587) C:NA T:88%	pCi/L	05/06/17 18:54	

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60242519

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60242519001	MW-301	EPA 903.1	256703		
60242519002	MW-302	EPA 903.1	256703		
60242519003	MW-303	EPA 903.1	256703		
60242519004	MW-304	EPA 903.1	256703		
60242519005	MW-305	EPA 903.1	256703		
60242519006	MW-306	EPA 903.1	256703		
60242519007	FIELD BLANK	EPA 903.1	256703		
60242519008	MW 307	EPA 903.1	256703		
60242519009	MW 308	EPA 903.1	256703		
60242519010	MW 309	EPA 903.1	256703		
60242519001	MW-301	EPA 904.0	256704		
60242519002	MW-302	EPA 904.0	256704		
60242519003	MW-303	EPA 904.0	256704		
60242519004	MW-304	EPA 904.0	256704		
60242519005	MW-305	EPA 904.0	256704		
60242519006	MW-306	EPA 904.0	256704		
60242519007	FIELD BLANK	EPA 904.0	256704		
60242519008	MW 307	EPA 904.0	256704		
60242519009	MW 308	EPA 904.0	256704		
60242519010	MW 309	EPA 904.0	256704		
60242519001	MW-301	Total Radium Calculation	258651		
60242519002	MW-302	Total Radium Calculation	258651		
60242519003	MW-303	Total Radium Calculation	258651		
60242519004	MW-304	Total Radium Calculation	258651		
60242519005	MW-305	Total Radium Calculation	258652		
60242519006	MW-306	Total Radium Calculation	258652		
60242519007	FIELD BLANK	Total Radium Calculation	258652		
60242519008	MW 307	Total Radium Calculation	258652		
60242519009	MW 308	Total Radium Calculation	258652		
60242519010	MW 309	Total Radium Calculation	258652		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60242519



Client Name: SCS Engineers

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: 8677 7489 2808 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags 164/21 Foam None Other

Thermometer Used: T-266 / T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 17.0 Corr. Factor CF +1.5 / CF +0.2 Corrected 18.5

Date and initials of person examining contents: 5/9/17

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Field blank came unpreserved, added 10.0 mL to each BPA, Final pH 2.0
Cyanide water sample checks: <input checked="" type="checkbox"/> N/A		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: Copy COC to Client? Y / Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature] Date: 4-21-17

Chain of Custody

30217006 -

 Pace Analytical®
 www.paceanalytical.com

Workorder: 60242519 Subcontract To Workorder Name: Ottumwa Gen. Station/25216072 Owner Received Date: 4/21/2017 Results Requested By: 5/16/2017

Trudy Gipson
 Pace Analytical Kansas
 9608 Loiret Blvd.
 Lenexa, KS 66219
 Phone 1(913)563-1405

Pace Analytical Pittsburgh
 1638 Roseytown Road
 Suites 2,3, & 4
 Greensburg, PA 15601
 Phone (724)850-5600

Requested Analysis

WO#: 30217006



30217006

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		903.1 Radium-226	904.0 Radium-228	Total Radium	Comments
						HNO3					
1	MW-301	PS	4/19/2017 17:10	60242519001	Water	2		X	X	X	001
2	MW-302	PS	4/19/2017 17:55	60242519002	Water	2		X	X	X	002
3	MW-303	PS	4/19/2017 18:45	60242519003	Water	2		X	X	X	003
4	MW-304	PS	4/19/2017 19:25	60242519004	Water	2		X	X	X	004
5	MW-305	PS	4/19/2017 20:10	60242519005	Water	2		X	X	X	005
6	MW-306	PS	4/19/2017 21:00	60242519006	Water	2		X	X	X	006
7	FIELD BLANK	PS	4/20/2017 12:50	60242519007	Water	2		X	X	X	007
8	MW 307	PS	4/20/2017 12:15	60242519008	Water	2		X	X	X	008
9	MW 308	PS	4/20/2017 13:35	60242519009	Water	2		X	X	X	009
10	MW 309	PS	4/20/2017 14:40	60242519010	Water	2		X	X	X	010

Transfers	Released By	Date/Time	Received	Date/Time
1		4/21/17 17:00	Alyssa R. Muddery	4/21/17 1000
2				
3				

Cooler Temperature on Receipt NA °C Custody Seal Y or N Received on Ice Y or N Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Pittsburgh

ML

30217006



Client Name: PaceKS

Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: Rippedoff

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Thermometer Used NIA Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ARM 4/25/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	/			1.
Chain of Custody Filled Out:	/			2.
Chain of Custody Relinquished:	/			3.
Sampler Name & Signature on COC:	/	/		4.
Sample Labels match COC: -Includes date/time/ID Matrix: <u>WT</u>	/			5.
Samples Arrived within Hold Time:	/			6.
Short Hold Time Analysis (<72hr remaining):		/		7.
Rush Turn Around Time Requested:		/		8.
Sufficient Volume:	/			9.
Correct Containers Used: -Pace Containers Used:	/	/		10.
Containers Intact:	/			11.
Orthophosphate field filtered			/	12.
Organic Samples checked for dechlorination:			/	13.
Filtered volume received for Dissolved tests			/	14. <u>ARM 4/25/17</u>
All containers have been checked for preservation.	/			15. <u>PH 2</u>
All containers needing preservation are found to be in compliance with EPA recommendation.	/			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: <u>ARM</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):			/	16.
Trip Blank Present:			/	17.
Trip Blank Custody Seals Present			/	
Rad Aqueous Samples Screened > 0.5 mrem/hr		/		Initial when completed: <u>ARM</u> Date: <u>4/25/17</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

A check in this box indicates that additional information has been stored in ereports.

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

A7 Round 7 Background Sampling, Analytical Laboratory Report

July 05, 2017

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60247194

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on June 23, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60247194001	MW-301	Water	06/20/17 16:15	06/23/17 08:35
60247194002	MW-302	Water	06/20/17 17:15	06/23/17 08:35
60247194003	MW-303	Water	06/20/17 18:15	06/23/17 08:35
60247194004	MW-304	Water	06/21/17 08:45	06/23/17 08:35
60247194005	MW-305	Water	06/21/17 13:00	06/23/17 08:35
60247194006	MW-306	Water	06/21/17 12:15	06/23/17 08:35
60247194007	MW-307	Water	06/21/17 10:05	06/23/17 08:35
60247194008	MW-308	Water	06/21/17 10:40	06/23/17 08:35
60247194009	MW-309	Water	06/21/17 11:10	06/23/17 08:35
60247194010	FIELD BLANK	Water	06/21/17 12:30	06/23/17 08:35

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60247194001	MW-301	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60247194002	MW-302	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60247194003	MW-303	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60247194004	MW-304	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60247194005	MW-305	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60247194006	MW-306	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60247194007	MW-307	EPA 6010	TDS	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60247194008	MW-308	EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
		EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
60247194009	MW-309	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K
		EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
60247194010	FIELD BLANK	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	RAD	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Sample: MW-301		Lab ID: 60247194001		Collected: 06/20/17 16:15		Received: 06/23/17 08:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method:									
Collected By	Client				1		06/20/17 16:15		
Field pH	6.31	Std. Units	0.10	0.050	1		06/20/17 16:15		
Field Temperature	17.3	deg C	0.50	0.25	1		06/20/17 16:15		
Field Specific Conductance	758	umhos/cm	1.0	1.0	1		06/20/17 16:15		
Field Oxidation Potential	67.2	mV			1		06/20/17 16:15		
Oxygen, Dissolved	4.34	mg/L			1		06/20/17 16:15	7782-44-7	
Turbidity	0.38	NTU	1.0	1.0	1		06/20/17 16:15		
Groundwater Elevation	681.91	feet			1		06/20/17 16:15		
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	657	ug/L	100	3.5	1	06/28/17 17:00	06/29/17 18:31	7440-42-8	
Calcium	59.3	mg/L	0.10	0.036	1	06/28/17 17:00	06/29/17 18:31	7440-70-2	
Lithium	24.9	ug/L	10.0	2.9	1	06/28/17 17:00	06/29/17 18:31	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.054J	ug/L	1.0	0.026	1	06/28/17 17:00	06/29/17 20:03	7440-36-0	
Arsenic	0.15J	ug/L	1.0	0.052	1	06/28/17 17:00	06/29/17 20:03	7440-38-2	
Barium	39.9	ug/L	1.0	0.095	1	06/28/17 17:00	06/29/17 20:03	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	06/28/17 17:00	06/29/17 20:03	7440-41-7	
Cadmium	0.044J	ug/L	0.50	0.018	1	06/28/17 17:00	06/29/17 20:03	7440-43-9	
Chromium	0.25J	ug/L	1.0	0.054	1	06/28/17 17:00	06/29/17 20:03	7440-47-3	B
Cobalt	1.0J	ug/L	1.0	0.014	1	06/28/17 17:00	06/29/17 20:03	7440-48-4	
Lead	0.10J	ug/L	1.0	0.033	1	06/28/17 17:00	06/29/17 20:03	7439-92-1	
Molybdenum	0.79J	ug/L	1.0	0.058	1	06/28/17 17:00	06/29/17 20:03	7439-98-7	B
Selenium	5.5	ug/L	1.0	0.086	1	06/28/17 17:00	06/29/17 20:03	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	06/28/17 17:00	06/29/17 20:03	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	07/03/17 14:32	07/05/17 09:44	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	490	mg/L	5.0	5.0	1		06/26/17 07:55		
9040 pH									
Analytical Method: EPA 9040									
pH	6.5	Std. Units	0.10	0.10	1		06/27/17 13:16		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	69.8	mg/L	5.0	2.5	5		06/26/17 15:23	16887-00-6	
Fluoride	0.26	mg/L	0.20	0.10	1		06/26/17 15:06	16984-48-8	
Sulfate	166	mg/L	20.0	10.0	20		06/26/17 15:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Sample: MW-302		Lab ID: 60247194002		Collected: 06/20/17 17:15		Received: 06/23/17 08:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method:									
Collected By	Client				1		06/20/17 17:15		
Field pH	6.67	Std. Units	0.10	0.050	1		06/20/17 17:15		
Field Temperature	13.4	deg C	0.50	0.25	1		06/20/17 17:15		
Field Specific Conductance	2085	umhos/cm	1.0	1.0	1		06/20/17 17:15		
Field Oxidation Potential	21.0	mV			1		06/20/17 17:15		
Oxygen, Dissolved	0.12	mg/L			1		06/20/17 17:15	7782-44-7	
Turbidity	2.63	NTU	1.0	1.0	1		06/20/17 17:15		
Groundwater Elevation	655.65	feet			1		06/20/17 17:15		
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	1180	ug/L	100	3.5	1	06/28/17 17:00	06/29/17 18:34	7440-42-8	
Calcium	175	mg/L	0.10	0.036	1	06/28/17 17:00	06/29/17 18:34	7440-70-2	
Lithium	9.7J	ug/L	10.0	2.9	1	06/28/17 17:00	06/29/17 18:34	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.052J	ug/L	1.0	0.026	1	06/28/17 17:00	06/29/17 20:07	7440-36-0	
Arsenic	0.083J	ug/L	1.0	0.052	1	06/28/17 17:00	06/29/17 20:07	7440-38-2	
Barium	18.2	ug/L	1.0	0.095	1	06/28/17 17:00	06/29/17 20:07	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	06/28/17 17:00	06/29/17 20:07	7440-41-7	
Cadmium	0.19J	ug/L	0.50	0.018	1	06/28/17 17:00	06/29/17 20:07	7440-43-9	
Chromium	0.58J	ug/L	1.0	0.054	1	06/28/17 17:00	06/29/17 20:07	7440-47-3	B
Cobalt	0.86J	ug/L	1.0	0.014	1	06/28/17 17:00	06/29/17 20:07	7440-48-4	
Lead	0.081J	ug/L	1.0	0.033	1	06/28/17 17:00	06/29/17 20:07	7439-92-1	
Molybdenum	0.38J	ug/L	1.0	0.058	1	06/28/17 17:00	06/29/17 20:07	7439-98-7	B
Selenium	ND	ug/L	1.0	0.086	1	06/28/17 17:00	06/29/17 20:07	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	06/28/17 17:00	06/29/17 20:07	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	07/03/17 14:32	07/05/17 09:51	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	1670	mg/L	5.0	5.0	1		06/26/17 07:55		
9040 pH									
Analytical Method: EPA 9040									
pH	6.6	Std. Units	0.10	0.10	1		06/27/17 13:17		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	253	mg/L	20.0	10.0	20		06/26/17 16:11	16887-00-6	
Fluoride	0.26	mg/L	0.20	0.10	1		06/26/17 15:55	16984-48-8	
Sulfate	858	mg/L	100	50.0	100		06/26/17 16:27	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Sample: MW-303		Lab ID: 60247194003		Collected: 06/20/17 18:15		Received: 06/23/17 08:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		06/20/17 18:15		
Field pH	6.81	Std. Units	0.10	0.050	1		06/20/17 18:15		
Field Temperature	14.1	deg C	0.50	0.25	1		06/20/17 18:15		
Field Specific Conductance	1670	umhos/cm	1.0	1.0	1		06/20/17 18:15		
Field Oxidation Potential	8.6	mV			1		06/20/17 18:15		
Oxygen, Dissolved	0.08	mg/L			1		06/20/17 18:15	7782-44-7	
Turbidity	2.77	NTU	1.0	1.0	1		06/20/17 18:15		
Groundwater Elevation	652.42	feet			1		06/20/17 18:15		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	834	ug/L	100	3.5	1	06/28/17 17:00	06/29/17 18:36	7440-42-8	
Calcium	210	mg/L	0.10	0.036	1	06/28/17 17:00	06/29/17 18:36	7440-70-2	
Lithium	3.4J	ug/L	10.0	2.9	1	06/28/17 17:00	06/29/17 18:36	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.19J	ug/L	1.0	0.026	1	06/28/17 17:00	06/29/17 20:11	7440-36-0	
Arsenic	0.33J	ug/L	1.0	0.052	1	06/28/17 17:00	06/29/17 20:11	7440-38-2	
Barium	76.4	ug/L	1.0	0.095	1	06/28/17 17:00	06/29/17 20:11	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	06/28/17 17:00	06/29/17 20:11	7440-41-7	
Cadmium	0.52	ug/L	0.50	0.018	1	06/28/17 17:00	06/29/17 20:11	7440-43-9	
Chromium	0.37J	ug/L	1.0	0.054	1	06/28/17 17:00	06/29/17 20:11	7440-47-3	B
Cobalt	1.9	ug/L	1.0	0.014	1	06/28/17 17:00	06/29/17 20:11	7440-48-4	
Lead	0.070J	ug/L	1.0	0.033	1	06/28/17 17:00	06/29/17 20:11	7439-92-1	
Molybdenum	0.81J	ug/L	1.0	0.058	1	06/28/17 17:00	06/29/17 20:11	7439-98-7	B
Selenium	0.47J	ug/L	1.0	0.086	1	06/28/17 17:00	06/29/17 20:11	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	06/28/17 17:00	06/29/17 20:11	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	07/03/17 14:32	07/05/17 09:53	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1210	mg/L	5.0	5.0	1		06/26/17 07:56		
9040 pH		Analytical Method: EPA 9040							
pH	6.8	Std. Units	0.10	0.10	1		06/27/17 13:19		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	186	mg/L	20.0	10.0	20		06/26/17 17:00	16887-00-6	
Fluoride	0.23	mg/L	0.20	0.10	1		06/26/17 16:44	16984-48-8	
Sulfate	284	mg/L	20.0	10.0	20		06/26/17 17:00	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Sample: MW-304		Lab ID: 60247194004		Collected: 06/21/17 08:45		Received: 06/23/17 08:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		06/21/17 08:45		
Field pH	7.29	Std. Units	0.10	0.050	1		06/21/17 08:45		
Field Temperature	13.3	deg C	0.50	0.25	1		06/21/17 08:45		
Field Specific Conductance	2029	umhos/cm	1.0	1.0	1		06/21/17 08:45		
Field Oxidation Potential	-66.6	mV			1		06/21/17 08:45		
Oxygen, Dissolved	0.10	mg/L			1		06/21/17 08:45	7782-44-7	
Turbidity	1.64	NTU	1.0	1.0	1		06/21/17 08:45		
Groundwater Elevation	654.75	feet			1		06/21/17 08:45		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	982	ug/L	100	3.5	1	06/28/17 17:00	06/29/17 18:38	7440-42-8	
Calcium	126	mg/L	0.10	0.036	1	06/28/17 17:00	06/29/17 18:38	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	06/28/17 17:00	06/29/17 18:38	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.060J	ug/L	1.0	0.026	1	06/28/17 17:00	06/29/17 20:16	7440-36-0	
Arsenic	0.57J	ug/L	1.0	0.052	1	06/28/17 17:00	06/29/17 20:16	7440-38-2	
Barium	87.1	ug/L	1.0	0.095	1	06/28/17 17:00	06/29/17 20:16	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	06/28/17 17:00	06/29/17 20:16	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	06/28/17 17:00	06/29/17 20:16	7440-43-9	
Chromium	0.60J	ug/L	1.0	0.054	1	06/28/17 17:00	06/29/17 20:16	7440-47-3	B
Cobalt	0.36J	ug/L	1.0	0.014	1	06/28/17 17:00	06/29/17 20:16	7440-48-4	
Lead	0.081J	ug/L	1.0	0.033	1	06/28/17 17:00	06/29/17 20:16	7439-92-1	
Molybdenum	1.5	ug/L	1.0	0.058	1	06/28/17 17:00	06/29/17 20:16	7439-98-7	
Selenium	0.14J	ug/L	1.0	0.086	1	06/28/17 17:00	06/29/17 20:16	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	06/28/17 17:00	06/29/17 20:16	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	07/03/17 14:32	07/05/17 09:55	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1240	mg/L	5.0	5.0	1		06/26/17 07:58		
9040 pH		Analytical Method: EPA 9040							
pH	7.2	Std. Units	0.10	0.10	1		06/29/17 13:00		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	382	mg/L	50.0	25.0	50		06/27/17 15:00	16887-00-6	
Fluoride	1.0	mg/L	0.20	0.10	1		06/26/17 17:16	16984-48-8	
Sulfate	254	mg/L	25.0	12.5	25		06/26/17 17:32	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Sample: MW-305		Lab ID: 60247194005		Collected: 06/21/17 13:00		Received: 06/23/17 08:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		06/21/17 13:00		
Field pH	7.06	Std. Units	0.10	0.050	1		06/21/17 13:00		
Field Temperature	13.3	deg C	0.50	0.25	1		06/21/17 13:00		
Field Specific Conductance	1730	umhos/cm	1.0	1.0	1		06/21/17 13:00		
Field Oxidation Potential	-4.5	mV			1		06/21/17 13:00		
Oxygen, Dissolved	0.06	mg/L			1		06/21/17 13:00	7782-44-7	
Turbidity	1.9	NTU	1.0	1.0	1		06/21/17 13:00		
Groundwater Elevation	661.26	feet			1		06/21/17 13:00		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	889	ug/L	100	3.5	1	06/28/17 17:00	06/29/17 18:41	7440-42-8	
Calcium	93.8	mg/L	0.10	0.036	1	06/28/17 17:00	06/29/17 18:41	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	06/28/17 17:00	06/29/17 18:41	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.12J	ug/L	1.0	0.026	1	06/28/17 17:00	06/29/17 20:20	7440-36-0	
Arsenic	0.37J	ug/L	1.0	0.052	1	06/28/17 17:00	06/29/17 20:20	7440-38-2	
Barium	110	ug/L	1.0	0.095	1	06/28/17 17:00	06/29/17 20:20	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	06/28/17 17:00	06/29/17 20:20	7440-41-7	
Cadmium	0.039J	ug/L	0.50	0.018	1	06/28/17 17:00	06/29/17 20:20	7440-43-9	
Chromium	0.22J	ug/L	1.0	0.054	1	06/28/17 17:00	06/29/17 20:20	7440-47-3	B
Cobalt	14.4	ug/L	1.0	0.014	1	06/28/17 17:00	06/29/17 20:20	7440-48-4	
Lead	ND	ug/L	1.0	0.033	1	06/28/17 17:00	06/29/17 20:20	7439-92-1	
Molybdenum	5.8	ug/L	1.0	0.058	1	06/28/17 17:00	06/29/17 20:20	7439-98-7	
Selenium	0.16J	ug/L	1.0	0.086	1	06/28/17 17:00	06/29/17 20:20	7782-49-2	
Thallium	0.29J	ug/L	1.0	0.036	1	06/28/17 17:00	06/29/17 20:20	7440-28-0	B
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	07/03/17 14:32	07/05/17 09:57	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1010	mg/L	5.0	5.0	1		06/26/17 07:58		
9040 pH		Analytical Method: EPA 9040							
pH	7.1	Std. Units	0.10	0.10	1		06/27/17 13:30		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	290	mg/L	20.0	10.0	20		06/26/17 18:53	16887-00-6	
Fluoride	0.40	mg/L	0.20	0.10	1		06/26/17 18:20	16984-48-8	
Sulfate	121	mg/L	10.0	5.0	10		06/26/17 18:37	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Sample: MW-306		Lab ID: 60247194006		Collected: 06/21/17 12:15		Received: 06/23/17 08:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		06/21/17 12:15		
Field pH	6.71	Std. Units	0.10	0.050	1		06/21/17 12:15		
Field Temperature	13.4	deg C	0.50	0.25	1		06/21/17 12:15		
Field Specific Conductance	1151	umhos/cm	1.0	1.0	1		06/21/17 12:15		
Field Oxidation Potential	15.1	mV			1		06/21/17 12:15		
Oxygen, Dissolved	0.07	mg/L			1		06/21/17 12:15	7782-44-7	
Turbidity	0.14	NTU	1.0	1.0	1		06/21/17 12:15		
Groundwater Elevation	669.94	feet			1		06/21/17 12:15		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	784	ug/L	100	3.5	1	06/28/17 17:00	06/29/17 18:48	7440-42-8	
Calcium	75.6	mg/L	0.10	0.036	1	06/28/17 17:00	06/29/17 18:48	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	06/28/17 17:00	06/29/17 18:48	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.13J	ug/L	1.0	0.026	1	06/28/17 17:00	06/29/17 20:24	7440-36-0	
Arsenic	0.41J	ug/L	1.0	0.052	1	06/28/17 17:00	06/29/17 20:24	7440-38-2	
Barium	48.7	ug/L	1.0	0.095	1	06/28/17 17:00	06/29/17 20:24	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	06/28/17 17:00	06/29/17 20:24	7440-41-7	
Cadmium	0.65	ug/L	0.50	0.018	1	06/28/17 17:00	06/29/17 20:24	7440-43-9	
Chromium	0.57J	ug/L	1.0	0.054	1	06/28/17 17:00	06/29/17 20:24	7440-47-3	B
Cobalt	5.2	ug/L	1.0	0.014	1	06/28/17 17:00	06/29/17 20:24	7440-48-4	
Lead	0.10J	ug/L	1.0	0.033	1	06/28/17 17:00	06/29/17 20:24	7439-92-1	
Molybdenum	4.6	ug/L	1.0	0.058	1	06/28/17 17:00	06/29/17 20:24	7439-98-7	
Selenium	0.088J	ug/L	1.0	0.086	1	06/28/17 17:00	06/29/17 20:24	7782-49-2	
Thallium	0.082J	ug/L	1.0	0.036	1	06/28/17 17:00	06/29/17 20:24	7440-28-0	B
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	07/03/17 14:32	07/05/17 10:04	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	775	mg/L	5.0	5.0	1		06/26/17 07:59		
9040 pH		Analytical Method: EPA 9040							
pH	6.8	Std. Units	0.10	0.10	1		06/27/17 13:26		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	56.0	mg/L	5.0	2.5	5		06/26/17 19:25	16887-00-6	
Fluoride	ND	mg/L	0.20	0.10	1		06/26/17 19:09	16984-48-8	
Sulfate	282	mg/L	20.0	10.0	20		06/26/17 19:41	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60247194

Sample: MW-307		Lab ID: 60247194007		Collected: 06/21/17 10:05		Received: 06/23/17 08:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		06/21/17 10:05		
Field pH	6.82	Std. Units	0.10	0.050	1		06/21/17 10:05		
Field Temperature	12.7	deg C	0.50	0.25	1		06/21/17 10:05		
Field Specific Conductance	1557	umhos/cm	1.0	1.0	1		06/21/17 10:05		
Field Oxidation Potential	-23.1	mV			1		06/21/17 10:05		
Oxygen, Dissolved	0.08	mg/L			1		06/21/17 10:05	7782-44-7	
Turbidity	34.94	NTU	1.0	1.0	1		06/21/17 10:05		
Groundwater Elevation	649.85	feet			1		06/21/17 10:05		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	197	ug/L	100	3.5	1	06/28/17 17:00	06/29/17 18:50	7440-42-8	
Calcium	229	mg/L	0.10	0.036	1	06/28/17 17:00	06/29/17 18:50	7440-70-2	
Lithium	11.2	ug/L	10.0	2.9	1	06/28/17 17:00	06/29/17 18:50	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	0.026	1	06/28/17 17:00	06/29/17 20:29	7440-36-0	
Arsenic	0.62J	ug/L	1.0	0.052	1	06/28/17 17:00	06/29/17 20:29	7440-38-2	
Barium	132	ug/L	1.0	0.095	1	06/28/17 17:00	06/29/17 20:29	7440-39-3	
Beryllium	0.016J	ug/L	0.50	0.012	1	06/28/17 17:00	06/29/17 20:29	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	06/28/17 17:00	06/29/17 20:29	7440-43-9	
Chromium	1.0	ug/L	1.0	0.054	1	06/28/17 17:00	06/29/17 20:29	7440-47-3	
Cobalt	1.1	ug/L	1.0	0.014	1	06/28/17 17:00	06/29/17 20:29	7440-48-4	
Lead	0.26J	ug/L	1.0	0.033	1	06/28/17 17:00	06/29/17 20:29	7439-92-1	
Molybdenum	0.31J	ug/L	1.0	0.058	1	06/28/17 17:00	06/29/17 20:29	7439-98-7	B
Selenium	0.11J	ug/L	1.0	0.086	1	06/28/17 17:00	06/29/17 20:29	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	06/28/17 17:00	06/29/17 20:29	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	07/03/17 14:32	07/05/17 10:06	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1070	mg/L	5.0	5.0	1		06/26/17 07:59		
9040 pH		Analytical Method: EPA 9040							
pH	6.8	Std. Units	0.10	0.10	1		06/27/17 13:22		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	213	mg/L	20.0	10.0	20		06/26/17 20:30	16887-00-6	
Fluoride	0.16J	mg/L	0.20	0.10	1		06/26/17 19:58	16984-48-8	
Sulfate	110	mg/L	10.0	5.0	10		06/26/17 20:14	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Sample: MW-308		Lab ID: 60247194008		Collected: 06/21/17 10:40		Received: 06/23/17 08:35		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		06/21/17 10:40		
Field pH	6.93	Std. Units	0.10	0.050	1		06/21/17 10:40		
Field Temperature	12.2	deg C	0.50	0.25	1		06/21/17 10:40		
Field Specific Conductance	1467	umhos/cm	1.0	1.0	1		06/21/17 10:40		
Field Oxidation Potential	-29.1	mV			1		06/21/17 10:40		
Oxygen, Dissolved	0.03	mg/L			1		06/21/17 10:40	7782-44-7	
Turbidity	0.84	NTU	1.0	1.0	1		06/21/17 10:40		
Groundwater Elevation	648.26	feet			1		06/21/17 10:40		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	182	ug/L	100	3.5	1	06/28/17 17:00	06/29/17 18:52	7440-42-8	
Calcium	209	mg/L	0.10	0.036	1	06/28/17 17:00	06/29/17 18:52	7440-70-2	
Lithium	12.7	ug/L	10.0	2.9	1	06/28/17 17:00	06/29/17 18:52	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.039J	ug/L	1.0	0.026	1	06/28/17 17:00	06/29/17 20:33	7440-36-0	
Arsenic	0.14J	ug/L	1.0	0.052	1	06/28/17 17:00	06/29/17 20:33	7440-38-2	
Barium	125	ug/L	1.0	0.095	1	06/28/17 17:00	06/29/17 20:33	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	06/28/17 17:00	06/29/17 20:33	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	06/28/17 17:00	06/29/17 20:33	7440-43-9	
Chromium	0.34J	ug/L	1.0	0.054	1	06/28/17 17:00	06/29/17 20:33	7440-47-3	B
Cobalt	0.25J	ug/L	1.0	0.014	1	06/28/17 17:00	06/29/17 20:33	7440-48-4	
Lead	ND	ug/L	1.0	0.033	1	06/28/17 17:00	06/29/17 20:33	7439-92-1	
Molybdenum	0.50J	ug/L	1.0	0.058	1	06/28/17 17:00	06/29/17 20:33	7439-98-7	B
Selenium	ND	ug/L	1.0	0.086	1	06/28/17 17:00	06/29/17 20:33	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	06/28/17 17:00	06/29/17 20:33	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	07/03/17 14:32	07/05/17 10:08	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1050	mg/L	5.0	5.0	1		06/26/17 08:00		
9040 pH		Analytical Method: EPA 9040							
pH	7.0	Std. Units	0.10	0.10	1		06/27/17 13:24		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	146	mg/L	20.0	10.0	20		06/26/17 20:46	16887-00-6	
Fluoride	0.12J	mg/L	0.20	0.10	1		06/26/17 22:07	16984-48-8	
Sulfate	303	mg/L	20.0	10.0	20		06/26/17 20:46	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Sample: MW-309 **Lab ID: 60247194009** Collected: 06/21/17 11:10 Received: 06/23/17 08:35 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
Field Data									
Analytical Method:									
Collected By	Client				1		06/21/17 11:10		
Field pH	7.17	Std. Units	0.10	0.050	1		06/21/17 11:10		
Field Temperature	12.4	deg C	0.50	0.25	1		06/21/17 11:10		
Field Specific Conductance	1363	umhos/cm	1.0	1.0	1		06/21/17 11:10		
Field Oxidation Potential	-34.8	mV			1		06/21/17 11:10		
Oxygen, Dissolved	0.06	mg/L			1		06/21/17 11:10	7782-44-7	
Turbidity	20.33	NTU	1.0	1.0	1		06/21/17 11:10		
Groundwater Elevation	647.6	feet			1		06/21/17 11:10		
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	1250	ug/L	100	3.5	1	06/28/17 17:00	06/29/17 18:55	7440-42-8	
Calcium	136	mg/L	0.10	0.036	1	06/28/17 17:00	06/29/17 18:55	7440-70-2	
Lithium	7.3J	ug/L	10.0	2.9	1	06/28/17 17:00	06/29/17 18:55	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.041J	ug/L	1.0	0.026	1	06/28/17 17:00	06/29/17 20:37	7440-36-0	
Arsenic	0.52J	ug/L	1.0	0.052	1	06/28/17 17:00	06/29/17 20:37	7440-38-2	
Barium	48.7	ug/L	1.0	0.095	1	06/28/17 17:00	06/29/17 20:37	7440-39-3	
Beryllium	0.025J	ug/L	0.50	0.012	1	06/28/17 17:00	06/29/17 20:37	7440-41-7	
Cadmium	0.033J	ug/L	0.50	0.018	1	06/28/17 17:00	06/29/17 20:37	7440-43-9	
Chromium	1.8	ug/L	1.0	0.054	1	06/28/17 17:00	06/29/17 20:37	7440-47-3	
Cobalt	2.4	ug/L	1.0	0.014	1	06/28/17 17:00	06/29/17 20:37	7440-48-4	
Lead	0.50J	ug/L	1.0	0.033	1	06/28/17 17:00	06/29/17 20:37	7439-92-1	
Molybdenum	0.28J	ug/L	1.0	0.058	1	06/28/17 17:00	06/29/17 20:37	7439-98-7	B
Selenium	ND	ug/L	1.0	0.086	1	06/28/17 17:00	06/29/17 20:37	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	06/28/17 17:00	06/29/17 20:37	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	07/03/17 14:32	07/05/17 10:10	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	1020	mg/L	5.0	5.0	1		06/26/17 08:00		
9040 pH									
Analytical Method: EPA 9040									
pH	7.2	Std. Units	0.10	0.10	1		06/27/17 13:25		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	75.5	mg/L	10.0	5.0	10		06/26/17 23:12	16887-00-6	
Fluoride	0.16J	mg/L	0.20	0.10	1		06/26/17 22:56	16984-48-8	
Sulfate	415	mg/L	50.0	25.0	50		06/26/17 23:28	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Sample: FIELD BLANK Lab ID: 60247194010 Collected: 06/21/17 12:30 Received: 06/23/17 08:35 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	4.8J	ug/L	100	3.5	1	06/28/17 17:00	06/29/17 18:57	7440-42-8	
Calcium	ND	mg/L	0.10	0.036	1	06/28/17 17:00	06/29/17 18:57	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	06/28/17 17:00	06/29/17 18:57	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.026	1	06/28/17 17:00	06/29/17 20:55	7440-36-0	
Arsenic	ND	ug/L	1.0	0.052	1	06/28/17 17:00	06/29/17 20:55	7440-38-2	
Barium	ND	ug/L	1.0	0.095	1	06/28/17 17:00	06/29/17 20:55	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	06/28/17 17:00	06/29/17 20:55	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	06/28/17 17:00	06/29/17 20:55	7440-43-9	
Chromium	0.46J	ug/L	1.0	0.054	1	06/28/17 17:00	06/29/17 20:55	7440-47-3	B
Cobalt	ND	ug/L	1.0	0.014	1	06/28/17 17:00	06/29/17 20:55	7440-48-4	
Lead	0.051J	ug/L	1.0	0.033	1	06/28/17 17:00	06/29/17 20:55	7439-92-1	
Molybdenum	ND	ug/L	1.0	0.058	1	06/28/17 17:00	06/29/17 20:55	7439-98-7	
Selenium	ND	ug/L	1.0	0.086	1	06/28/17 17:00	06/29/17 20:55	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	06/28/17 17:00	06/29/17 20:55	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	07/03/17 14:32	07/05/17 10:13	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	ND	mg/L	5.0	5.0	1		06/26/17 08:01		
9040 pH Analytical Method: EPA 9040									
pH	6.7	Std. Units	0.10	0.10	1		06/27/17 13:29		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	ND	mg/L	1.0	0.50	1		06/26/17 14:02	16887-00-6	
Fluoride	ND	mg/L	0.20	0.10	1		06/26/17 14:02	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		06/26/17 14:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

QC Batch: 483788

Analysis Method: EPA 7470

QC Batch Method: EPA 7470

Analysis Description: 7470 Mercury

Associated Lab Samples: 60247194001, 60247194002, 60247194003, 60247194004, 60247194005, 60247194006, 60247194007, 60247194008, 60247194009, 60247194010

METHOD BLANK: 1982091

Matrix: Water

Associated Lab Samples: 60247194001, 60247194002, 60247194003, 60247194004, 60247194005, 60247194006, 60247194007, 60247194008, 60247194009, 60247194010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.046	07/05/17 09:40	

LABORATORY CONTROL SAMPLE: 1982092

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1982093 1982094

Parameter	Units	60247194001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.5	4.7	91	93	75-125	3	20	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

QC Batch: 483129 Analysis Method: EPA 6010
 QC Batch Method: EPA 3010 Analysis Description: 6010 MET
 Associated Lab Samples: 60247194001, 60247194002, 60247194003, 60247194004, 60247194005, 60247194006, 60247194007, 60247194008, 60247194009, 60247194010

METHOD BLANK: 1979036 Matrix: Water
 Associated Lab Samples: 60247194001, 60247194002, 60247194003, 60247194004, 60247194005, 60247194006, 60247194007, 60247194008, 60247194009, 60247194010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	3.5	06/29/17 18:02	
Calcium	mg/L	ND	0.10	0.036	06/29/17 18:02	
Lithium	ug/L	ND	10.0	2.9	06/29/17 18:02	

LABORATORY CONTROL SAMPLE: 1979037

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	958	96	80-120	
Calcium	mg/L	10	9.4	94	80-120	
Lithium	ug/L	1000	1080	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1979038 1979039

Parameter	Units	60247077002		60247077003		60247077004		% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
Boron	ug/L	558	1000	1000	1530	1550	97	99	75-125	1	20
Calcium	mg/L	110	10	10	118	120	84	98	75-125	1	20
Lithium	ug/L	ND	1000	1000	1100	1100	110	110	75-125	0	20

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

QC Batch:	483127	Analysis Method:	EPA 6020
QC Batch Method:	EPA 3010	Analysis Description:	6020 MET
Associated Lab Samples:	60247194001, 60247194002, 60247194003, 60247194004, 60247194005, 60247194006, 60247194007, 60247194008, 60247194009, 60247194010		

METHOD BLANK: 1979032 Matrix: Water
Associated Lab Samples: 60247194001, 60247194002, 60247194003, 60247194004, 60247194005, 60247194006, 60247194007, 60247194008, 60247194009, 60247194010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	0.026	06/29/17 19:06	
Arsenic	ug/L	ND	1.0	0.052	06/29/17 19:06	
Barium	ug/L	ND	1.0	0.095	06/29/17 19:06	
Beryllium	ug/L	ND	0.50	0.012	06/29/17 19:06	
Cadmium	ug/L	ND	0.50	0.018	06/29/17 19:06	
Chromium	ug/L	0.070J	1.0	0.054	06/29/17 19:06	
Cobalt	ug/L	ND	1.0	0.014	06/29/17 19:06	
Lead	ug/L	ND	1.0	0.033	06/29/17 19:06	
Molybdenum	ug/L	0.12J	1.0	0.058	06/29/17 19:06	
Selenium	ug/L	ND	1.0	0.086	06/29/17 19:06	
Thallium	ug/L	0.052J	1.0	0.036	06/29/17 19:06	

LABORATORY CONTROL SAMPLE: 1979033

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	37.9	95	80-120	
Arsenic	ug/L	40	37.9	95	80-120	
Barium	ug/L	40	38.9	97	80-120	
Beryllium	ug/L	40	39.1	98	80-120	
Cadmium	ug/L	40	38.3	96	80-120	
Chromium	ug/L	40	39.2	98	80-120	
Cobalt	ug/L	40	39.1	98	80-120	
Lead	ug/L	40	38.5	96	80-120	
Molybdenum	ug/L	40	40.4	101	80-120	
Selenium	ug/L	40	36.2	91	80-120	
Thallium	ug/L	40	37.0	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1979034 1979035

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		60247077003 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Antimony	ug/L	0.34J	40	40	36.9	37.2	91	92	75-125	1	20	
Arsenic	ug/L	2.5	40	40	38.0	38.8	89	91	75-125	2	20	
Barium	ug/L	214	40	40	254	250	98	90	75-125	1	20	
Beryllium	ug/L	ND	40	40	37.8	37.7	95	94	75-125	0	20	
Cadmium	ug/L	ND	40	40	35.7	35.6	89	89	75-125	0	20	
Chromium	ug/L	0.36J	40	40	39.1	38.4	97	95	75-125	2	20	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Parameter	Units	60247077003		1979034		1979035		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS Result	MSD Result							
Cobalt	ug/L	0.22J	40	40	37.1	37.3	92	93	75-125	1	20			
Lead	ug/L	0.085J	40	40	36.1	36.2	90	90	75-125	0	20			
Molybdenum	ug/L	15.9	40	40	56.6	56.0	102	100	75-125	1	20			
Selenium	ug/L	0.67J	40	40	33.6	33.5	82	82	75-125	0	20			
Thallium	ug/L	ND	40	40	35.5	35.4	89	88	75-125	1	20			

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

QC Batch: 482462

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60247194001, 60247194002, 60247194003, 60247194004, 60247194005, 60247194006, 60247194007, 60247194008, 60247194009, 60247194010

METHOD BLANK: 1976891

Matrix: Water

Associated Lab Samples: 60247194001, 60247194002, 60247194003, 60247194004, 60247194005, 60247194006, 60247194007, 60247194008, 60247194009, 60247194010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	06/26/17 07:51	

LABORATORY CONTROL SAMPLE: 1976892

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	922	92	80-120	

SAMPLE DUPLICATE: 1976893

Parameter	Units	60247184001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3120	3110	0	10	

SAMPLE DUPLICATE: 1976894

Parameter	Units	60247195002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	656	636	3	10	

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

QC Batch: 482814

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Associated Lab Samples: 60247194001, 60247194002, 60247194003, 60247194005, 60247194006, 60247194007, 60247194008, 60247194009, 60247194010

SAMPLE DUPLICATE: 1977920

Parameter	Units	60247195002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.6	7.7	0	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

QC Batch: 483293 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 60247194004

SAMPLE DUPLICATE: 1979775

Parameter	Units	60247194004 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.2	7.2	0	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60247194

QC Batch: 482525 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60247194001, 60247194002, 60247194003, 60247194004, 60247194005, 60247194006, 60247194007, 60247194008, 60247194009, 60247194010

METHOD BLANK: 1977053 Matrix: Water
Associated Lab Samples: 60247194001, 60247194002, 60247194003, 60247194004, 60247194005, 60247194006, 60247194007, 60247194008, 60247194009, 60247194010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	06/26/17 08:41	
Fluoride	mg/L	ND	0.20	0.10	06/26/17 08:41	
Sulfate	mg/L	ND	1.0	0.50	06/26/17 08:41	

LABORATORY CONTROL SAMPLE: 1977054

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	103	80-120	
Fluoride	mg/L	2.5	2.8	113	80-120	
Sulfate	mg/L	5	5.3	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1977055 1977056

Parameter	Units	60247194008		1977055		1977056		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Chloride	mg/L	146	100	100	254	253	108	107	80-120	0	15
Fluoride	mg/L	0.12J	2.5	2.5	3.1	3.1	118	119	80-120	1	15

SAMPLE DUPLICATE: 1977057

Parameter	Units	60247195002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	8.0	8.0	0	15	
Fluoride	mg/L	1.1	1.1	3	15	
Sulfate	mg/L	79.3	78.1	2	15	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

QC Batch: 482672	Analysis Method: EPA 9056
QC Batch Method: EPA 9056	Analysis Description: 9056 IC Anions
Associated Lab Samples: 60247194004	

METHOD BLANK: 1977449 Matrix: Water
Associated Lab Samples: 60247194004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	06/27/17 07:26	

LABORATORY CONTROL SAMPLE: 1977450

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1977451 1977452

Parameter	Units	60247194004		1977451		1977452		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.				
Chloride	mg/L	382	250	250	656	654	110	109	80-120	0	15

SAMPLE DUPLICATE: 1977453

Parameter	Units	60247195003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	12.8	29.9J			

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60247194001	MW-301		483794		
60247194002	MW-302		483794		
60247194003	MW-303		483794		
60247194004	MW-304		483794		
60247194005	MW-305		483794		
60247194006	MW-306		483794		
60247194007	MW-307		483794		
60247194008	MW-308		483794		
60247194009	MW-309		483794		
60247194001	MW-301	EPA 3010	483129	EPA 6010	483172
60247194002	MW-302	EPA 3010	483129	EPA 6010	483172
60247194003	MW-303	EPA 3010	483129	EPA 6010	483172
60247194004	MW-304	EPA 3010	483129	EPA 6010	483172
60247194005	MW-305	EPA 3010	483129	EPA 6010	483172
60247194006	MW-306	EPA 3010	483129	EPA 6010	483172
60247194007	MW-307	EPA 3010	483129	EPA 6010	483172
60247194008	MW-308	EPA 3010	483129	EPA 6010	483172
60247194009	MW-309	EPA 3010	483129	EPA 6010	483172
60247194010	FIELD BLANK	EPA 3010	483129	EPA 6010	483172
60247194001	MW-301	EPA 3010	483127	EPA 6020	483175
60247194002	MW-302	EPA 3010	483127	EPA 6020	483175
60247194003	MW-303	EPA 3010	483127	EPA 6020	483175
60247194004	MW-304	EPA 3010	483127	EPA 6020	483175
60247194005	MW-305	EPA 3010	483127	EPA 6020	483175
60247194006	MW-306	EPA 3010	483127	EPA 6020	483175
60247194007	MW-307	EPA 3010	483127	EPA 6020	483175
60247194008	MW-308	EPA 3010	483127	EPA 6020	483175
60247194009	MW-309	EPA 3010	483127	EPA 6020	483175
60247194010	FIELD BLANK	EPA 3010	483127	EPA 6020	483175
60247194001	MW-301	EPA 7470	483788	EPA 7470	483842
60247194002	MW-302	EPA 7470	483788	EPA 7470	483842
60247194003	MW-303	EPA 7470	483788	EPA 7470	483842
60247194004	MW-304	EPA 7470	483788	EPA 7470	483842
60247194005	MW-305	EPA 7470	483788	EPA 7470	483842
60247194006	MW-306	EPA 7470	483788	EPA 7470	483842
60247194007	MW-307	EPA 7470	483788	EPA 7470	483842
60247194008	MW-308	EPA 7470	483788	EPA 7470	483842
60247194009	MW-309	EPA 7470	483788	EPA 7470	483842
60247194010	FIELD BLANK	EPA 7470	483788	EPA 7470	483842
60247194001	MW-301	SM 2540C	482462		
60247194002	MW-302	SM 2540C	482462		
60247194003	MW-303	SM 2540C	482462		
60247194004	MW-304	SM 2540C	482462		
60247194005	MW-305	SM 2540C	482462		
60247194006	MW-306	SM 2540C	482462		
60247194007	MW-307	SM 2540C	482462		
60247194008	MW-308	SM 2540C	482462		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247194

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60247194009	MW-309	SM 2540C	482462		
60247194010	FIELD BLANK	SM 2540C	482462		
60247194001	MW-301	EPA 9040	482814		
60247194002	MW-302	EPA 9040	482814		
60247194003	MW-303	EPA 9040	482814		
60247194004	MW-304	EPA 9040	483293		
60247194005	MW-305	EPA 9040	482814		
60247194006	MW-306	EPA 9040	482814		
60247194007	MW-307	EPA 9040	482814		
60247194008	MW-308	EPA 9040	482814		
60247194009	MW-309	EPA 9040	482814		
60247194010	FIELD BLANK	EPA 9040	482814		
60247194001	MW-301	EPA 9056	482525		
60247194002	MW-302	EPA 9056	482525		
60247194003	MW-303	EPA 9056	482525		
60247194004	MW-304	EPA 9056	482525		
60247194004	MW-304	EPA 9056	482672		
60247194005	MW-305	EPA 9056	482525		
60247194006	MW-306	EPA 9056	482525		
60247194007	MW-307	EPA 9056	482525		
60247194008	MW-308	EPA 9056	482525		
60247194009	MW-309	EPA 9056	482525		
60247194010	FIELD BLANK	EPA 9056	482525		

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Sample Condition Upon Receipt

WO#: 60247194



60247194

Client Name: SCS Eng

Courier: FedEx [x] UPS [] VIA [] Clay [] PEX [] ECI [] Pace [] Xroads [] Client [] Other []

Tracking #: 7285 6593 2610; - 2600 Pace Shipping Label Used? Yes [] No [x]

Custody Seal on Cooler/Box Present: Yes [x] No [] Seals intact: Yes [x] No []

Packing Material: Bubble Wrap [x] Bubble Bags [] Foam [] None [] Other []

Thermometer Used: T-266 T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 2.0, 1.2 Corr. Factor CF +2.9 CF +0.2 Corrected 2.0, 1.4

Date and initials of person examining contents: JPD 01/23/17

Temperature should be above freezing to 6°C

Table with 2 columns: Question and Yes/No/N/A checkboxes. Rows include Chain of Custody, Short Hold Time analyses (<72hr), Rush Turn Around Time, Sufficient volume, Correct containers used, Pace containers used, Containers intact, Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?, Filtered volume received for dissolved tests?, Sample labels match COC, Samples contain multiple phases? Matrix: water, Containers requiring pH preservation, Cyanide water sample checks, Trip Blank present, Headspace in VOA vials, Samples from USDA Regulated Area, Additional labels attached to 5035A / TX1005 vials.

Client Notification/ Resolution: Copy COC to Client? Y / [N] Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 6-26-17

July 19, 2017

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Gen. Station/25216072
Pace Project No.: 60247197

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on June 23, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60247197001	MW-301	Water	06/20/17 16:15	06/23/17 08:35
60247197002	MW-302	Water	06/20/17 17:15	06/23/17 08:35
60247197003	MW-303	Water	06/20/17 18:15	06/23/17 08:35
60247197004	MW-304	Water	06/21/17 08:45	06/23/17 08:35
60247197005	MW-305	Water	06/21/17 13:00	06/23/17 08:35
60247197006	MW-306	Water	06/21/17 12:15	06/23/17 08:35
60247197007	MW-307	Water	06/21/17 10:15	06/23/17 08:35
60247197008	MW-308	Water	06/21/17 10:40	06/23/17 08:35
60247197009	MW-309	Water	06/21/17 11:10	06/23/17 08:35
60247197010	FIELD BLANK	Water	06/21/17 12:30	06/23/17 08:35

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60247197001	MW-301	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60247197002	MW-302	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60247197003	MW-303	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60247197004	MW-304	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60247197005	MW-305	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60247197006	MW-306	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60247197007	MW-307	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60247197008	MW-308	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60247197009	MW-309	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60247197010	FIELD BLANK	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Sample: MW-301 **Lab ID: 60247197001** Collected: 06/20/17 16:15 Received: 06/23/17 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.501 ± 0.376 (0.194) C:NA T:80%	pCi/L	07/11/17 21:03	13982-63-3	
Radium-228	EPA 904.0	0.562 ± 0.408 (0.800) C:76% T:82%	pCi/L	07/13/17 15:55	15262-20-1	
Total Radium	Total Radium Calculation	1.06 ± 0.784 (0.994)	pCi/L	07/19/17 09:24	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Sample: MW-302 **Lab ID: 60247197002** Collected: 06/20/17 17:15 Received: 06/23/17 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.130 ± 0.360 (0.698) C:NA T:90%	pCi/L	07/11/17 21:20	13982-63-3	
Radium-228	EPA 904.0	1.16 ± 0.514 (0.862) C:75% T:78%	pCi/L	07/13/17 15:55	15262-20-1	
Total Radium	Total Radium Calculation	1.29 ± 0.874 (1.56)	pCi/L	07/19/17 09:24	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Sample: MW-303 **Lab ID: 60247197003** Collected: 06/20/17 18:15 Received: 06/23/17 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.556 ± 0.474 (0.665) C:NA T:93%	pCi/L	07/11/17 21:20	13982-63-3	
Radium-228	EPA 904.0	1.06 ± 0.422 (0.652) C:75% T:86%	pCi/L	07/14/17 14:58	15262-20-1	
Total Radium	Total Radium Calculation	1.62 ± 0.896 (1.32)	pCi/L	07/19/17 09:24	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Sample: MW-304 **Lab ID: 60247197004** Collected: 06/21/17 08:45 Received: 06/23/17 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.62 ± 0.688 (0.478) C:NA T:95%	pCi/L	07/11/17 21:20	13982-63-3	
Radium-228	EPA 904.0	1.93 ± 0.588 (0.765) C:75% T:87%	pCi/L	07/14/17 14:58	15262-20-1	
Total Radium	Total Radium Calculation	3.55 ± 1.28 (1.24)	pCi/L	07/19/17 09:24	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Sample: MW-305 **Lab ID: 60247197005** Collected: 06/21/17 13:00 Received: 06/23/17 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.301 ± 0.468 (0.811) C:NA T:92%	pCi/L	07/10/17 11:34	13982-63-3	
Radium-228	EPA 904.0	0.695 ± 0.372 (0.667) C:78% T:86%	pCi/L	07/14/17 14:58	15262-20-1	
Total Radium	Total Radium Calculation	0.996 ± 0.840 (1.48)	pCi/L	07/19/17 09:24	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Sample: MW-306 **Lab ID: 60247197006** Collected: 06/21/17 12:15 Received: 06/23/17 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.394 (0.802) C:NA T:76%	pCi/L	07/10/17 11:53	13982-63-3	
Radium-228	EPA 904.0	1.03 ± 0.404 (0.618) C:77% T:89%	pCi/L	07/14/17 14:58	15262-20-1	
Total Radium	Total Radium Calculation	1.03 ± 0.798 (1.42)	pCi/L	07/19/17 09:24	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Sample: MW-307 **Lab ID: 60247197007** Collected: 06/21/17 10:15 Received: 06/23/17 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.87 ± 0.868 (0.897) C:NA T:90%	pCi/L	07/10/17 11:53	13982-63-3	
Radium-228	EPA 904.0	0.960 ± 0.376 (0.572) C:78% T:93%	pCi/L	07/14/17 14:58	15262-20-1	
Total Radium	Total Radium Calculation	2.83 ± 1.24 (1.47)	pCi/L	07/19/17 09:24	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Sample: MW-308 **Lab ID: 60247197008** Collected: 06/21/17 10:40 Received: 06/23/17 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	2.00 ± 0.959 (1.09) C:NA T:85%	pCi/L	07/10/17 11:53	13982-63-3	
Radium-228	EPA 904.0	1.30 ± 0.452 (0.618) C:76% T:84%	pCi/L	07/14/17 14:59	15262-20-1	
Total Radium	Total Radium Calculation	3.30 ± 1.41 (1.71)	pCi/L	07/19/17 09:24	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Sample: MW-309 **Lab ID: 60247197009** Collected: 06/21/17 11:10 Received: 06/23/17 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.37 ± 0.651 (0.206) C:NA T:86%	pCi/L	07/10/17 11:53	13982-63-3	
Radium-228	EPA 904.0	0.259 ± 0.273 (0.566) C:78% T:94%	pCi/L	07/14/17 14:59	15262-20-1	
Total Radium	Total Radium Calculation	1.63 ± 0.924 (0.772)	pCi/L	07/19/17 09:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Sample: FIELD BLANK		Lab ID: 60247197010	Collected: 06/21/17 12:30	Received: 06/23/17 08:35	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.624 ± 0.489 (0.574) C:NA T:89%	pCi/L	07/10/17 11:53	13982-63-3	
Radium-228	EPA 904.0	0.604 ± 0.353 (0.636) C:78% T:77%	pCi/L	07/14/17 14:59	15262-20-1	
Total Radium	Total Radium Calculation	1.23 ± 0.842 (1.21)	pCi/L	07/19/17 09:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

QC Batch:	264363	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	60247197003, 60247197004, 60247197005, 60247197006, 60247197007, 60247197008, 60247197009, 60247197010		

METHOD BLANK:	1302002	Matrix:	Water
Associated Lab Samples:	60247197003, 60247197004, 60247197005, 60247197006, 60247197007, 60247197008, 60247197009, 60247197010		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	1.01 ± 0.458 (0.776) C:75% T:80%	pCi/L	07/14/17 14:58	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

QC Batch: 263771 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60247197001, 60247197002, 60247197003, 60247197004

METHOD BLANK: 1299245 Matrix: Water

Associated Lab Samples: 60247197001, 60247197002, 60247197003, 60247197004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.403 ± 0.377 (0.534) C:NA T:97%	pCi/L	07/11/17 20:29	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

QC Batch: 264361

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60247197001, 60247197002

METHOD BLANK: 1302000

Matrix: Water

Associated Lab Samples: 60247197001, 60247197002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.727 ± 0.367 (0.647) C:83% T:87%	pCi/L	07/13/17 11:35	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen. Station/25216072

Pace Project No.: 60247197

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60247197001	MW-301	EPA 903.1	263771		
60247197002	MW-302	EPA 903.1	263771		
60247197003	MW-303	EPA 903.1	263771		
60247197004	MW-304	EPA 903.1	263771		
60247197005	MW-305	EPA 903.1	263924		
60247197006	MW-306	EPA 903.1	263924		
60247197007	MW-307	EPA 903.1	263924		
60247197008	MW-308	EPA 903.1	263924		
60247197009	MW-309	EPA 903.1	263924		
60247197010	FIELD BLANK	EPA 903.1	263924		
60247197001	MW-301	EPA 904.0	264361		
60247197002	MW-302	EPA 904.0	264361		
60247197003	MW-303	EPA 904.0	264363		
60247197004	MW-304	EPA 904.0	264363		
60247197005	MW-305	EPA 904.0	264363		
60247197006	MW-306	EPA 904.0	264363		
60247197007	MW-307	EPA 904.0	264363		
60247197008	MW-308	EPA 904.0	264363		
60247197009	MW-309	EPA 904.0	264363		
60247197010	FIELD BLANK	EPA 904.0	264363		
60247197001	MW-301	Total Radium Calculation	265473		
60247197002	MW-302	Total Radium Calculation	265473		
60247197003	MW-303	Total Radium Calculation	265473		
60247197004	MW-304	Total Radium Calculation	265473		
60247197005	MW-305	Total Radium Calculation	265473		
60247197006	MW-306	Total Radium Calculation	265473		
60247197007	MW-307	Total Radium Calculation	265473		
60247197008	MW-308	Total Radium Calculation	265473		
60247197009	MW-309	Total Radium Calculation	265473		
60247197010	FIELD BLANK	Total Radium Calculation	265473		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60247197



Client Name: SCS Eng.

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: 7205 6593 2551; -2573 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T-266 / T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 5.4, 4.0 Corr. Factor CF +2.9 CF +0.2 Corrected 5.6, 4.2

Date and initials of person examining contents: JS 6/23/17

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples contain multiple phases? Matrix: <u>wet</u>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Cyanide water sample checks:	<input checked="" type="checkbox"/> N/A
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature] Date: 6-26-17

Chain of Custody



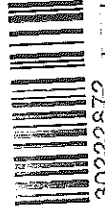
Workorder: 60247197 Workorder Name: Ottumwa Gen. Station/25216072 Owner Received Date: 6/23/2017 Results Requested By: 7/19/2017

Report To: Subcontract To: Requested Analysis:

Trudy Gipson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1405

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

WO#: 30222872



Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Total Radium	LAB USE ONLY
						903.1 Radium-226	904.0 Radium-228		
1	MW-301	PS	6/20/2017 16:15	60247197001	Water	2	X	X	001
2	MW-302	PS	6/20/2017 17:15	60247197002	Water	2	X	X	002
3	MW-303	PS	6/20/2017 18:15	60247197003	Water	2	X	X	003
4	MW-304	PS	6/21/2017 08:45	60247197004	Water	2	X	X	004
5	MW-305	PS	6/21/2017 13:00	60247197005	Water	2	X	X	005
6	MW-306	PS	6/21/2017 12:15	60247197006	Water	2	X	X	006
7	MW-307	PS	6/21/2017 10:15	60247197007	Water	2	X	X	007
8	MW-308	PS	6/21/2017 10:40	60247197008	Water	2	X	X	008
9	MW-309	PS	6/21/2017 11:10	60247197009	Water	2	X	X	009
10	FIELD BLANK	PS	6/21/2017 12:30	60247197010	Water	2	X	X	010

Transfers Released By: [Signature] Date/Time: 6/21/17 17:00 Received: [Signature] Date/Time: 6/28/17 10:15

Transfers	Released By	Date/Time	Received	Date/Time	Received on Ice	Y or N	Custody Seal	Y or N	Samples Intact	Y or N
1	[Signature]	6/21/17 17:00	[Signature]	6/28/17 10:15		Y		N		N
2										
3										

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Pittsburgh

30222872

AM



Client Name: PACE - KANSAS Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: 778565935193

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Thermometer Used N/A Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ZH 6/28/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	/			1.
Chain of Custody Filled Out:	/			2.
Chain of Custody Relinquished:				3.
Sampler Name & Signature on COC:		/		4.
Sample Labels match COC:				5.
-Includes date/time/ID Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	/			6.
Short Hold Time Analysis (<72hr remaining):		/		7.
Rush Turn Around Time Requested:		/		8.
Sufficient Volume:	/			9.
Correct Containers Used:	/			10.
-Pace Containers Used:		/		
Containers Intact:	/			11.
Orthophosphate field filtered			/	12.
Organic Samples checked for dechlorination:			/	13.
Filtered volume received for Dissolved tests			/	14.
All containers have been checked for preservation.	/			15.
All containers needing preservation are found to be in compliance with EPA recommendation.	/			
exceptions: VOA, coliform, TOC, O&G, Phenolics				
				Initial when completed <u>ZH</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			/	16.
Trip Blank Present:			/	17.
Trip Blank Custody Seals Present			/	
Rad Aqueous Samples Screened > 0.5 mrem/hr	/			Initial when completed <u>ZH</u> Date: <u>6/28/17</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

A check in this box indicates that additional information has been stored in ereports.

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

A8 Round 8 Background Sampling, Analytical Laboratory Report

September 07, 2017

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Gen Sta/25216072.17
Pace Project No.: 60251657

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on August 24, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Kyle Kramer, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60251657001	MW-301	Water	08/23/17 12:00	08/24/17 08:45
60251657002	MW-302	Water	08/22/17 16:55	08/24/17 08:45
60251657003	MW-303	Water	08/22/17 17:45	08/24/17 08:45
60251657004	MW-304	Water	08/22/17 19:00	08/24/17 08:45
60251657005	MW-305	Water	08/23/17 10:15	08/24/17 08:45
60251657006	MW-306	Water	08/23/17 11:05	08/24/17 08:45
60251657007	MW-307	Water	08/21/17 19:10	08/24/17 08:45
60251657008	MW-308	Water	08/21/17 18:15	08/24/17 08:45
60251657009	MW-309	Water	08/21/17 17:10	08/24/17 08:45
60251657010	FIELD BLANK	Water	08/23/17 11:05	08/24/17 08:45

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60251657001	MW-301	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60251657002	MW-302	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60251657003	MW-303	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60251657004	MW-304	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60251657005	MW-305	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60251657006	MW-306	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60251657007	MW-307	EPA 6010	SMW	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60251657008	MW-308	EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
		EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
60251657009	MW-309	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
		EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
60251657010	FIELD BLANK	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	NSM	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 9040	HMM	1	PASI-K
		EPA 9056	OL	3	PASI-K
		EPA 6010	SMW	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Sample: MW-301		Lab ID: 60251657001		Collected: 08/23/17 12:00		Received: 08/24/17 08:45		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		08/23/17 12:00		
Field pH	6.16	Std. Units	0.10	0.050	1		08/23/17 12:00		
Field Temperature	19.7	deg C	0.50	0.25	1		08/23/17 12:00		
Field Specific Conductance	1107	umhos/cm	1.0	1.0	1		08/23/17 12:00		
Field Oxidation Potential	41.4	mV			1		08/23/17 12:00		
Oxygen, Dissolved	2.88	mg/L			1		08/23/17 12:00	7782-44-7	
Turbidity	0.79	NTU	1.0	1.0	1		08/23/17 12:00		
Groundwater Elevation	681.28	feet			1		08/23/17 12:00		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	779	ug/L	100	3.5	1	08/29/17 10:31	08/30/17 13:55	7440-42-8	
Calcium	66.8	mg/L	0.10	0.036	1	08/29/17 10:31	08/30/17 13:55	7440-70-2	M1
Lithium	27.9	ug/L	10.0	2.9	1	08/29/17 10:31	08/30/17 13:55	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.063J	ug/L	1.0	0.026	1	08/29/17 10:31	08/30/17 16:28	7440-36-0	
Arsenic	0.14J	ug/L	1.0	0.052	1	08/29/17 10:31	08/30/17 16:28	7440-38-2	
Barium	44.0	ug/L	1.0	0.095	1	08/29/17 10:31	08/30/17 16:28	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	08/29/17 10:31	08/30/17 16:28	7440-41-7	
Cadmium	0.037J	ug/L	0.50	0.018	1	08/29/17 10:31	08/30/17 16:28	7440-43-9	
Chromium	0.39J	ug/L	1.0	0.054	1	08/29/17 10:31	08/30/17 16:28	7440-47-3	B
Cobalt	0.96J	ug/L	1.0	0.014	1	08/29/17 10:31	08/30/17 16:28	7440-48-4	
Lead	0.049J	ug/L	1.0	0.033	1	08/29/17 10:31	08/30/17 16:28	7439-92-1	
Molybdenum	1.3	ug/L	1.0	0.058	1	08/29/17 10:31	08/30/17 16:28	7439-98-7	
Selenium	7.2	ug/L	1.0	0.086	1	08/29/17 10:31	08/30/17 16:28	7782-49-2	
Thallium	0.067J	ug/L	1.0	0.036	1	08/29/17 10:31	08/30/17 16:28	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	09/01/17 16:30	09/05/17 10:25	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	557	mg/L	5.0	5.0	1		08/28/17 16:48		
9040 pH		Analytical Method: EPA 9040							
pH	6.4	Std. Units	0.10	0.10	1		08/29/17 16:16		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	73.5	mg/L	5.0	2.5	5		09/02/17 12:29	16887-00-6	
Fluoride	0.34	mg/L	0.20	0.10	1		09/01/17 16:39	16984-48-8	
Sulfate	162	mg/L	20.0	10.0	20		09/02/17 12:45	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Sample: MW-302		Lab ID: 60251657002		Collected: 08/22/17 16:55		Received: 08/24/17 08:45		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		08/22/17 16:55		
Field pH	6.75	Std. Units	0.10	0.050	1		08/22/17 16:55		
Field Temperature	14.0	deg C	0.50	0.25	1		08/22/17 16:55		
Field Specific Conductance	2991	umhos/cm	1.0	1.0	1		08/22/17 16:55		
Field Oxidation Potential	20.8	mV			1		08/22/17 16:55		
Oxygen, Dissolved	0.08	mg/L			1		08/22/17 16:55	7782-44-7	
Turbidity	1.32	NTU	1.0	1.0	1		08/22/17 16:55		
Groundwater Elevation	655.13	feet			1		08/22/17 16:55		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	1250	ug/L	100	3.5	1	08/29/17 10:31	08/30/17 14:01	7440-42-8	
Calcium	179	mg/L	0.10	0.036	1	08/29/17 10:31	08/30/17 14:01	7440-70-2	
Lithium	13.8	ug/L	10.0	2.9	1	08/29/17 10:31	08/30/17 14:01	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.036J	ug/L	1.0	0.026	1	08/29/17 10:31	08/30/17 16:32	7440-36-0	
Arsenic	0.19J	ug/L	1.0	0.052	1	08/29/17 10:31	08/30/17 16:32	7440-38-2	
Barium	18.5	ug/L	1.0	0.095	1	08/29/17 10:31	08/30/17 16:32	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	08/29/17 10:31	08/30/17 16:32	7440-41-7	
Cadmium	0.21J	ug/L	0.50	0.018	1	08/29/17 10:31	08/30/17 16:32	7440-43-9	
Chromium	0.70J	ug/L	1.0	0.054	1	08/29/17 10:31	08/30/17 16:32	7440-47-3	B
Cobalt	0.88J	ug/L	1.0	0.014	1	08/29/17 10:31	08/30/17 16:32	7440-48-4	
Lead	ND	ug/L	1.0	0.033	1	08/29/17 10:31	08/30/17 16:32	7439-92-1	
Molybdenum	0.51J	ug/L	1.0	0.058	1	08/29/17 10:31	08/30/17 16:32	7439-98-7	B
Selenium	ND	ug/L	1.0	0.086	1	08/29/17 10:31	08/30/17 16:32	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	08/29/17 10:31	08/30/17 16:32	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	09/01/17 16:30	09/05/17 10:31	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1620	mg/L	5.0	5.0	1		08/26/17 15:30		
9040 pH		Analytical Method: EPA 9040							
pH	6.6	Std. Units	0.10	0.10	1		08/29/17 16:19		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	264	mg/L	20.0	10.0	20		09/02/17 13:01	16887-00-6	
Fluoride	0.27	mg/L	0.20	0.10	1		09/01/17 16:55	16984-48-8	
Sulfate	858	mg/L	100	50.0	100		09/02/17 13:17	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Sample: MW-303		Lab ID: 60251657003		Collected: 08/22/17 17:45		Received: 08/24/17 08:45		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		08/22/17 17:45		
Field pH	6.53	Std. Units	0.10	0.050	1		08/22/17 17:45		
Field Temperature	16.8	deg C	0.50	0.25	1		08/22/17 17:45		
Field Specific Conductance	2474	umhos/cm	1.0	1.0	1		08/22/17 17:45		
Field Oxidation Potential	20.9	mV			1		08/22/17 17:45		
Oxygen, Dissolved	0.08	mg/L			1		08/22/17 17:45	7782-44-7	
Turbidity	14.62	NTU	1.0	1.0	1		08/22/17 17:45		
Groundwater Elevation	650.58	feet			1		08/22/17 17:45		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	1180	ug/L	100	3.5	1	08/29/17 10:31	08/30/17 14:03	7440-42-8	
Calcium	200	mg/L	0.10	0.036	1	08/29/17 10:31	08/30/17 14:03	7440-70-2	
Lithium	8.1J	ug/L	10.0	2.9	1	08/29/17 10:31	08/30/17 14:03	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.30J	ug/L	1.0	0.026	1	08/29/17 10:31	08/30/17 16:45	7440-36-0	
Arsenic	0.61J	ug/L	1.0	0.052	1	08/29/17 10:31	08/30/17 16:45	7440-38-2	
Barium	83.8	ug/L	1.0	0.095	1	08/29/17 10:31	08/30/17 16:45	7440-39-3	
Beryllium	0.015J	ug/L	0.50	0.012	1	08/29/17 10:31	08/30/17 16:45	7440-41-7	
Cadmium	0.57	ug/L	0.50	0.018	1	08/29/17 10:31	08/30/17 16:45	7440-43-9	
Chromium	0.61J	ug/L	1.0	0.054	1	08/29/17 10:31	08/30/17 16:45	7440-47-3	B
Cobalt	2.8	ug/L	1.0	0.014	1	08/29/17 10:31	08/30/17 16:45	7440-48-4	
Lead	0.19J	ug/L	1.0	0.033	1	08/29/17 10:31	08/30/17 16:45	7439-92-1	
Molybdenum	0.64J	ug/L	1.0	0.058	1	08/29/17 10:31	08/30/17 16:45	7439-98-7	B
Selenium	0.52J	ug/L	1.0	0.086	1	08/29/17 10:31	08/30/17 16:45	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	08/29/17 10:31	08/30/17 16:45	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	09/01/17 16:30	09/05/17 10:34	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1220	mg/L	5.0	5.0	1		08/26/17 15:31		
9040 pH		Analytical Method: EPA 9040							
pH	6.8	Std. Units	0.10	0.10	1		08/29/17 16:21		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	268	mg/L	20.0	10.0	20		09/02/17 13:33	16887-00-6	
Fluoride	0.30	mg/L	0.20	0.10	1		09/01/17 17:11	16984-48-8	
Sulfate	215	mg/L	20.0	10.0	20		09/02/17 13:33	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Sample: MW-304 **Lab ID: 60251657004** Collected: 08/22/17 19:00 Received: 08/24/17 08:45 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
Field Data									
Analytical Method:									
Collected By	Client				1		08/22/17 19:00		
Field pH	6.72	Std. Units	0.10	0.050	1		08/22/17 19:00		
Field Temperature	13.4	deg C	0.50	0.25	1		08/22/17 19:00		
Field Specific Conductance	2881	umhos/cm	1.0	1.0	1		08/22/17 19:00		
Field Oxidation Potential	-10.1	mV			1		08/22/17 19:00		
Oxygen, Dissolved	0.08	mg/L			1		08/22/17 19:00	7782-44-7	
Turbidity	0.92	NTU	1.0	1.0	1		08/22/17 19:00		
Groundwater Elevation	652.39	feet			1		08/22/17 19:00		
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	1040	ug/L	100	3.5	1	08/29/17 10:31	08/30/17 14:06	7440-42-8	
Calcium	130	mg/L	0.10	0.036	1	08/29/17 10:31	08/30/17 14:06	7440-70-2	
Lithium	5.3J	ug/L	10.0	2.9	1	08/29/17 10:31	08/30/17 14:06	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.035J	ug/L	1.0	0.026	1	08/29/17 10:31	08/30/17 16:49	7440-36-0	
Arsenic	0.67J	ug/L	1.0	0.052	1	08/29/17 10:31	08/30/17 16:49	7440-38-2	
Barium	91.5	ug/L	1.0	0.095	1	08/29/17 10:31	08/30/17 16:49	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	08/29/17 10:31	08/30/17 16:49	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	08/29/17 10:31	08/30/17 16:49	7440-43-9	
Chromium	0.43J	ug/L	1.0	0.054	1	08/29/17 10:31	08/30/17 16:49	7440-47-3	B
Cobalt	0.30J	ug/L	1.0	0.014	1	08/29/17 10:31	08/30/17 16:49	7440-48-4	
Lead	0.041J	ug/L	1.0	0.033	1	08/29/17 10:31	08/30/17 16:49	7439-92-1	
Molybdenum	1.6	ug/L	1.0	0.058	1	08/29/17 10:31	08/30/17 16:49	7439-98-7	
Selenium	0.21J	ug/L	1.0	0.086	1	08/29/17 10:31	08/30/17 16:49	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	08/29/17 10:31	08/30/17 16:49	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	09/01/17 16:30	09/05/17 10:36	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	1250	mg/L	5.0	5.0	1		08/26/17 15:31		
9040 pH									
Analytical Method: EPA 9040									
pH	7.0	Std. Units	0.10	0.10	1		08/29/17 16:22		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	409	mg/L	50.0	25.0	50		09/02/17 14:06	16887-00-6	
Fluoride	0.89	mg/L	0.20	0.10	1		09/01/17 17:59	16984-48-8	
Sulfate	194	mg/L	20.0	10.0	20		09/02/17 13:50	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Sample: MW-305		Lab ID: 60251657005		Collected: 08/23/17 10:15		Received: 08/24/17 08:45		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		08/23/17 10:15		
Field pH	6.88	Std. Units	0.10	0.050	1		08/23/17 10:15		
Field Temperature	13.3	deg C	0.50	0.25	1		08/23/17 10:15		
Field Specific Conductance	2422	umhos/cm	1.0	1.0	1		08/23/17 10:15		
Field Oxidation Potential	-51.3	mV			1		08/23/17 10:15		
Oxygen, Dissolved	0.12	mg/L			1		08/23/17 10:15	7782-44-7	
Turbidity	0.58	NTU	1.0	1.0	1		08/23/17 10:15		
Groundwater Elevation	659.00	feet			1		08/23/17 10:15		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	903	ug/L	100	3.5	1	08/29/17 10:31	08/30/17 14:12	7440-42-8	
Calcium	95.8	mg/L	0.10	0.036	1	08/29/17 10:31	08/30/17 14:12	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	08/29/17 10:31	08/30/17 14:12	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.12J	ug/L	1.0	0.026	1	08/29/17 10:31	08/30/17 16:53	7440-36-0	
Arsenic	0.51J	ug/L	1.0	0.052	1	08/29/17 10:31	08/30/17 16:53	7440-38-2	
Barium	114	ug/L	1.0	0.095	1	08/29/17 10:31	08/30/17 16:53	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	08/29/17 10:31	08/30/17 16:53	7440-41-7	
Cadmium	0.034J	ug/L	0.50	0.018	1	08/29/17 10:31	08/30/17 16:53	7440-43-9	
Chromium	0.45J	ug/L	1.0	0.054	1	08/29/17 10:31	08/30/17 16:53	7440-47-3	B
Cobalt	14.7	ug/L	1.0	0.014	1	08/29/17 10:31	08/30/17 16:53	7440-48-4	
Lead	0.039J	ug/L	1.0	0.033	1	08/29/17 10:31	08/30/17 16:53	7439-92-1	
Molybdenum	6.0	ug/L	1.0	0.058	1	08/29/17 10:31	08/30/17 16:53	7439-98-7	
Selenium	0.26J	ug/L	1.0	0.086	1	08/29/17 10:31	08/30/17 16:53	7782-49-2	
Thallium	0.36J	ug/L	1.0	0.036	1	08/29/17 10:31	08/30/17 16:53	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	09/01/17 16:30	09/05/17 10:38	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1040	mg/L	5.0	5.0	1		08/28/17 16:49		
9040 pH		Analytical Method: EPA 9040							
pH	7.1	Std. Units	0.10	0.10	1		08/29/17 16:23		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	295	mg/L	20.0	10.0	20		09/02/17 14:38	16887-00-6	
Fluoride	0.48	mg/L	0.20	0.10	1		09/01/17 18:16	16984-48-8	
Sulfate	124	mg/L	10.0	5.0	10		09/02/17 14:22	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Sample: MW-306		Lab ID: 60251657006		Collected: 08/23/17 11:05		Received: 08/24/17 08:45		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		08/23/17 11:05		
Field pH	6.46	Std. Units	0.10	0.050	1		08/23/17 11:05		
Field Temperature	13.2	deg C	0.50	0.25	1		08/23/17 11:05		
Field Specific Conductance	1576	umhos/cm	1.0	1.0	1		08/23/17 11:05		
Field Oxidation Potential	-10.5	mV			1		08/23/17 11:05		
Oxygen, Dissolved	0.08	mg/L			1		08/23/17 11:05	7782-44-7	
Turbidity	0.74	NTU	1.0	1.0	1		08/23/17 11:05		
Groundwater Elevation	668.77	feet			1		08/23/17 11:05		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	822	ug/L	100	3.5	1	08/29/17 10:31	08/30/17 14:15	7440-42-8	
Calcium	73.9	mg/L	0.10	0.036	1	08/29/17 10:31	08/30/17 14:15	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	08/29/17 10:31	08/30/17 14:15	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.10J	ug/L	1.0	0.026	1	08/29/17 10:31	08/30/17 16:58	7440-36-0	
Arsenic	0.38J	ug/L	1.0	0.052	1	08/29/17 10:31	08/30/17 16:58	7440-38-2	
Barium	47.4	ug/L	1.0	0.095	1	08/29/17 10:31	08/30/17 16:58	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	08/29/17 10:31	08/30/17 16:58	7440-41-7	
Cadmium	0.72	ug/L	0.50	0.018	1	08/29/17 10:31	08/30/17 16:58	7440-43-9	
Chromium	0.58J	ug/L	1.0	0.054	1	08/29/17 10:31	08/30/17 16:58	7440-47-3	B
Cobalt	5.0	ug/L	1.0	0.014	1	08/29/17 10:31	08/30/17 16:58	7440-48-4	
Lead	ND	ug/L	1.0	0.033	1	08/29/17 10:31	08/30/17 16:58	7439-92-1	
Molybdenum	4.4	ug/L	1.0	0.058	1	08/29/17 10:31	08/30/17 16:58	7439-98-7	
Selenium	0.13J	ug/L	1.0	0.086	1	08/29/17 10:31	08/30/17 16:58	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	08/29/17 10:31	08/30/17 16:58	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	09/01/17 16:30	09/05/17 10:45	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	769	mg/L	5.0	5.0	1		08/28/17 16:49		
9040 pH		Analytical Method: EPA 9040							
pH	6.7	Std. Units	0.10	0.10	1		08/29/17 16:24		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	54.4	mg/L	5.0	2.5	5		09/02/17 14:54	16887-00-6	
Fluoride	0.15J	mg/L	0.20	0.10	1		09/01/17 18:32	16984-48-8	
Sulfate	264	mg/L	20.0	10.0	20		09/02/17 15:42	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Sample: MW-307 Lab ID: 60251657007 Collected: 08/21/17 19:10 Received: 08/24/17 08:45 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data Analytical Method:									
Collected By	Client				1		08/21/17 19:10		
Field pH	6.40	Std. Units	0.10	0.050	1		08/21/17 19:10		
Field Temperature	13.0	deg C	0.50	0.25	1		08/21/17 19:10		
Field Specific Conductance	2193	umhos/cm	1.0	1.0	1		08/21/17 19:10		
Field Oxidation Potential	23.7	mV			1		08/21/17 19:10		
Oxygen, Dissolved	0.08	mg/L			1		08/21/17 19:10	7782-44-7	
Turbidity	4.89	NTU	1.0	1.0	1		08/21/17 19:10		
Groundwater Elevation	645.78	feet			1		08/21/17 19:10		
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	197	ug/L	100	3.5	1	08/29/17 10:31	08/30/17 14:17	7440-42-8	
Calcium	221	mg/L	0.10	0.036	1	08/29/17 10:31	08/30/17 14:17	7440-70-2	
Lithium	15.2	ug/L	10.0	2.9	1	08/29/17 10:31	08/30/17 14:17	7439-93-2	
6020 MET ICPMS Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.026	1	08/29/17 10:31	08/30/17 17:15	7440-36-0	
Arsenic	0.52J	ug/L	1.0	0.052	1	08/29/17 10:31	08/30/17 17:15	7440-38-2	
Barium	128	ug/L	1.0	0.095	1	08/29/17 10:31	08/30/17 17:15	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	08/29/17 10:31	08/30/17 17:15	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	08/29/17 10:31	08/30/17 17:15	7440-43-9	
Chromium	0.38J	ug/L	1.0	0.054	1	08/29/17 10:31	08/30/17 17:15	7440-47-3	B
Cobalt	1.1	ug/L	1.0	0.014	1	08/29/17 10:31	08/30/17 17:15	7440-48-4	
Lead	0.085J	ug/L	1.0	0.033	1	08/29/17 10:31	08/30/17 17:15	7439-92-1	
Molybdenum	0.31J	ug/L	1.0	0.058	1	08/29/17 10:31	08/30/17 17:15	7439-98-7	B
Selenium	0.11J	ug/L	1.0	0.086	1	08/29/17 10:31	08/30/17 17:15	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	08/29/17 10:31	08/30/17 17:15	7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	09/01/17 16:30	09/05/17 10:47	7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C									
Total Dissolved Solids	1050	mg/L	5.0	5.0	1		08/26/17 12:43		
9040 pH Analytical Method: EPA 9040									
pH	6.9	Std. Units	0.10	0.10	1		08/29/17 16:26		H6
9056 IC Anions Analytical Method: EPA 9056									
Chloride	219	mg/L	20.0	10.0	20		09/02/17 16:15	16887-00-6	
Fluoride	0.20	mg/L	0.20	0.10	1		09/01/17 18:48	16984-48-8	
Sulfate	102	mg/L	10.0	5.0	10		09/02/17 15:58	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Sample: MW-308 **Lab ID: 60251657008** Collected: 08/21/17 18:15 Received: 08/24/17 08:45 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
Field Data									
Analytical Method:									
Collected By	Client				1		08/21/17 18:15		
Field pH	6.52	Std. Units	0.10	0.050	1		08/21/17 18:15		
Field Temperature	12.6	deg C	0.50	0.25	1		08/21/17 18:15		
Field Specific Conductance	2042	umhos/cm	1.0	1.0	1		08/21/17 18:15		
Field Oxidation Potential	24.4	mV			1		08/21/17 18:15		
Oxygen, Dissolved	0.12	mg/L			1		08/21/17 18:15	7782-44-7	
Turbidity	1.15	NTU	1.0	1.0	1		08/21/17 18:15		
Groundwater Elevation	643.12	feet			1		08/21/17 18:15		
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	214	ug/L	100	3.5	1	08/29/17 10:31	08/30/17 14:19	7440-42-8	
Calcium	218	mg/L	0.10	0.036	1	08/29/17 10:31	08/30/17 14:19	7440-70-2	
Lithium	19.1	ug/L	10.0	2.9	1	08/29/17 10:31	08/30/17 14:19	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.026	1	08/29/17 10:31	08/30/17 17:19	7440-36-0	
Arsenic	0.32J	ug/L	1.0	0.052	1	08/29/17 10:31	08/30/17 17:19	7440-38-2	
Barium	132	ug/L	1.0	0.095	1	08/29/17 10:31	08/30/17 17:19	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	08/29/17 10:31	08/30/17 17:19	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	08/29/17 10:31	08/30/17 17:19	7440-43-9	
Chromium	0.49J	ug/L	1.0	0.054	1	08/29/17 10:31	08/30/17 17:19	7440-47-3	B
Cobalt	0.26J	ug/L	1.0	0.014	1	08/29/17 10:31	08/30/17 17:19	7440-48-4	
Lead	ND	ug/L	1.0	0.033	1	08/29/17 10:31	08/30/17 17:19	7439-92-1	
Molybdenum	0.61J	ug/L	1.0	0.058	1	08/29/17 10:31	08/30/17 17:19	7439-98-7	B
Selenium	ND	ug/L	1.0	0.086	1	08/29/17 10:31	08/30/17 17:19	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	08/29/17 10:31	08/30/17 17:19	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	09/01/17 16:30	09/05/17 10:49	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	1020	mg/L	5.0	5.0	1		08/26/17 12:43		
9040 pH									
Analytical Method: EPA 9040									
pH	6.9	Std. Units	0.10	0.10	1		08/29/17 16:27		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	151	mg/L	20.0	10.0	20		09/02/17 16:31	16887-00-6	
Fluoride	0.23	mg/L	0.20	0.10	1		09/01/17 19:04	16984-48-8	
Sulfate	294	mg/L	20.0	10.0	20		09/02/17 16:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Sample: MW-309 **Lab ID: 60251657009** Collected: 08/21/17 17:10 Received: 08/24/17 08:45 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
Field Data									
Analytical Method:									
Collected By	Client				1		08/21/17 17:10		
Field pH	6.90	Std. Units	0.10	0.050	1		08/21/17 17:10		
Field Temperature	12.6	deg C	0.50	0.25	1		08/21/17 17:10		
Field Specific Conductance	1821	umhos/cm	1.0	1.0	1		08/21/17 17:10		
Field Oxidation Potential	-5.0	mV			1		08/21/17 17:10		
Oxygen, Dissolved	0.08	mg/L			1		08/21/17 17:10	7782-44-7	
Turbidity	2.34	NTU	1.0	1.0	1		08/21/17 17:10		
Groundwater Elevation	641.82	feet			1		08/21/17 17:10		
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	1320	ug/L	100	3.5	1	08/29/17 10:31	08/30/17 14:21	7440-42-8	
Calcium	135	mg/L	0.10	0.036	1	08/29/17 10:31	08/30/17 14:21	7440-70-2	
Lithium	9.4J	ug/L	10.0	2.9	1	08/29/17 10:31	08/30/17 14:21	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	0.029J	ug/L	1.0	0.026	1	08/29/17 10:31	08/30/17 17:24	7440-36-0	
Arsenic	0.44J	ug/L	1.0	0.052	1	08/29/17 10:31	08/30/17 17:24	7440-38-2	
Barium	46.1	ug/L	1.0	0.095	1	08/29/17 10:31	08/30/17 17:24	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	08/29/17 10:31	08/30/17 17:24	7440-41-7	
Cadmium	0.018J	ug/L	0.50	0.018	1	08/29/17 10:31	08/30/17 17:24	7440-43-9	
Chromium	1.2	ug/L	1.0	0.054	1	08/29/17 10:31	08/30/17 17:24	7440-47-3	
Cobalt	2.1	ug/L	1.0	0.014	1	08/29/17 10:31	08/30/17 17:24	7440-48-4	
Lead	0.096J	ug/L	1.0	0.033	1	08/29/17 10:31	08/30/17 17:24	7439-92-1	
Molybdenum	0.28J	ug/L	1.0	0.058	1	08/29/17 10:31	08/30/17 17:24	7439-98-7	B
Selenium	ND	ug/L	1.0	0.086	1	08/29/17 10:31	08/30/17 17:24	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	08/29/17 10:31	08/30/17 17:24	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	09/01/17 16:30	09/05/17 10:51	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	1010	mg/L	5.0	5.0	1		08/26/17 12:44		
9040 pH									
Analytical Method: EPA 9040									
pH	7.2	Std. Units	0.10	0.10	1		08/29/17 16:30		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	78.4	mg/L	5.0	2.5	5		09/02/17 17:03	16887-00-6	
Fluoride	0.19J	mg/L	0.20	0.10	1		09/01/17 19:20	16984-48-8	
Sulfate	395	mg/L	50.0	25.0	50		09/02/17 17:19	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Sample: FIELD BLANK									
Lab ID: 60251657010									
Collected: 08/23/17 11:05									
Received: 08/24/17 08:45									
Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	3.6J	ug/L	100	3.5	1	08/29/17 10:31	08/30/17 13:53	7440-42-8	B
Calcium	ND	mg/L	0.10	0.036	1	08/29/17 10:31	08/30/17 13:53	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	08/29/17 10:31	08/30/17 13:53	7439-93-2	
6020 MET ICPMS									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	ND	ug/L	1.0	0.026	1	08/29/17 10:31	08/30/17 17:11	7440-36-0	
Arsenic	ND	ug/L	1.0	0.052	1	08/29/17 10:31	08/30/17 17:11	7440-38-2	
Barium	ND	ug/L	1.0	0.095	1	08/29/17 10:31	08/30/17 17:11	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	08/29/17 10:31	08/30/17 17:11	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	08/29/17 10:31	08/30/17 17:11	7440-43-9	
Chromium	0.28J	ug/L	1.0	0.054	1	08/29/17 10:31	08/30/17 17:11	7440-47-3	B
Cobalt	ND	ug/L	1.0	0.014	1	08/29/17 10:31	08/30/17 17:11	7440-48-4	
Lead	ND	ug/L	1.0	0.033	1	08/29/17 10:31	08/30/17 17:11	7439-92-1	
Molybdenum	ND	ug/L	1.0	0.058	1	08/29/17 10:31	08/30/17 17:11	7439-98-7	
Selenium	ND	ug/L	1.0	0.086	1	08/29/17 10:31	08/30/17 17:11	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	08/29/17 10:31	08/30/17 17:11	7440-28-0	
7470 Mercury									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	ND	ug/L	0.20	0.046	1	09/01/17 16:30	09/05/17 10:54	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	ND	mg/L	5.0	5.0	1		08/28/17 16:50		
9040 pH									
Analytical Method: EPA 9040									
pH	5.7	Std. Units	0.10	0.10	1		08/29/17 16:32		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	0.62J	mg/L	1.0	0.50	1		09/01/17 19:36	16887-00-6	
Fluoride	ND	mg/L	0.20	0.10	1		09/01/17 19:36	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		09/01/17 19:36	14808-79-8	

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

QC Batch:	491855	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3010	Analysis Description:	6010 MET
Associated Lab Samples:	60251657001, 60251657002, 60251657003, 60251657004, 60251657005, 60251657006, 60251657007, 60251657008, 60251657009, 60251657010		

METHOD BLANK:	2013028	Matrix:	Water
Associated Lab Samples:	60251657001, 60251657002, 60251657003, 60251657004, 60251657005, 60251657006, 60251657007, 60251657008, 60251657009, 60251657010		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	5.3J	100	3.5	08/30/17 13:50	
Calcium	mg/L	ND	0.10	0.036	08/30/17 13:50	
Lithium	ug/L	ND	10.0	2.9	08/30/17 13:50	

LABORATORY CONTROL SAMPLE: 2013029						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1000	100	80-120	
Calcium	mg/L	10	9.6	96	80-120	
Lithium	ug/L	1000	1060	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2013030												2013031	
Parameter	Units	60251657001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Boron	ug/L	779	1000	1000	1770	1750	99	97	75-125	1	20		
Calcium	mg/L	66.8	10	10	75.0	72.7	82	59	75-125	3	20	M1	
Lithium	ug/L	27.9	1000	1000	1090	1080	106	105	75-125	1	20		

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17
Pace Project No.: 60251657

QC Batch: 491857 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60251657001, 60251657002, 60251657003, 60251657004, 60251657005, 60251657006, 60251657007, 60251657008, 60251657009, 60251657010

METHOD BLANK: 2013033 Matrix: Water
Associated Lab Samples: 60251657001, 60251657002, 60251657003, 60251657004, 60251657005, 60251657006, 60251657007, 60251657008, 60251657009, 60251657010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	0.026	08/30/17 16:19	
Arsenic	ug/L	ND	1.0	0.052	08/30/17 16:19	
Barium	ug/L	0.14J	1.0	0.095	08/30/17 16:19	
Beryllium	ug/L	ND	0.50	0.012	08/30/17 16:19	
Cadmium	ug/L	ND	0.50	0.018	08/30/17 16:19	
Chromium	ug/L	0.11J	1.0	0.054	08/30/17 16:19	
Cobalt	ug/L	ND	1.0	0.014	08/30/17 16:19	
Lead	ug/L	ND	1.0	0.033	08/30/17 16:19	
Molybdenum	ug/L	0.075J	1.0	0.058	08/30/17 16:19	
Selenium	ug/L	ND	1.0	0.086	08/30/17 16:19	
Thallium	ug/L	ND	1.0	0.036	08/30/17 16:19	

LABORATORY CONTROL SAMPLE: 2013034

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	38.2	95	80-120	
Arsenic	ug/L	40	38.8	97	80-120	
Barium	ug/L	40	38.3	96	80-120	
Beryllium	ug/L	40	38.5	96	80-120	
Cadmium	ug/L	40	38.9	97	80-120	
Chromium	ug/L	40	39.1	98	80-120	
Cobalt	ug/L	40	38.5	96	80-120	
Lead	ug/L	40	38.3	96	80-120	
Molybdenum	ug/L	40	38.9	97	80-120	
Selenium	ug/L	40	37.9	95	80-120	
Thallium	ug/L	40	37.9	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2013035 2013036

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		60251657002 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Antimony	ug/L	0.036J	40	40	36.1	37.2	90	93	75-125	3	20	
Arsenic	ug/L	0.19J	40	40	36.4	37.4	91	93	75-125	3	20	
Barium	ug/L	18.5	40	40	55.0	56.7	91	96	75-125	3	20	
Beryllium	ug/L	ND	40	40	29.9	30.9	75	77	75-125	3	20	
Cadmium	ug/L	0.21J	40	40	32.6	33.2	81	82	75-125	2	20	
Chromium	ug/L	0.70J	40	40	38.3	39.3	94	96	75-125	3	20	

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Parameter	Units	2013035		2013036		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual	
		60251657002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						MSD Result
Cobalt	ug/L	0.88J	40	40	36.2	36.8	88	90	75-125	2	20
Lead	ug/L	ND	40	40	35.1	36.6	88	91	75-125	4	20
Molybdenum	ug/L	0.51J	40	40	39.3	40.2	97	99	75-125	2	20
Selenium	ug/L	ND	40	40	33.3	34.8	83	87	75-125	4	20
Thallium	ug/L	ND	40	40	36.1	37.6	90	94	75-125	4	20

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

QC Batch: 491616

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60251657007, 60251657008, 60251657009

METHOD BLANK: 2012339

Matrix: Water

Associated Lab Samples: 60251657007, 60251657008, 60251657009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	08/26/17 12:41	

LABORATORY CONTROL SAMPLE: 2012340

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	990	99	80-120	

SAMPLE DUPLICATE: 2012341

Parameter	Units	60251427001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	317	309	3	10	

SAMPLE DUPLICATE: 2012342

Parameter	Units	60251637005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2330	2340	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

QC Batch: 491618 Analysis Method: SM 2540C
 QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
 Associated Lab Samples: 60251657002, 60251657003, 60251657004

METHOD BLANK: 2012388 Matrix: Water

Associated Lab Samples: 60251657002, 60251657003, 60251657004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	08/26/17 15:28	

LABORATORY CONTROL SAMPLE: 2012389

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	984	98	80-120	

SAMPLE DUPLICATE: 2012392

Parameter	Units	60251710001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	15700	16000	2	10	

SAMPLE DUPLICATE: 2012393

Parameter	Units	60251710004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	19000	19000	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

QC Batch: 491860

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60251657001, 60251657005, 60251657006, 60251657010

METHOD BLANK: 2013046

Matrix: Water

Associated Lab Samples: 60251657001, 60251657005, 60251657006, 60251657010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	08/28/17 16:45	

LABORATORY CONTROL SAMPLE: 2013047

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1040	104	80-120	

SAMPLE DUPLICATE: 2013048

Parameter	Units	60251912001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2760	2790	1	10	

SAMPLE DUPLICATE: 2013049

Parameter	Units	60251863003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	984	999	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

QC Batch: 492059 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 60251657001, 60251657002, 60251657003, 60251657004, 60251657005, 60251657006, 60251657007, 60251657008, 60251657009, 60251657010

SAMPLE DUPLICATE: 2013642

Parameter	Units	60251657001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	6.4	6.4	0	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

QC Batch:	492586	Analysis Method:	EPA 9056
QC Batch Method:	EPA 9056	Analysis Description:	9056 IC Anions
Associated Lab Samples:	60251657001, 60251657002, 60251657003, 60251657004, 60251657005, 60251657006, 60251657007, 60251657008, 60251657009, 60251657010		

METHOD BLANK:	2015447	Matrix:	Water
Associated Lab Samples:	60251657001, 60251657002, 60251657003, 60251657004, 60251657005, 60251657006, 60251657007, 60251657008, 60251657009, 60251657010		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	09/01/17 14:46	
Fluoride	mg/L	ND	0.20	0.10	09/01/17 14:46	
Sulfate	mg/L	ND	1.0	0.50	09/01/17 14:46	

LABORATORY CONTROL SAMPLE: 2015448

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	80-120	
Fluoride	mg/L	2.5	2.4	97	80-120	
Sulfate	mg/L	5	4.9	97	80-120	

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

QC Batch: 492641 Analysis Method: EPA 9056
 QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
 Associated Lab Samples: 60251657001, 60251657002, 60251657003, 60251657004, 60251657005, 60251657006, 60251657007, 60251657008, 60251657009

METHOD BLANK: 2015834 Matrix: Water
 Associated Lab Samples: 60251657001, 60251657002, 60251657003, 60251657004, 60251657005, 60251657006, 60251657007, 60251657008, 60251657009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	09/02/17 09:12	
Sulfate	mg/L	ND	1.0	0.50	09/02/17 09:12	

LABORATORY CONTROL SAMPLE: 2015835

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	80-120	
Sulfate	mg/L	5	5.0	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2015836 2015837

Parameter	Units	60251651008 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
			Spike Conc.	MS Result	Spike Conc.	MSD Result							
Sulfate	mg/L	ND	5	5	5	5	6.0	5.6	101	93	80-120	6	15

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QUALIFIERS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60251657001	MW-301		493234		
60251657002	MW-302		493234		
60251657003	MW-303		493234		
60251657004	MW-304		493234		
60251657005	MW-305		493234		
60251657006	MW-306		493234		
60251657007	MW-307		493234		
60251657008	MW-308		493234		
60251657009	MW-309		493234		
60251657001	MW-301	EPA 3010	491855	EPA 6010	492032
60251657002	MW-302	EPA 3010	491855	EPA 6010	492032
60251657003	MW-303	EPA 3010	491855	EPA 6010	492032
60251657004	MW-304	EPA 3010	491855	EPA 6010	492032
60251657005	MW-305	EPA 3010	491855	EPA 6010	492032
60251657006	MW-306	EPA 3010	491855	EPA 6010	492032
60251657007	MW-307	EPA 3010	491855	EPA 6010	492032
60251657008	MW-308	EPA 3010	491855	EPA 6010	492032
60251657009	MW-309	EPA 3010	491855	EPA 6010	492032
60251657010	FIELD BLANK	EPA 3010	491855	EPA 6010	492032
60251657001	MW-301	EPA 3010	491857	EPA 6020	492026
60251657002	MW-302	EPA 3010	491857	EPA 6020	492026
60251657003	MW-303	EPA 3010	491857	EPA 6020	492026
60251657004	MW-304	EPA 3010	491857	EPA 6020	492026
60251657005	MW-305	EPA 3010	491857	EPA 6020	492026
60251657006	MW-306	EPA 3010	491857	EPA 6020	492026
60251657007	MW-307	EPA 3010	491857	EPA 6020	492026
60251657008	MW-308	EPA 3010	491857	EPA 6020	492026
60251657009	MW-309	EPA 3010	491857	EPA 6020	492026
60251657010	FIELD BLANK	EPA 3010	491857	EPA 6020	492026
60251657001	MW-301	EPA 7470	492571	EPA 7470	492629
60251657002	MW-302	EPA 7470	492571	EPA 7470	492629
60251657003	MW-303	EPA 7470	492571	EPA 7470	492629
60251657004	MW-304	EPA 7470	492571	EPA 7470	492629
60251657005	MW-305	EPA 7470	492571	EPA 7470	492629
60251657006	MW-306	EPA 7470	492571	EPA 7470	492629
60251657007	MW-307	EPA 7470	492571	EPA 7470	492629
60251657008	MW-308	EPA 7470	492571	EPA 7470	492629
60251657009	MW-309	EPA 7470	492571	EPA 7470	492629
60251657010	FIELD BLANK	EPA 7470	492571	EPA 7470	492629
60251657001	MW-301	SM 2540C	491860		
60251657002	MW-302	SM 2540C	491618		
60251657003	MW-303	SM 2540C	491618		
60251657004	MW-304	SM 2540C	491618		
60251657005	MW-305	SM 2540C	491860		
60251657006	MW-306	SM 2540C	491860		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251657

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60251657007	MW-307	SM 2540C	491616		
60251657008	MW-308	SM 2540C	491616		
60251657009	MW-309	SM 2540C	491616		
60251657010	FIELD BLANK	SM 2540C	491860		
60251657001	MW-301	EPA 9040	492059		
60251657002	MW-302	EPA 9040	492059		
60251657003	MW-303	EPA 9040	492059		
60251657004	MW-304	EPA 9040	492059		
60251657005	MW-305	EPA 9040	492059		
60251657006	MW-306	EPA 9040	492059		
60251657007	MW-307	EPA 9040	492059		
60251657008	MW-308	EPA 9040	492059		
60251657009	MW-309	EPA 9040	492059		
60251657010	FIELD BLANK	EPA 9040	492059		
60251657001	MW-301	EPA 9056	492586		
60251657001	MW-301	EPA 9056	492641		
60251657002	MW-302	EPA 9056	492586		
60251657002	MW-302	EPA 9056	492641		
60251657003	MW-303	EPA 9056	492586		
60251657003	MW-303	EPA 9056	492641		
60251657004	MW-304	EPA 9056	492586		
60251657004	MW-304	EPA 9056	492641		
60251657005	MW-305	EPA 9056	492586		
60251657005	MW-305	EPA 9056	492641		
60251657006	MW-306	EPA 9056	492586		
60251657006	MW-306	EPA 9056	492641		
60251657007	MW-307	EPA 9056	492586		
60251657007	MW-307	EPA 9056	492641		
60251657008	MW-308	EPA 9056	492586		
60251657008	MW-308	EPA 9056	492641		
60251657009	MW-309	EPA 9056	492586		
60251657009	MW-309	EPA 9056	492641		
60251657010	FIELD BLANK	EPA 9056	492586		

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Sample Condition Upon Receipt

WO#: 60251657



Client Name: SCS Eng.

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: 8677 7489 2705 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other

Thermometer Used: T-266 / T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 3.4 Corr. Factor CF 0.0 / CF +0.3 Corrected 3.4

Date and initials of person examining contents: JB 8/24/17

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<u>pH</u>
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Cyanide water sample checks: <input checked="" type="checkbox"/> N/A		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: ASB Date: 8.24.17

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.



Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: SCS Engineers	Report To: Meghan Blodgett	Company Name: SCS Engineers	Attention: Meghan Blodgett/Jess Vaicheck	Address:	REGULATORY AGENCY:
Address: 2830 Dairy Drive	Copy To: Tom Karwaski	Address:		MPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/>	
Madison WI 53718	Purchase Order No:	City/State:		UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER <input type="checkbox"/>	
Email To: mblodgett@scsengineers.com		Site Location:			
Phone: 608-216-7362	Project Name: Ootumwa Generating Station	STATE:	IA		
Requested Due Date/TA:	Project Number: 25216072.17				

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER: DW WASTE WATER: WW PRODUCT: P SOIL: SL OIL: OL WIPE: WP AIR: AR OTHER: OT TISSUE: TS	SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
			DATE	TIME						
1	MW-301	MW-301	8-23-17	12:00	18.7	2	H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₈ Methanol Other	X	X	0051657
2	MW-302	MW-302	8-23-17	16:55	14.0	2	Unpreserved	X	X	0051657
3	MW-303	MW-303	8-23-17	17:45	16.8	2	Unpreserved	X	X	0051657
4	MW-304	MW-304	8-23-17	19:00	13.4	2	Unpreserved	X	X	0051657
5	MW-305	MW-305	8-23-17	10:15	13.3	2	Unpreserved	X	X	0051657
6	MW-306	MW-306	8-23-17	11:05	13.2	2	Unpreserved	X	X	0051657
7	MW-307	MW-307	8-23-17	19:10	12.7	2	Unpreserved	X	X	0051657
8	MW-308	MW-308	8-23-17	18:15	12.6	2	Unpreserved	X	X	0051657
9	MW-309	MW-309	8-23-17	17:10	12.1	2	Unpreserved	X	X	0051657
10	FIELD BLANK	FIELD BLANK	8-23-17	11:05	11.05	2	Unpreserved	X	X	0051657
11										
12										

RELINQUISHED BY / AFFILIATION:	DATE:	TIME:	ACCEPTED BY / AFFILIATION:	DATE:	TIME:	SAMPLE CONDITIONS:
Paul A. Brown SCS	8-23-17	11:50	Jess Vaicheck	8/24/17	0845	Temp °C: 34 Y Y Y Y
SAMPLER NAME AND SIGNATURE						
PRINT Name of SAMPLER:						
SIGNATURE of SAMPLER:						
DATE Signed (MM/DD/YY):						
Temp °C:						
Frosted on Ice (Y/N):						
Custody Sealed Cooler (Y/N):						
Samples Intact (Y/N):						

September 19, 2017

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Gen Sta/25216072.17
Pace Project No.: 60251678

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on August 24, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Kyle Kramer, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60251678001	MW-301	Water	08/23/17 12:00	08/24/17 08:45
60251678002	MW-302	Water	08/22/17 16:55	08/24/17 08:45
60251678003	MW-303	Water	08/22/17 17:45	08/24/17 08:45
60251678004	MW-304	Water	08/22/17 19:00	08/24/17 08:45
60251678005	MW-305	Water	08/23/17 10:15	08/24/17 08:45
60251678006	MW-306	Water	08/23/17 11:05	08/24/17 08:45
60251678007	MW-307	Water	08/21/17 19:10	08/24/17 08:45
60251678008	MW-308	Water	08/21/17 18:15	08/24/17 08:45
60251678009	MW-309	Water	08/21/17 17:10	08/24/17 08:45
60251678010	FIELD BLANK	Water	08/23/17 11:05	08/24/17 08:45

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60251678001	MW-301	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60251678002	MW-302	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60251678003	MW-303	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60251678004	MW-304	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60251678005	MW-305	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60251678006	MW-306	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60251678007	MW-307	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60251678008	MW-308	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60251678009	MW-309	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60251678010	FIELD BLANK	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Sample: MW-301 **Lab ID: 60251678001** Collected: 08/23/17 12:00 Received: 08/24/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.123 ± 0.282 (0.454) C:NA T:89%	pCi/L	09/08/17 20:08	13982-63-3	
Radium-228	EPA 904.0	0.602 ± 0.404 (0.782) C:75% T:89%	pCi/L	09/12/17 11:55	15262-20-1	
Total Radium	Total Radium Calculation	0.725 ± 0.686 (1.24)	pCi/L	09/19/17 08:29	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Sample: MW-302 **Lab ID: 60251678002** Collected: 08/22/17 16:55 Received: 08/24/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.406 ± 0.471 (0.760) C:NA T:90%	pCi/L	09/08/17 20:08	13982-63-3	
Radium-228	EPA 904.0	1.20 ± 0.524 (0.857) C:68% T:80%	pCi/L	09/12/17 11:55	15262-20-1	
Total Radium	Total Radium Calculation	1.61 ± 0.995 (1.62)	pCi/L	09/19/17 08:29	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Sample: MW-303 **Lab ID: 60251678003** Collected: 08/22/17 17:45 Received: 08/24/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.40 ± 0.671 (0.617) C:NA T:81%	pCi/L	09/08/17 20:08	13982-63-3	
Radium-228	EPA 904.0	0.958 ± 0.445 (0.710) C:72% T:86%	pCi/L	09/12/17 18:07	15262-20-1	
Total Radium	Total Radium Calculation	2.36 ± 1.12 (1.33)	pCi/L	09/19/17 08:29	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Sample: MW-304 **Lab ID: 60251678004** Collected: 08/22/17 19:00 Received: 08/24/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.20 ± 0.735 (0.929) C:NA T:77%	pCi/L	09/08/17 20:25	13982-63-3	
Radium-228	EPA 904.0	2.00 ± 0.625 (0.782) C:75% T:90%	pCi/L	09/12/17 18:07	15262-20-1	
Total Radium	Total Radium Calculation	3.20 ± 1.36 (1.71)	pCi/L	09/19/17 08:29	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Sample: MW-305 **Lab ID: 60251678005** Collected: 08/23/17 10:15 Received: 08/24/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.291 ± 0.471 (0.819) C:NA T:88%	pCi/L	09/08/17 20:25	13982-63-3	
Radium-228	EPA 904.0	0.793 ± 0.429 (0.753) C:75% T:89%	pCi/L	09/12/17 18:07	15262-20-1	
Total Radium	Total Radium Calculation	1.08 ± 0.900 (1.57)	pCi/L	09/19/17 08:29	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Sample: MW-306 **Lab ID: 60251678006** Collected: 08/23/17 11:05 Received: 08/24/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.517 ± 0.364 (0.175) C:NA T:82%	pCi/L	09/08/17 20:25	13982-63-3	
Radium-228	EPA 904.0	0.784 ± 0.485 (0.882) C:74% T:70%	pCi/L	09/12/17 18:08	15262-20-1	
Total Radium	Total Radium Calculation	1.30 ± 0.849 (1.06)	pCi/L	09/19/17 08:29	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Sample: MW-307 **Lab ID: 60251678007** Collected: 08/21/17 19:10 Received: 08/24/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.69 ± 0.666 (0.169) C:NA T:81%	pCi/L	09/08/17 20:25	13982-63-3	
Radium-228	EPA 904.0	1.38 ± 0.509 (0.680) C:75% T:81%	pCi/L	09/12/17 18:08	15262-20-1	
Total Radium	Total Radium Calculation	3.07 ± 1.18 (0.849)	pCi/L	09/19/17 08:29	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Sample: MW-308 **Lab ID: 60251678008** Collected: 08/21/17 18:15 Received: 08/24/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.42 ± 0.643 (0.192) C:NA T:75%	pCi/L	09/08/17 20:25	13982-63-3	
Radium-228	EPA 904.0	0.745 ± 0.409 (0.715) C:75% T:87%	pCi/L	09/12/17 18:08	15262-20-1	
Total Radium	Total Radium Calculation	2.17 ± 1.05 (0.907)	pCi/L	09/19/17 08:29	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Sample: MW-309 **Lab ID: 60251678009** Collected: 08/21/17 17:10 Received: 08/24/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.783 ± 0.448 (0.411) C:NA T:87%	pCi/L	09/08/17 20:25	13982-63-3	
Radium-228	EPA 904.0	0.866 ± 0.435 (0.745) C:78% T:87%	pCi/L	09/12/17 18:08	15262-20-1	
Total Radium	Total Radium Calculation	1.65 ± 0.883 (1.16)	pCi/L	09/19/17 08:29	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Sample: FIELD BLANK **Lab ID: 60251678010** Collected: 08/23/17 11:05 Received: 08/24/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.246 ± 0.283 (0.167) C:NA T:86%	pCi/L	09/08/17 20:40	13982-63-3	
Radium-228	EPA 904.0	0.288 ± 0.497 (1.08) C:76% T:69%	pCi/L	09/12/17 18:08	15262-20-1	
Total Radium	Total Radium Calculation	0.534 ± 0.780 (1.25)	pCi/L	09/19/17 08:29	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

QC Batch:	270001	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
Associated Lab Samples:	60251678001, 60251678002, 60251678003, 60251678004, 60251678005, 60251678006, 60251678007, 60251678008, 60251678009, 60251678010		

METHOD BLANK:	1328689	Matrix:	Water
Associated Lab Samples:	60251678001, 60251678002, 60251678003, 60251678004, 60251678005, 60251678006, 60251678007, 60251678008, 60251678009, 60251678010		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.116 ± 0.322 (0.624) C:NA T:87%	pCi/L	09/08/17 19:54	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

QC Batch:	270012	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	60251678001, 60251678002, 60251678003, 60251678004, 60251678005, 60251678006, 60251678007, 60251678008, 60251678009, 60251678010		

METHOD BLANK:	1328714	Matrix:	Water
Associated Lab Samples:	60251678001, 60251678002, 60251678003, 60251678004, 60251678005, 60251678006, 60251678007, 60251678008, 60251678009, 60251678010		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.790 ± 0.410 (0.733) C:79% T:84%	pCi/L	09/12/17 11:54	

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

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QUALIFIERS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60251678

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60251678001	MW-301	EPA 903.1	270001		
60251678002	MW-302	EPA 903.1	270001		
60251678003	MW-303	EPA 903.1	270001		
60251678004	MW-304	EPA 903.1	270001		
60251678005	MW-305	EPA 903.1	270001		
60251678006	MW-306	EPA 903.1	270001		
60251678007	MW-307	EPA 903.1	270001		
60251678008	MW-308	EPA 903.1	270001		
60251678009	MW-309	EPA 903.1	270001		
60251678010	FIELD BLANK	EPA 903.1	270001		
60251678001	MW-301	EPA 904.0	270012		
60251678002	MW-302	EPA 904.0	270012		
60251678003	MW-303	EPA 904.0	270012		
60251678004	MW-304	EPA 904.0	270012		
60251678005	MW-305	EPA 904.0	270012		
60251678006	MW-306	EPA 904.0	270012		
60251678007	MW-307	EPA 904.0	270012		
60251678008	MW-308	EPA 904.0	270012		
60251678009	MW-309	EPA 904.0	270012		
60251678010	FIELD BLANK	EPA 904.0	270012		
60251678001	MW-301	Total Radium Calculation	272136		
60251678002	MW-302	Total Radium Calculation	272136		
60251678003	MW-303	Total Radium Calculation	272136		
60251678004	MW-304	Total Radium Calculation	272136		
60251678005	MW-305	Total Radium Calculation	272136		
60251678006	MW-306	Total Radium Calculation	272136		
60251678007	MW-307	Total Radium Calculation	272136		
60251678008	MW-308	Total Radium Calculation	272136		
60251678009	MW-309	Total Radium Calculation	272136		
60251678010	FIELD BLANK	Total Radium Calculation	272136		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60251678



Client Name: SCS

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: 8106 8854 1777 Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags BB 924 Foam None Other

Thermometer Used: T-266 / T-239 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 14.6 Corr. Factor CF 0.0 / CF +0.3 Corrected 14.6

Date and initials of person examining contents: BB 8/24/17

Temperature should be above freezing to 6°C

Chain of Custody present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples arrived within holding time:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Pace containers used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Samples contain multiple phases? Matrix: <u>wt</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Cyanide water sample checks: <input type="checkbox"/> N/A	
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

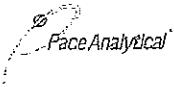
Client Notification/ Resolution: Copy COC to Client? Y N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature] Date: 8-24-17

Pittsburgh Lab Sample Condition Upon Receipt



30228486

Client Name: PACE, KS

Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: 778565961981

Label	<u>ZH</u>
LIMS Login	<u>ANW</u>

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Thermometer Used N/A Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ZH 8/29/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	/			1.
Chain of Custody Filled Out:	/			2.
Chain of Custody Relinquished:	/			3.
Sampler Name & Signature on COC:		/		4.
Sample Labels match COC:	/			5.
-Includes date/time/ID Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	/			6.
Short Hold Time Analysis (<72hr remaining):		/		7.
Rush Turn Around Time Requested:		/		8.
Sufficient Volume:	/			9.
Correct Containers Used:	/			10.
-Pace Containers Used:	/			
Containers Intact:	/			11.
Orthophosphate field filtered			/	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			/	13.
Organic Samples checked for dechlorination:			/	14.
Filtered volume received for Dissolved tests			/	15.
All containers have been checked for preservation.	/			16.
All containers needing preservation are found to be in compliance with EPA recommendation.	/			<u>PHLZ</u>
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: <u>ZH</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):			/	17.
Trip Blank Present:			/	18.
Trip Blank Custody Seals Present			/	
Rad Aqueous Samples Screened > 0.5 mrem/hr		/		Initial when completed: <u>ZH</u> Date: <u>8/29/17</u>

Client Notification/ Resolution: Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)
 *PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

A9 Fall 2017 Detection Sampling, Analytical Laboratory Report

November 22, 2017

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Ottumwa Gen Sta/25216072.17
Pace Project No.: 60257805

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on November 10, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Kyle Kramer, SCS Engineers
Jeff Maxted, Alliant Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60257805001	MW-301	Water	11/08/17 10:30	11/10/17 08:30
60257805002	MW-302	Water	11/08/17 11:15	11/10/17 08:30
60257805003	MW-303	Water	11/08/17 11:45	11/10/17 08:30
60257805004	MW-304	Water	11/08/17 12:40	11/10/17 08:30
60257805005	MW-305	Water	11/08/17 13:30	11/10/17 08:30
60257805006	MW-306	Water	11/08/17 13:55	11/10/17 08:30
60257805007	MW-307	Water	11/08/17 15:25	11/10/17 08:30
60257805008	MW-308	Water	11/08/17 16:00	11/10/17 08:30
60257805009	MW-309	Water	11/08/17 16:35	11/10/17 08:30
60257805010	FIELD BLANK	Water	11/08/17 14:45	11/10/17 08:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60257805001	MW-301	EPA 6010	TDS	2	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	JMC1, OL	3	PASI-K
60257805002	MW-302	EPA 6010	TDS	2	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	JMC1, OL	3	PASI-K
60257805003	MW-303	EPA 6010	TDS	2	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	JMC1, OL	3	PASI-K
60257805004	MW-304	EPA 6010	TDS	2	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	JMC1, OL	3	PASI-K
60257805005	MW-305	EPA 6010	TDS	2	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	JMC1, OL	3	PASI-K
60257805006	MW-306	EPA 6010	TDS	2	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	JMC1, OL	3	PASI-K
60257805007	MW-307	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	JMC1, OL	3	PASI-K
60257805008	MW-308	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	JMC1, OL	3	PASI-K
60257805009	MW-309	EPA 6010	TDS	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	JMC1, OL	3	PASI-K
60257805010	FIELD BLANK	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 9040	JSS	1	PASI-K
		EPA 9056	OL	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Sample: MW-301									
Lab ID: 60257805001									
Collected: 11/08/17 10:30									
Received: 11/10/17 08:30									
Matrix: Water									
Field Data									
Analytical Method:									
Collected By	Client				1		11/08/17 10:30		
Field pH	6.41	Std. Units	0.10	0.050	1		11/08/17 10:30		
Field Temperature	13.9	deg C	0.50	0.25	1		11/08/17 10:30		
Field Specific Conductance	743	umhos/cm	1.0	1.0	1		11/08/17 10:30		
Field Oxidation Potential	200.7	mV			1		11/08/17 10:30		
Oxygen, Dissolved	4.16	mg/L			1		11/08/17 10:30	7782-44-7	
Turbidity	1.03	NTU	1.0	1.0	1		11/08/17 10:30		
Groundwater Elevation	681.54	feet			1		11/08/17 10:30		
6010 MET ICP									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Boron	488	ug/L	100	3.5	1	11/15/17 10:20	11/15/17 17:49	7440-42-8	
Calcium	65.2	mg/L	0.10	0.036	1	11/15/17 10:20	11/15/17 17:49	7440-70-2	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Total Dissolved Solids	448	mg/L	5.0	5.0	1		11/15/17 15:29		
9040 pH									
Analytical Method: EPA 9040									
pH	6.4	Std. Units	0.10	0.10	1		11/13/17 16:27		H6
9056 IC Anions									
Analytical Method: EPA 9056									
Chloride	59.8	mg/L	5.0	2.5	5		11/21/17 17:49	16887-00-6	
Fluoride	0.27	mg/L	0.20	0.10	1		11/18/17 23:30	16984-48-8	
Sulfate	178	mg/L	20.0	10.0	20		11/21/17 18:03	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Sample: MW-302		Lab ID: 60257805002		Collected: 11/08/17 11:15		Received: 11/10/17 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		11/08/17 11:15		
Field pH	6.55	Std. Units	0.10	0.050	1		11/08/17 11:15		
Field Temperature	13.8	deg C	0.50	0.25	1		11/08/17 11:15		
Field Specific Conductance	2274	umhos/cm	1.0	1.0	1		11/08/17 11:15		
Field Oxidation Potential	191.7	mV			1		11/08/17 11:15		
Oxygen, Dissolved	0.40	mg/L			1		11/08/17 11:15	7782-44-7	
Turbidity	1.63	NTU	1.0	1.0	1		11/08/17 11:15		
Groundwater Elevation	655.40	feet			1		11/08/17 11:15		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	1320	ug/L	100	3.5	1	11/15/17 10:20	11/15/17 17:51	7440-42-8	
Calcium	183	mg/L	0.10	0.036	1	11/15/17 10:20	11/15/17 17:51	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1620	mg/L	5.0	5.0	1		11/15/17 15:30		
9040 pH		Analytical Method: EPA 9040							
pH	6.5	Std. Units	0.10	0.10	1		11/13/17 16:29		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	254	mg/L	20.0	10.0	20		11/21/17 18:17	16887-00-6	
Fluoride	0.20J	mg/L	0.20	0.10	1		11/19/17 00:14	16984-48-8	
Sulfate	786	mg/L	100	50.0	100		11/21/17 19:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Sample: MW-303		Lab ID: 60257805003		Collected: 11/08/17 11:45		Received: 11/10/17 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		11/08/17 11:45		
Field pH	6.60	Std. Units	0.10	0.050	1		11/08/17 11:45		
Field Temperature	15.2	deg C	0.50	0.25	1		11/08/17 11:45		
Field Specific Conductance	1896	umhos/cm	1.0	1.0	1		11/08/17 11:45		
Field Oxidation Potential	176.8	mV			1		11/08/17 11:45		
Oxygen, Dissolved	0.48	mg/L			1		11/08/17 11:45	7782-44-7	
Turbidity	3.67	NTU	1.0	1.0	1		11/08/17 11:45		
Groundwater Elevation	651.34	feet			1		11/08/17 11:45		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	1070	ug/L	100	3.5	1	11/15/17 10:20	11/15/17 17:53	7440-42-8	
Calcium	234	mg/L	0.10	0.036	1	11/15/17 10:20	11/15/17 17:53	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1290	mg/L	5.0	5.0	1		11/15/17 15:30		
9040 pH		Analytical Method: EPA 9040							
pH	6.7	Std. Units	0.10	0.10	1		11/13/17 16:30		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	185	mg/L	20.0	10.0	20		11/21/17 19:14	16887-00-6	
Fluoride	0.19J	mg/L	0.20	0.10	1		11/19/17 00:28	16984-48-8	
Sulfate	348	mg/L	20.0	10.0	20		11/21/17 19:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Sample: MW-304		Lab ID: 60257805004		Collected: 11/08/17 12:40		Received: 11/10/17 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		11/08/17 12:40		
Field pH	7.00	Std. Units	0.10	0.050	1		11/08/17 12:40		
Field Temperature	13.3	deg C	0.50	0.25	1		11/08/17 12:40		
Field Specific Conductance	2205	umhos/cm	1.0	1.0	1		11/08/17 12:40		
Field Oxidation Potential	162.7	mV			1		11/08/17 12:40		
Oxygen, Dissolved	0.25	mg/L			1		11/08/17 12:40	7782-44-7	
Turbidity	3.88	NTU	1.0	1.0	1		11/08/17 12:40		
Groundwater Elevation	653.03	feet			1		11/08/17 12:40		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	1040	ug/L	100	3.5	1	11/15/17 10:20	11/15/17 17:56	7440-42-8	
Calcium	136	mg/L	0.10	0.036	1	11/15/17 10:20	11/15/17 17:56	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1270	mg/L	5.0	5.0	1		11/15/17 15:30		
9040 pH		Analytical Method: EPA 9040							
pH	6.9	Std. Units	0.10	0.10	1		11/13/17 16:31		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	417	mg/L	50.0	25.0	50		11/21/17 19:42	16887-00-6	
Fluoride	0.96	mg/L	0.20	0.10	1		11/19/17 00:42	16984-48-8	
Sulfate	194	mg/L	20.0	10.0	20		11/21/17 19:57	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Sample: MW-305		Lab ID: 60257805005		Collected: 11/08/17 13:30		Received: 11/10/17 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		11/08/17 13:30		
Field pH	7.01	Std. Units	0.10	0.050	1		11/08/17 13:30		
Field Temperature	13.2	deg C	0.50	0.25	1		11/08/17 13:30		
Field Specific Conductance	1738	umhos/cm	1.0	1.0	1		11/08/17 13:30		
Field Oxidation Potential	146.1	mV			1		11/08/17 13:30		
Oxygen, Dissolved	0.20	mg/L			1		11/08/17 13:30	7782-44-7	
Turbidity	2.68	NTU	1.0	1.0	1		11/08/17 13:30		
Groundwater Elevation	659.76	feet			1		11/08/17 13:30		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	925	ug/L	100	3.5	1	11/15/17 10:20	11/15/17 17:58	7440-42-8	
Calcium	99.5	mg/L	0.10	0.036	1	11/15/17 10:20	11/15/17 17:58	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1040	mg/L	5.0	5.0	1		11/15/17 15:30		
9040 pH		Analytical Method: EPA 9040							
pH	7.0	Std. Units	0.10	0.10	1		11/13/17 16:33		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	282	mg/L	20.0	10.0	20		11/21/17 20:11	16887-00-6	
Fluoride	0.40	mg/L	0.20	0.10	1		11/19/17 00:57	16984-48-8	
Sulfate	138	mg/L	10.0	5.0	10		11/21/17 20:25	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Sample: MW-306		Lab ID: 60257805006		Collected: 11/08/17 13:55		Received: 11/10/17 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		11/08/17 13:55		
Field pH	6.49	Std. Units	0.10	0.050	1		11/08/17 13:55		
Field Temperature	13.6	deg C	0.50	0.25	1		11/08/17 13:55		
Field Specific Conductance	1186	umhos/cm	1.0	1.0	1		11/08/17 13:55		
Field Oxidation Potential	174.1	mV			1		11/08/17 13:55		
Oxygen, Dissolved	0.18	mg/L			1		11/08/17 13:55	7782-44-7	
Turbidity	0.82	NTU	1.0	1.0	1		11/08/17 13:55		
Groundwater Elevation	669.04	feet			1		11/08/17 13:55		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	881	ug/L	100	3.5	1	11/15/17 10:20	11/15/17 18:01	7440-42-8	
Calcium	73.1	mg/L	0.10	0.036	1	11/15/17 10:20	11/15/17 18:01	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	773	mg/L	5.0	5.0	1		11/15/17 15:31		
9040 pH		Analytical Method: EPA 9040							
pH	6.5	Std. Units	0.10	0.10	1		11/13/17 16:35		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	50.4	mg/L	5.0	2.5	5		11/21/17 20:39	16887-00-6	
Fluoride	0.11J	mg/L	0.20	0.10	1		11/19/17 01:11	16984-48-8	
Sulfate	274	mg/L	20.0	10.0	20		11/21/17 20:53	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Sample: MW-307		Lab ID: 60257805007		Collected: 11/08/17 15:25		Received: 11/10/17 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		11/08/17 15:25		
Field pH	6.61	Std. Units	0.10	0.050	1		11/08/17 15:25		
Field Temperature	13.2	deg C	0.50	0.25	1		11/08/17 15:25		
Field Specific Conductance	1656	umhos/cm	1.0	1.0	1		11/08/17 15:25		
Field Oxidation Potential	176.7	mV			1		11/08/17 15:25		
Oxygen, Dissolved	0.17	mg/L			1		11/08/17 15:25	7782-44-7	
Turbidity	11.16	NTU	1.0	1.0	1		11/08/17 15:25		
Groundwater Elevation	647.37	feet			1		11/08/17 15:25		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	214	ug/L	100	3.5	1	11/15/17 10:20	11/15/17 18:03	7440-42-8	
Calcium	227	mg/L	0.10	0.036	1	11/15/17 10:20	11/15/17 18:03	7440-70-2	
Lithium	12.9	ug/L	10.0	2.9	1	11/15/17 10:20	11/15/17 18:03	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	0.026	1	11/15/17 10:20	11/19/17 11:27	7440-36-0	
Arsenic	0.54J	ug/L	1.0	0.052	1	11/15/17 10:20	11/19/17 11:27	7440-38-2	
Barium	131	ug/L	1.0	0.095	1	11/15/17 10:20	11/19/17 11:27	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	11/15/17 10:20	11/19/17 11:27	7440-41-7	
Cadmium	0.018J	ug/L	0.50	0.018	1	11/15/17 10:20	11/19/17 11:27	7440-43-9	
Chromium	0.38J	ug/L	1.0	0.054	1	11/15/17 10:20	11/19/17 11:27	7440-47-3	
Cobalt	1.3	ug/L	1.0	0.014	1	11/15/17 10:20	11/19/17 11:27	7440-48-4	
Lead	0.075J	ug/L	1.0	0.033	1	11/15/17 10:20	11/19/17 11:27	7439-92-1	
Molybdenum	0.37J	ug/L	1.0	0.058	1	11/15/17 10:20	11/19/17 11:27	7439-98-7	B
Selenium	0.13J	ug/L	1.0	0.086	1	11/15/17 10:20	11/19/17 11:27	7782-49-2	
Thallium	0.065J	ug/L	1.0	0.036	1	11/15/17 10:20	11/19/17 11:27	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	11/17/17 10:27	11/17/17 14:37	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1030	mg/L	5.0	5.0	1		11/15/17 15:31		
9040 pH		Analytical Method: EPA 9040							
pH	7.0	Std. Units	0.10	0.10	1		11/14/17 16:48		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	217	mg/L	20.0	10.0	20		11/21/17 21:08	16887-00-6	
Fluoride	0.12J	mg/L	0.20	0.10	1		11/19/17 01:26	16984-48-8	
Sulfate	102	mg/L	10.0	5.0	10		11/21/17 21:50	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Sample: MW-308		Lab ID: 60257805008		Collected: 11/08/17 16:00		Received: 11/10/17 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method:							
Collected By	Client				1		11/08/17 16:00		
Field pH	6.76	Std. Units	0.10	0.050	1		11/08/17 16:00		
Field Temperature	13.0	deg C	0.50	0.25	1		11/08/17 16:00		
Field Specific Conductance	1577	umhos/cm	1.0	1.0	1		11/08/17 16:00		
Field Oxidation Potential	169.7	mV			1		11/08/17 16:00		
Oxygen, Dissolved	0.12	mg/L			1		11/08/17 16:00	7782-44-7	
Turbidity	0.73	NTU	1.0	1.0	1		11/08/17 16:00		
Groundwater Elevation	644.99	feet			1		11/08/17 16:00		
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Boron	240	ug/L	100	3.5	1	11/15/17 10:20	11/15/17 18:05	7440-42-8	
Calcium	212	mg/L	0.10	0.036	1	11/15/17 10:20	11/15/17 18:05	7440-70-2	
Lithium	12.6	ug/L	10.0	2.9	1	11/15/17 10:20	11/15/17 18:05	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	ND	ug/L	1.0	0.026	1	11/15/17 10:20	11/19/17 11:51	7440-36-0	
Arsenic	0.32J	ug/L	1.0	0.052	1	11/15/17 10:20	11/19/17 11:51	7440-38-2	
Barium	133	ug/L	1.0	0.095	1	11/15/17 10:20	11/19/17 11:51	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	11/15/17 10:20	11/19/17 11:51	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	11/15/17 10:20	11/19/17 11:51	7440-43-9	
Chromium	0.45J	ug/L	1.0	0.054	1	11/15/17 10:20	11/19/17 11:51	7440-47-3	
Cobalt	0.23J	ug/L	1.0	0.014	1	11/15/17 10:20	11/19/17 11:51	7440-48-4	
Lead	ND	ug/L	1.0	0.033	1	11/15/17 10:20	11/19/17 11:51	7439-92-1	
Molybdenum	0.75J	ug/L	1.0	0.058	1	11/15/17 10:20	11/19/17 11:51	7439-98-7	B
Selenium	ND	ug/L	1.0	0.086	1	11/15/17 10:20	11/19/17 11:51	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	11/15/17 10:20	11/19/17 11:51	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	0.046	1	11/17/17 10:27	11/17/17 14:39	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	1120	mg/L	5.0	5.0	1		11/15/17 15:32		
9040 pH		Analytical Method: EPA 9040							
pH	7.0	Std. Units	0.10	0.10	1		11/14/17 16:50		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	156	mg/L	10.0	5.0	10		11/21/17 22:04	16887-00-6	
Fluoride	0.12J	mg/L	0.20	0.10	1		11/19/17 01:40	16984-48-8	
Sulfate	297	mg/L	20.0	10.0	20		11/21/17 22:19	14808-79-8	

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Sample: MW-309		Lab ID: 60257805009		Collected: 11/08/17 16:35	Received: 11/10/17 08:30	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
Field Data		Analytical Method:								
Collected By	Client				1		11/08/17 16:35			
Field pH	7.11	Std. Units	0.10	0.050	1		11/08/17 16:35			
Field Temperature	13.1	deg C	0.50	0.25	1		11/08/17 16:35			
Field Specific Conductance	1431	umhos/cm	1.0	1.0	1		11/08/17 16:35			
Field Oxidation Potential	149.7	mV			1		11/08/17 16:35			
Oxygen, Dissolved	0.13	mg/L			1		11/08/17 16:35	7782-44-7		
Turbidity	3.71	NTU	1.0	1.0	1		11/08/17 16:35			
Groundwater Elevation	644.20	feet			1		11/08/17 16:35			
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	1360	ug/L	100	3.5	1	11/15/17 10:20	11/15/17 18:08	7440-42-8		
Calcium	135	mg/L	0.10	0.036	1	11/15/17 10:20	11/15/17 18:08	7440-70-2		
Lithium	6.9J	ug/L	10.0	2.9	1	11/15/17 10:20	11/15/17 18:08	7439-93-2		
6020 MET ICPMS		Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	ND	ug/L	1.0	0.026	1	11/15/17 10:20	11/19/17 12:11	7440-36-0		
Arsenic	0.45J	ug/L	1.0	0.052	1	11/15/17 10:20	11/19/17 12:11	7440-38-2		
Barium	46.0	ug/L	1.0	0.095	1	11/15/17 10:20	11/19/17 12:11	7440-39-3		
Beryllium	0.016J	ug/L	0.50	0.012	1	11/15/17 10:20	11/19/17 12:11	7440-41-7		
Cadmium	ND	ug/L	0.50	0.018	1	11/15/17 10:20	11/19/17 12:11	7440-43-9		
Chromium	1.2	ug/L	1.0	0.054	1	11/15/17 10:20	11/19/17 12:11	7440-47-3		
Cobalt	2.0	ug/L	1.0	0.014	1	11/15/17 10:20	11/19/17 12:11	7440-48-4		
Lead	0.057J	ug/L	1.0	0.033	1	11/15/17 10:20	11/19/17 12:11	7439-92-1		
Molybdenum	0.37J	ug/L	1.0	0.058	1	11/15/17 10:20	11/19/17 12:11	7439-98-7	B	
Selenium	ND	ug/L	1.0	0.086	1	11/15/17 10:20	11/19/17 12:11	7782-49-2		
Thallium	ND	ug/L	1.0	0.036	1	11/15/17 10:20	11/19/17 12:11	7440-28-0		
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.046	1	11/17/17 10:27	11/17/17 14:41	7439-97-6		
2540C Total Dissolved Solids		Analytical Method: SM 2540C								
Total Dissolved Solids	1010	mg/L	5.0	5.0	1		11/15/17 15:32			
9040 pH		Analytical Method: EPA 9040								
pH	7.4	Std. Units	0.10	0.10	1		11/14/17 16:51		H6	
9056 IC Anions		Analytical Method: EPA 9056								
Chloride	78.1	mg/L	5.0	2.5	5		11/21/17 22:33	16887-00-6		
Fluoride	0.14J	mg/L	0.20	0.10	1		11/19/17 01:54	16984-48-8		
Sulfate	402	mg/L	50.0	25.0	50		11/21/17 22:47	14808-79-8		

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ANALYTICAL RESULTS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Sample: FIELD BLANK		Lab ID: 60257805010		Collected: 11/08/17 14:45		Received: 11/10/17 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010		Preparation Method: EPA 3010					
Boron	ND	ug/L	100	3.5	1	11/15/17 10:20	11/15/17 18:10	7440-42-8	
Calcium	0.038J	mg/L	0.10	0.036	1	11/15/17 10:20	11/15/17 18:10	7440-70-2	
Lithium	ND	ug/L	10.0	2.9	1	11/15/17 10:20	11/15/17 18:10	7439-93-2	
6020 MET ICPMS		Analytical Method: EPA 6020		Preparation Method: EPA 3010					
Antimony	ND	ug/L	1.0	0.026	1	11/15/17 10:20	11/19/17 12:07	7440-36-0	
Arsenic	ND	ug/L	1.0	0.052	1	11/15/17 10:20	11/19/17 12:07	7440-38-2	
Barium	ND	ug/L	1.0	0.095	1	11/15/17 10:20	11/19/17 12:07	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	11/15/17 10:20	11/19/17 12:07	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	11/15/17 10:20	11/19/17 12:07	7440-43-9	
Chromium	0.16J	ug/L	1.0	0.054	1	11/15/17 10:20	11/19/17 12:07	7440-47-3	
Cobalt	ND	ug/L	1.0	0.014	1	11/15/17 10:20	11/19/17 12:07	7440-48-4	
Lead	ND	ug/L	1.0	0.033	1	11/15/17 10:20	11/19/17 12:07	7439-92-1	
Molybdenum	ND	ug/L	1.0	0.058	1	11/15/17 10:20	11/19/17 12:07	7439-98-7	
Selenium	ND	ug/L	1.0	0.086	1	11/15/17 10:20	11/19/17 12:07	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	11/15/17 10:20	11/19/17 12:07	7440-28-0	
7470 Mercury		Analytical Method: EPA 7470		Preparation Method: EPA 7470					
Mercury	ND	ug/L	0.20	0.046	1	11/17/17 10:27	11/17/17 14:43	7439-97-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C							
Total Dissolved Solids	10.5	mg/L	5.0	5.0	1		11/15/17 15:33		
9040 pH		Analytical Method: EPA 9040							
pH	5.4	Std. Units	0.10	0.10	1		11/14/17 16:47		H6
9056 IC Anions		Analytical Method: EPA 9056							
Chloride	ND	mg/L	1.0	0.50	1		11/19/17 02:09	16887-00-6	
Fluoride	ND	mg/L	0.20	0.10	1		11/19/17 02:09	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		11/19/17 02:09	14808-79-8	

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

QC Batch: 503615 Analysis Method: EPA 7470
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
 Associated Lab Samples: 60257805007, 60257805008, 60257805009, 60257805010

METHOD BLANK: 2061781 Matrix: Water
 Associated Lab Samples: 60257805007, 60257805008, 60257805009, 60257805010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.046	11/17/17 14:32	

LABORATORY CONTROL SAMPLE: 2061782

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2061783 2061784

Parameter	Units	60257854005		2061783		2061784		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					
Mercury	ug/L	ND	ND	5	5	4.9	5.0	97	99	75-125	2	20

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

QC Batch: 503267 Analysis Method: EPA 6010
 QC Batch Method: EPA 3010 Analysis Description: 6010 MET
 Associated Lab Samples: 60257805001, 60257805002, 60257805003, 60257805004, 60257805005, 60257805006, 60257805007, 60257805008, 60257805009, 60257805010

METHOD BLANK: 2060296 Matrix: Water
 Associated Lab Samples: 60257805001, 60257805002, 60257805003, 60257805004, 60257805005, 60257805006, 60257805007, 60257805008, 60257805009, 60257805010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	3.5	11/15/17 17:23	
Calcium	mg/L	ND	0.10	0.036	11/15/17 17:23	
Lithium	ug/L	ND	10.0	2.9	11/15/17 17:23	

LABORATORY CONTROL SAMPLE: 2060297

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1010	101	80-120	
Calcium	mg/L	10	10.0	100	80-120	
Lithium	ug/L	1000	1060	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2060298 2060299

Parameter	Units	60257718001		60257718002		60257718003		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Result				
Boron	ug/L	1010	1000	1000	2030	2020	102	101	75-125	0	20
Calcium	mg/L	161	10	10	169	164	83	36	75-125	3	20 M1
Lithium	ug/L	111	1000	1000	1170	1180	106	107	75-125	1	20

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

QC Batch: 503268 Analysis Method: EPA 6020
 QC Batch Method: EPA 3010 Analysis Description: 6020 MET
 Associated Lab Samples: 60257805007, 60257805008, 60257805009, 60257805010

METHOD BLANK: 2060304 Matrix: Water
 Associated Lab Samples: 60257805007, 60257805008, 60257805009, 60257805010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	0.026	11/19/17 11:19	
Arsenic	ug/L	ND	1.0	0.052	11/19/17 11:19	
Barium	ug/L	0.23J	1.0	0.095	11/19/17 11:19	
Beryllium	ug/L	ND	0.50	0.012	11/19/17 11:19	
Cadmium	ug/L	ND	0.50	0.018	11/19/17 11:19	
Chromium	ug/L	ND	1.0	0.054	11/19/17 11:19	
Cobalt	ug/L	ND	1.0	0.014	11/19/17 11:19	
Lead	ug/L	ND	1.0	0.033	11/19/17 11:19	
Molybdenum	ug/L	0.17J	1.0	0.058	11/19/17 11:19	
Selenium	ug/L	ND	1.0	0.086	11/19/17 11:19	
Thallium	ug/L	ND	1.0	0.036	11/19/17 11:19	

LABORATORY CONTROL SAMPLE: 2060305

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.7	99	80-120	
Arsenic	ug/L	40	41.0	103	80-120	
Barium	ug/L	40	39.2	98	80-120	
Beryllium	ug/L	40	38.3	96	80-120	
Cadmium	ug/L	40	39.4	99	80-120	
Chromium	ug/L	40	39.9	100	80-120	
Cobalt	ug/L	40	39.4	98	80-120	
Lead	ug/L	40	38.2	96	80-120	
Molybdenum	ug/L	40	40.0	100	80-120	
Selenium	ug/L	40	39.7	99	80-120	
Thallium	ug/L	40	36.6	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2060306 2060307

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		60257805007 Result	Spike Conc.	Spike Conc.	Result							Result
Antimony	ug/L	ND	40	40	39.1	41.0	98	102	75-125	5	20	
Arsenic	ug/L	0.54J	40	40	39.9	41.0	98	101	75-125	3	20	
Barium	ug/L	131	40	40	169	173	96	104	75-125	2	20	
Beryllium	ug/L	ND	40	40	35.4	35.1	89	88	75-125	1	20	
Cadmium	ug/L	0.018J	40	40	36.8	37.8	92	95	75-125	3	20	
Chromium	ug/L	0.38J	40	40	39.6	39.2	98	97	75-125	1	20	
Cobalt	ug/L	1.3	40	40	37.9	38.5	91	93	75-125	2	20	

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Parameter	Units	2060306		2060307		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		60257805007 Result	MS Spike Conc.	MSD Spike Conc.									
Lead	ug/L	0.075J	40	40	39.3	39.3	98	98	75-125	0	20		
Molybdenum	ug/L	0.37J	40	40	41.8	41.7	104	103	75-125	0	20		
Selenium	ug/L	0.13J	40	40	36.1	37.8	90	94	75-125	4	20		
Thallium	ug/L	0.065J	40	40	37.8	37.8	94	94	75-125	0	20		

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

QC Batch: 502970 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 60257805001, 60257805002, 60257805003, 60257805004, 60257805005, 60257805006

SAMPLE DUPLICATE: 2059184

Parameter	Units	60257524001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	6.9	7.0	1	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

QC Batch: 503028 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 60257805007, 60257805008, 60257805009, 60257805010

SAMPLE DUPLICATE: 2059465

Parameter	Units	60257584001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	8.0	8.0	0	10	H6

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

QC Batch:	503806	Analysis Method:	EPA 9056
QC Batch Method:	EPA 9056	Analysis Description:	9056 IC Anions
Associated Lab Samples:	60257805001, 60257805002, 60257805003, 60257805004, 60257805005, 60257805006, 60257805007, 60257805008, 60257805009, 60257805010		

METHOD BLANK:	2062941	Matrix:	Water
Associated Lab Samples:	60257805001, 60257805002, 60257805003, 60257805004, 60257805005, 60257805006, 60257805007, 60257805008, 60257805009, 60257805010		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	11/18/17 20:23	
Fluoride	mg/L	ND	0.20	0.10	11/18/17 20:23	
Sulfate	mg/L	ND	1.0	0.50	11/18/17 20:23	

LABORATORY CONTROL SAMPLE: 2062942

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	80-120	
Fluoride	mg/L	2.5	2.4	96	80-120	
Sulfate	mg/L	5	5.2	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2062943 2062944

Parameter	Units	60257718001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.77	2.5	2.5	3.3	3.4	101	106	80-120	4	15	

SAMPLE DUPLICATE: 2062945

Parameter	Units	60257718002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	7.8	7.8	0	15	
Fluoride	mg/L	1.2	1.0	15	15	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

QC Batch:	504269	Analysis Method:	EPA 9056
QC Batch Method:	EPA 9056	Analysis Description:	9056 IC Anions
Associated Lab Samples:	60257805001, 60257805002, 60257805003, 60257805004, 60257805005, 60257805006, 60257805007, 60257805008, 60257805009		

METHOD BLANK:	2065478	Matrix:	Water
Associated Lab Samples:	60257805001, 60257805002, 60257805003, 60257805004, 60257805005, 60257805006, 60257805007, 60257805008, 60257805009		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	11/21/17 14:02	
Sulfate	mg/L	ND	1.0	0.50	11/21/17 14:02	

LABORATORY CONTROL SAMPLE: 2065479						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	80-120	
Sulfate	mg/L	5	4.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2065480												2065481	
Parameter	Units	60257718001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Chloride	mg/L	28.9	10	10	40.5	40.5	116	116	80-120	0	15		
Sulfate	mg/L	926	500	500	1430	1440	102	103	80-120	1	15		

SAMPLE DUPLICATE: 2065482						
Parameter	Units	60257718002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	77.5	75.9	2	15	

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QUALIFIERS

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60257805001	MW-301		503906		
60257805002	MW-302		503906		
60257805003	MW-303		503906		
60257805004	MW-304		503906		
60257805005	MW-305		503906		
60257805006	MW-306		503906		
60257805007	MW-307		503906		
60257805008	MW-308		503906		
60257805009	MW-309		503906		
60257805001	MW-301	EPA 3010	503267	EPA 6010	503383
60257805002	MW-302	EPA 3010	503267	EPA 6010	503383
60257805003	MW-303	EPA 3010	503267	EPA 6010	503383
60257805004	MW-304	EPA 3010	503267	EPA 6010	503383
60257805005	MW-305	EPA 3010	503267	EPA 6010	503383
60257805006	MW-306	EPA 3010	503267	EPA 6010	503383
60257805007	MW-307	EPA 3010	503267	EPA 6010	503383
60257805008	MW-308	EPA 3010	503267	EPA 6010	503383
60257805009	MW-309	EPA 3010	503267	EPA 6010	503383
60257805010	FIELD BLANK	EPA 3010	503267	EPA 6010	503383
60257805007	MW-307	EPA 3010	503268	EPA 6020	503384
60257805008	MW-308	EPA 3010	503268	EPA 6020	503384
60257805009	MW-309	EPA 3010	503268	EPA 6020	503384
60257805010	FIELD BLANK	EPA 3010	503268	EPA 6020	503384
60257805007	MW-307	EPA 7470	503615	EPA 7470	503746
60257805008	MW-308	EPA 7470	503615	EPA 7470	503746
60257805009	MW-309	EPA 7470	503615	EPA 7470	503746
60257805010	FIELD BLANK	EPA 7470	503615	EPA 7470	503746
60257805001	MW-301	SM 2540C	503357		
60257805002	MW-302	SM 2540C	503357		
60257805003	MW-303	SM 2540C	503357		
60257805004	MW-304	SM 2540C	503357		
60257805005	MW-305	SM 2540C	503357		
60257805006	MW-306	SM 2540C	503357		
60257805007	MW-307	SM 2540C	503357		
60257805008	MW-308	SM 2540C	503357		
60257805009	MW-309	SM 2540C	503357		
60257805010	FIELD BLANK	SM 2540C	503357		
60257805001	MW-301	EPA 9040	502970		
60257805002	MW-302	EPA 9040	502970		
60257805003	MW-303	EPA 9040	502970		
60257805004	MW-304	EPA 9040	502970		
60257805005	MW-305	EPA 9040	502970		
60257805006	MW-306	EPA 9040	502970		
60257805007	MW-307	EPA 9040	503028		
60257805008	MW-308	EPA 9040	503028		
60257805009	MW-309	EPA 9040	503028		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Ottumwa Gen Sta/25216072.17

Pace Project No.: 60257805

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60257805010	FIELD BLANK	EPA 9040	503028		
60257805001	MW-301	EPA 9056	503806		
60257805001	MW-301	EPA 9056	504269		
60257805002	MW-302	EPA 9056	503806		
60257805002	MW-302	EPA 9056	504269		
60257805003	MW-303	EPA 9056	503806		
60257805003	MW-303	EPA 9056	504269		
60257805004	MW-304	EPA 9056	503806		
60257805004	MW-304	EPA 9056	504269		
60257805005	MW-305	EPA 9056	503806		
60257805005	MW-305	EPA 9056	504269		
60257805006	MW-306	EPA 9056	503806		
60257805006	MW-306	EPA 9056	504269		
60257805007	MW-307	EPA 9056	503806		
60257805007	MW-307	EPA 9056	504269		
60257805008	MW-308	EPA 9056	503806		
60257805008	MW-308	EPA 9056	504269		
60257805009	MW-309	EPA 9056	503806		
60257805009	MW-309	EPA 9056	504269		
60257805010	FIELD BLANK	EPA 9056	503806		

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Sample Condition Upon Receipt

WO#: 60257805
Barcode
60257805

Client Name: SCS Engineers
Courier: FedEx [checked] UPS [] VIA [] Clay [] PEX [] ECI [] Pace [] Xroads [] Client [] Other []
Tracking #: 72856597 9230 Pace Shipping Label Used? Yes [] No [checked]
Custody Seal on Cooler/Box Present: Yes [checked] No [] Seals intact: Yes [checked] No []
Packing Material: Bubble Wrap [] Bubble Bags [] Foam [] None [checked] Other []
Thermometer Used: T-266 / T-239 Type of Ice: Wet Blue None
Cooler Temperature (°C): As-read 0.9 Corr. Factor CF 0.0 CF +0.2 Corrected 0.9

Date and initials of person examining contents: Rut 11-10-17

Temperature should be above freezing to 6°C

Table with 2 columns: Question/Field and Answer (Yes/No/N/A). Rows include Chain of Custody present, Chain of Custody relinquished, Samples arrived within holding time, Short Hold Time analyses (<72hr), Rush Turn Around Time requested, Sufficient volume, Correct containers used, Pace containers used, Containers intact, Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?, Filtered volume received for dissolved tests?, Sample labels match COC: Date / time / ID / analyses, Samples contain multiple phases? Matrix: WT, Containers requiring pH preservation in compliance?, Cyanide water sample checks: N/A, Lead acetate strip turns dark?, Potassium iodide test strip turns blue/purple?, Trip Blank present, Headspace in VOA vials (>6mm), Samples from USDA Regulated Area: State, Additional labels attached to 5035A / TX1005 vials in the field?

Client Notification/ Resolution: Copy COC to Client? Y / [checked] N Field Data Required? Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Date: 11-13-17

