

# 2018 Annual Groundwater Monitoring and Corrective Action Report

Secondary Pond  
Columbia Energy Center  
Pardeeville, Wisconsin

Prepared for:



Wisconsin Power and Light Company  
4902 N. Biltmore Lane  
Madison, Wisconsin 53718

**SCS ENGINEERS**

25219067.00 | August 1, 2019

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

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## 1.0 INTRODUCTION

This 2018 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” (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) and subsequent amendments. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.90(e) and 40 CFR 257.100 for inactive CCR surface impoundments. The applicable sections of the Rule are provided below in *italics*, followed by applicable information relative to the 2018 Annual Groundwater Monitoring and Corrective Action Report for the CCR unit.

This report covers the period of groundwater monitoring from January 25, 2017, through December 31, 2018. January 25, 2017, 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 groundwater monitoring system for the Secondary Pond at the Columbia Energy Center (COL) monitors a single inactive CCR unit:

- Secondary Pond (inactive surface impoundment)

The system is designed to detect monitored constituents at the waste boundary of the COL Secondary Pond as required by 40 CFR 257.91(d). The groundwater monitoring system consists of two background wells and three downgradient monitoring wells.

## 2.0 §257.100(E)(5) GROUNDWATER MONITORING AND CORRECTIVE ACTION FOR INACTIVE CCR SURFACE IMPOUNDMENTS

*The owner or operator of the inactive CCR surface impoundments must: (i) No later than April 17, 2019, comply with groundwater monitoring requirements set forth in §§ 257.90(b) and 257.94(b); and (ii) No later than August 1, 2019, prepare the initial groundwater monitoring and corrective action report as set forth in § 257.90(e).*

This report is submitted to fulfill the initial report requirement.

## 3.0 §257.90(E) ANNUAL REPORT REQUIREMENTS

*Annual groundwater monitoring and corrective action report. . . 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:*

### **3.1 §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 showing the Secondary Pond and all background (or upgradient) and downgradient monitoring wells with identification numbers for the groundwater monitoring program is provided as **Figure 2**. Other CCR units are also shown on **Figure 2**.

### **3.2 §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;*

The three downgradient monitoring wells for the Secondary Pond (MW-306, MW-307, and MW-308) were installed on November 14 to 15, 2016. Background monitoring well MW-84A was installed prior to October 2015. Background monitoring well MW-301 was installed on November 11 to 12, 2015.

The background monitoring wells, MW-84A and MW-301, are also used in other groundwater monitoring systems located at the COL facility.

### **3.3 §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;*

Seven groundwater samples were collected from each of the three new CCR monitoring wells in 2017 and 2018 for the establishment of background. Background sampling began in January 2017. Background samples were analyzed for both Appendix III and Appendix IV constituents. A summary including the number of groundwater samples that were collected in 2017 and 2018 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 **Appendix A1** through **Appendix A7**.

Background monitoring for the two background wells (MW-84A and MW-301) was previously completed because these wells also serve as background wells for the COL Dry Ash Disposal Facility and Primary Ash Pond CCR units. Background data obtained from these wells was included in the 2017 and 2018 annual reports for these facilities.

### **3.4 §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);*

There were no transitions between monitoring programs in 2018.

## 3.5 §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 2018 Annual Groundwater Monitoring and Corrective Action Report for the CCR units.

### 3.5.1 §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.** In 2018, the groundwater monitoring and corrective action program was in background monitoring.

**Summary of Key Actions Completed.** Collection of seven rounds of background groundwater quality data was completed in 2017 and 2018.

#### **Description of Any Problems Encountered:**

- Monitoring wells MW-306 and MW-307 did not have enough water for laboratory analysis during the April 2018 groundwater sampling event.

#### **Discussion of Actions to Resolve the Problems:**

- An additional sampling event took place in May 2018 to collect groundwater sampling data from MW-306 and MW-307.

#### **Projection of Key Activities for the Upcoming Year (2019):**

- Completion of background monitoring.
- Two semi-annual groundwater sampling and analysis events (April and October 2019).
- Statistical evaluation and determination of any statistically significant increases (SSIs) for the April 2019 monitoring event (by 7/15/2019) and for the October 2019 monitoring event (by 1/15/2020).
- If an SSI is determined, then within 90 days either:
  - Complete alternative source demonstration (if applicable), or
  - Establish an assessment monitoring program

### **3.5.2 §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.

### **3.5.3 §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 2018.

### **3.5.4 §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.

### **3.5.5 §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 2018.

### **3.5.6 §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 2018.

### **3.5.7 §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  
COL Secondary Pond / SCS Engineers Project #25219067.00**

Sample Dates	Downgradient Wells			Background Wells <sup>(1)</sup>	
	MW-306	MW-307	MW-308	MW-84A	MW-301
1/25-26/2017	B	B	B	B	B
4/10-11/2017	B	B	B	B	B
6/5-6/2017	B	B	B	B	B
8/7-9/2017	B	B	B	B	B
10/23-24/2017	B	B	B	B	B
4/23-25/2018 <sup>(2)</sup>	-	-	B	B	B
5/24/2018 <sup>(2)</sup>	B	B	-	-	-
10/24/2018	B	B	B	B	B
Total Samples	7	7	7	7	7

Abbreviations:

B = Background sampling event

- Well not sampled

Notes:

Detection monitoring will be initiated after completion of background monitoring.

(1) Background well groundwater results were previously submitted in the 2017 and 2018 Annual Reports for COL Dry Ash Disposal Facility (Modules 1-3).

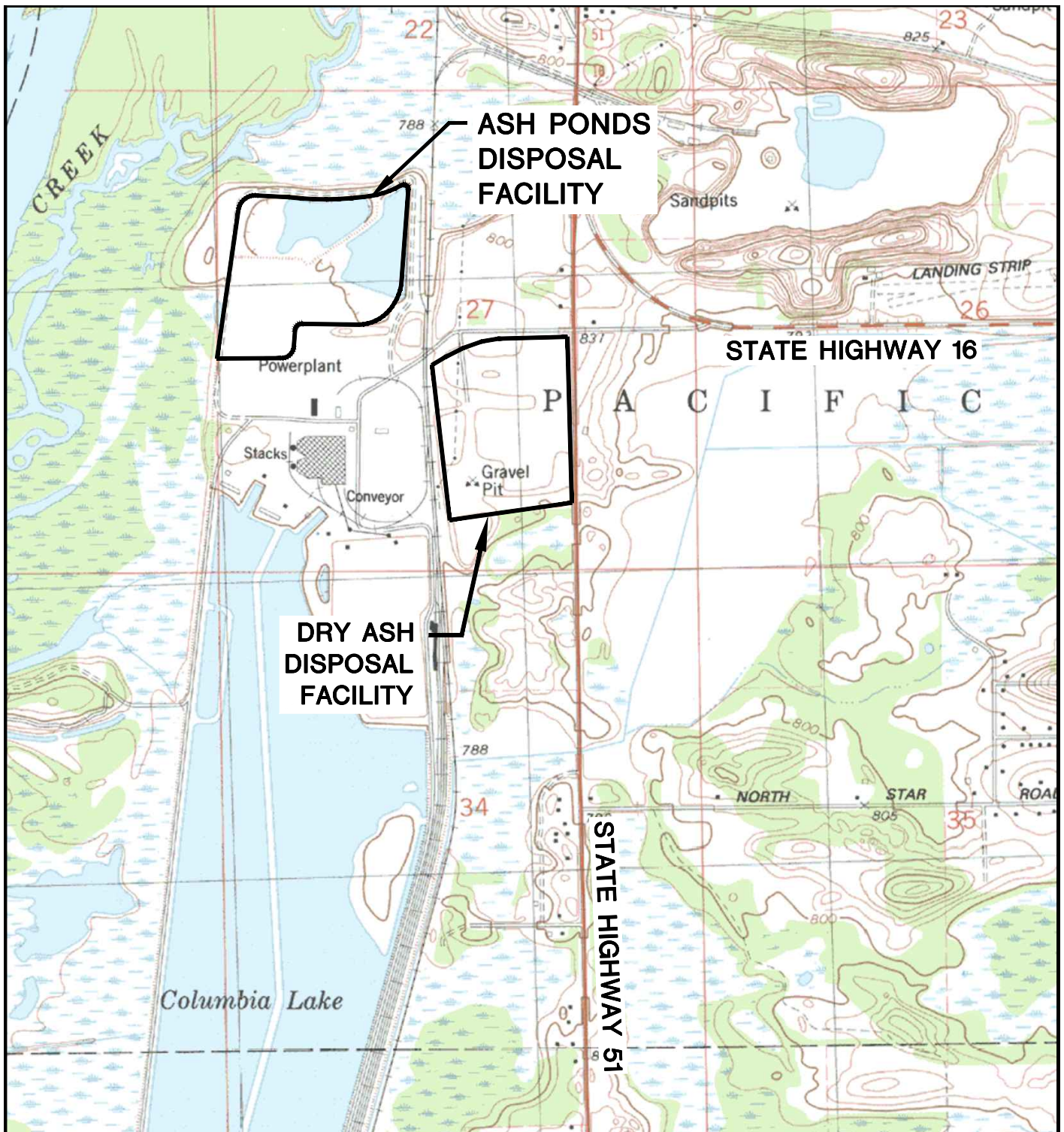
(2) See discussion in Section 3.5.1 regarding these events.

Created by: NDK Date: 6/10/2019  
 Last revision by: JR Date: 6/11/2019  
 Checked by: NDK Date: 6/11/2019

I:\25219067.00\Deliverables\2018 Federal Annual Report - Secondary Pond\Tables\[Table 1  
 GW\_Samples\_Summary\_Table\_COL\_SecPond.xlsx]GW Summary



## Figures

- 1 Site Location Map
- 2 Site Plan and Well Location Map

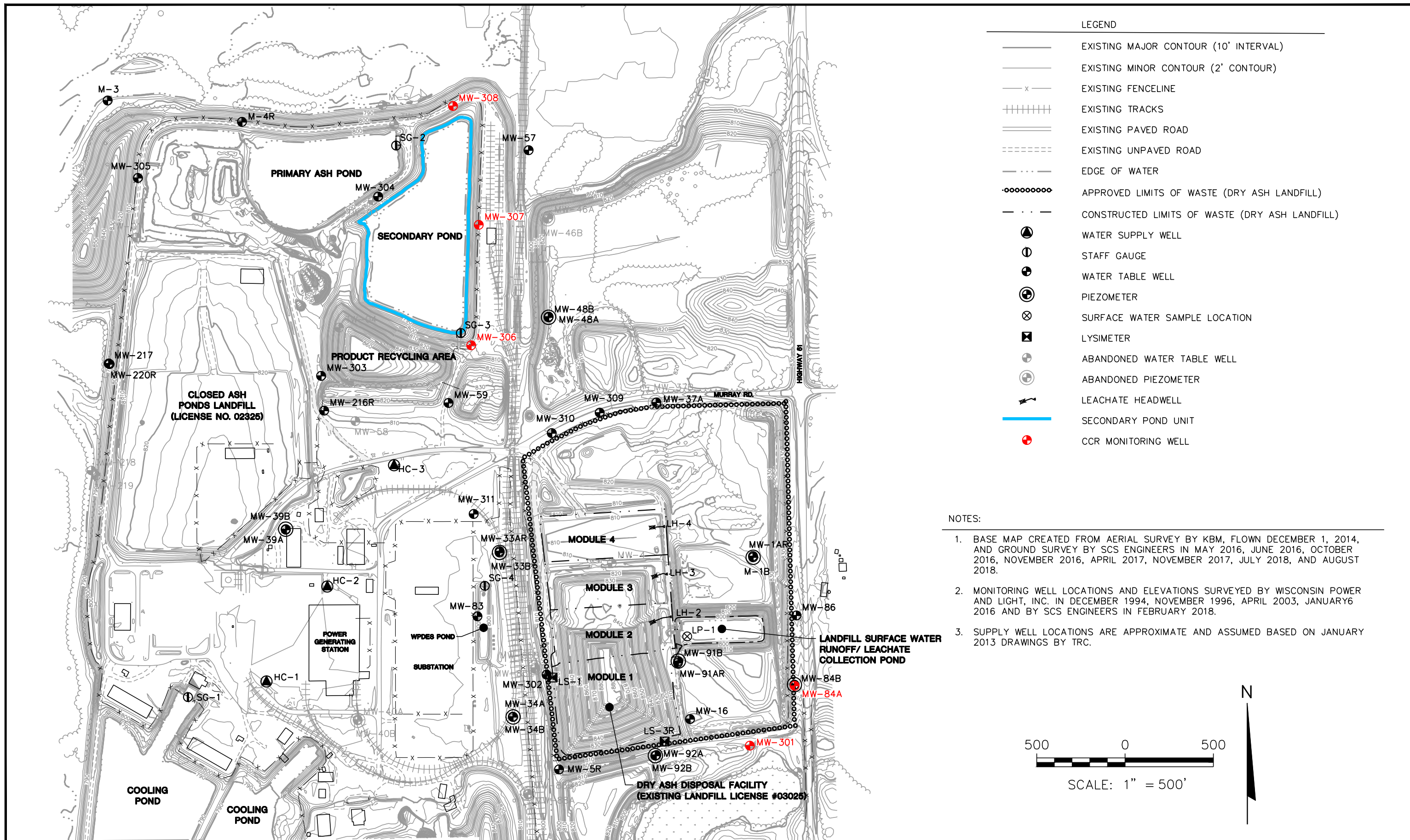


POYNETTE QUADRANGLE  
 WISCONSIN—COLUMBIA CO.  
 7.5 MINUTE SERIES (TOPOGRAPHIC)  
 NW/4 POYNETTE 15' QUADRANGLE  
 1984  
 SCALE: 1" = 2,000'




CLIENT		ALLIANT ENERGY 4902 NORTH BILTMORE LN. #1000 MADISON, WI 53718	SITE	COLUMBIA ASH PONDS AND DRY ASH DISPOSAL FACILITIES	SITE LOCATION MAP
	PROJECT NO.	25216067.00		DRAWN BY:	
	DRAWN:	08/10/09	CHECKED BY:	MDB	ENGINEER
	REVISED:	04/16/18	APPROVED BY:	TK 04/09/19	
				 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	
					FIGURE 1

I:\25216067.00\Drawings\Site Loc.dwg, 4/9/2019 10:40:27 AM



PROJECT NO. 25219067.00	DRAWN BY: BSS	 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	 ALLIANT ENERGY 4902 NORTH BILTMORE LN. #1000 MADISON, WI 53718	SITE	COLUMBIA ASH PONDS AND DRY ASH DISPOSAL FACILITIES	SITE PLAN AND WELL LOCATION MAP	FIGURE
DRAWN: 06/18/19	CHECKED BY: JR						2
REVISED: 06/25/19	APPROVED BY:						

I:\25219067.00\Drawings\2\_Site Plan and Well Location Map 11x17.dwg, 6/25/2019 3:28:26 PM



Appendix A  
Laboratory Reports

# A1 Round 1 Background Sampling, Analytical Laboratory Report



February 23, 2017

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 25216067 ALLIANT-COLUMBIA  
Pace Project No.: 40145002

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on January 28, 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,



Dan Milewsky  
dan.milewsky@pacelabs.com  
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS  
Jeff Maxted, ALLIANT ENERGY  
Marc Morandi, ALLIANT ENERGY



## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182

## CERTIFICATIONS

Project: 25216067 ALLIANT-COLUMBIA  
Pace Project No.: 40145002

---

### 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

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40145002001	MW-302	Water	01/25/17 16:20	01/28/17 08:15
40145002002	MW-305	Water	01/25/17 16:10	01/28/17 08:15
40145002003	MW-4R	Water	01/25/17 15:25	01/28/17 08:15
40145002004	MW-33AR	Water	01/25/17 14:40	01/28/17 08:15
40145002005	MW-34A	Water	01/25/17 13:25	01/28/17 08:15
40145002006	MW-84A	Water	01/25/17 12:25	01/28/17 08:15
40145002007	MW-301	Water	01/25/17 11:45	01/28/17 08:15
40145002008	MW-303	Water	01/26/17 08:55	01/28/17 08:15
40145002009	MW-304	Water	01/26/17 10:40	01/28/17 08:15
40145002010	MW-307	Water	01/26/17 13:40	01/28/17 08:15
40145002011	MW-308	Water	01/26/17 16:00	01/28/17 08:15
40145002012	MW-306	Water	01/26/17 17:30	01/28/17 08:15
40145002013	FIELD BLANK	Water	01/26/17 18:00	01/28/17 08:15

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### SAMPLE ANALYTE COUNT

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40145002001	MW-302	EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40145002002	MW-305	EPA 6020	DS1
EPA 7470	AJT			1	PASI-G
	AMH			7	PASI-G
EPA 903.1	WRR			1	PASI-PA
EPA 904.0	JLW			1	PASI-PA
Total Radium Calculation	RMK			1	PASI-PA
SM 2540C	TMK			1	PASI-G
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G
40145002003	MW-4R			EPA 6020	DS1
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40145002004	MW-33AR	EPA 6020	DS1
EPA 7470	AJT			1	PASI-G
	AMH			7	PASI-G
EPA 903.1	WRR			1	PASI-PA
EPA 904.0	JLW			1	PASI-PA
Total Radium Calculation	RMK			1	PASI-PA
SM 2540C	TMK			1	PASI-G
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G
40145002005	MW-34A			EPA 6020	DS1

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### SAMPLE ANALYTE COUNT

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40145002006	MW-84A	EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		40145002007	MW-301	SM 2540C	TMK
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G
EPA 6020	DS1			14	PASI-G
EPA 7470	AJT			1	PASI-G
	AMH			7	PASI-G
EPA 903.1	WRR			1	PASI-PA
EPA 904.0	JLW			1	PASI-PA
Total Radium Calculation	RMK			1	PASI-PA
SM 2540C	TMK			1	PASI-G
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G
EPA 6020	DS1			14	PASI-G
EPA 7470	AJT			1	PASI-G
40145002008	MW-303				AMH
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		40145002009	MW-304	EPA 9040	ALY
EPA 300.0	HMB			3	PASI-G
EPA 6020	DS1			14	PASI-G
EPA 7470	AJT			1	PASI-G

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40145002010	MW-307		AMH	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
40145002011	MW-308	EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
40145002012	MW-306	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
40145002013	FIELD BLANK	EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G
		EPA 903.1	WRR	1	PASI-PA

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### SAMPLE ANALYTE COUNT

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

**Sample: MW-302**      **Lab ID: 40145002001**      Collected: 01/25/17 16:20      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<b>0.17J</b>	ug/L	1.0	0.073	1	02/02/17 06:52	02/02/17 23:40	7440-36-0	
Arsenic	<b>0.24J</b>	ug/L	1.0	0.099	1	02/02/17 06:52	02/02/17 23:40	7440-38-2	
Barium	<b>17.8</b>	ug/L	1.0	0.062	1	02/02/17 06:52	02/02/17 23:40	7440-39-3	
Beryllium	<b>&lt;0.13</b>	ug/L	1.0	0.13	1	02/02/17 06:52	02/02/17 23:40	7440-41-7	
Boron	<b>149</b>	ug/L	10.0	2.0	1	02/02/17 06:52	02/02/17 23:40	7440-42-8	
Cadmium	<b>&lt;0.089</b>	ug/L	1.0	0.089	1	02/02/17 06:52	02/02/17 23:40	7440-43-9	
Calcium	<b>75400</b>	ug/L	2500	736	10	02/02/17 06:52	02/02/17 23:00	7440-70-2	P6
Chromium	<b>2.6</b>	ug/L	1.0	0.39	1	02/02/17 06:52	02/02/17 23:40	7440-47-3	
Cobalt	<b>0.083J</b>	ug/L	1.0	0.036	1	02/02/17 06:52	02/02/17 23:40	7440-48-4	
Lead	<b>0.075J</b>	ug/L	1.0	0.040	1	02/02/17 06:52	02/02/17 23:40	7439-92-1	
Lithium	<b>3.2</b>	ug/L	1.0	0.11	1	02/02/17 06:52	02/02/17 23:40	7439-93-2	
Molybdenum	<b>1.6</b>	ug/L	1.0	0.070	1	02/02/17 06:52	02/02/17 23:40	7439-98-7	
Selenium	<b>1.6</b>	ug/L	1.0	0.21	1	02/02/17 06:52	02/02/17 23:40	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	02/02/17 06:52	02/02/17 23:40	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 08:36	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>8.21</b>	Std. Units			1		01/25/17 16:20		
Field Specific Conductance	<b>726</b>	umhos/cm			1		01/25/17 16:20		
Oxygen, Dissolved	<b>6.22</b>	mg/L			1		01/25/17 16:20	7782-44-7	
REDOX	<b>223.40</b>	mV			1		01/25/17 16:20		
Turbidity	<b>1.26</b>	NTU			1		01/25/17 16:20		
Static Water Level	<b>786.89</b>	feet			1		01/25/17 16:20		
Temperature, Water (C)	<b>10.4</b>	deg C			1		01/25/17 16:20		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>384</b>	mg/L	20.0	8.7	1		02/01/17 15:38		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.8</b>	Std. Units	0.10	0.010	1		01/30/17 11:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>1.6J</b>	mg/L	2.0	0.50	1		02/08/17 12:11	16887-00-6	
Fluoride	<b>0.13J</b>	mg/L	0.30	0.10	1		02/08/17 12:11	16984-48-8	
Sulfate	<b>61.6</b>	mg/L	15.0	5.0	5		02/08/17 14:59	14808-79-8	M0,R1

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

**Sample: MW-305**      **Lab ID: 4014500202**      Collected: 01/25/17 16:10      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.71J</b>	ug/L	1.0	0.073	1	02/02/17 06:52	02/02/17 23:27	7440-36-0	
Arsenic	<b>0.78J</b>	ug/L	1.0	0.099	1	02/02/17 06:52	02/02/17 23:27	7440-38-2	
Barium	<b>12.7</b>	ug/L	1.0	0.062	1	02/02/17 06:52	02/02/17 23:27	7440-39-3	
Beryllium	<b>&lt;0.13</b>	ug/L	1.0	0.13	1	02/02/17 06:52	02/02/17 23:27	7440-41-7	
Boron	<b>733</b>	ug/L	10.0	2.0	1	02/02/17 06:52	02/02/17 23:27	7440-42-8	
Cadmium	<b>0.34J</b>	ug/L	1.0	0.089	1	02/02/17 06:52	02/02/17 23:27	7440-43-9	
Calcium	<b>96500</b>	ug/L	250	73.6	1	02/02/17 06:52	02/02/17 23:27	7440-70-2	
Chromium	<b>1.5</b>	ug/L	1.0	0.39	1	02/02/17 06:52	02/02/17 23:27	7440-47-3	
Cobalt	<b>0.44J</b>	ug/L	1.0	0.036	1	02/02/17 06:52	02/02/17 23:27	7440-48-4	
Lead	<b>0.38J</b>	ug/L	1.0	0.040	1	02/02/17 06:52	02/02/17 23:27	7439-92-1	
Lithium	<b>0.21J</b>	ug/L	1.0	0.11	1	02/02/17 06:52	02/02/17 23:27	7439-93-2	
Molybdenum	<b>69.1</b>	ug/L	1.0	0.070	1	02/02/17 06:52	02/02/17 23:27	7439-98-7	
Selenium	<b>6.8</b>	ug/L	1.0	0.21	1	02/02/17 06:52	02/02/17 23:27	7782-49-2	
Thallium	<b>0.45J</b>	ug/L	1.0	0.14	1	02/02/17 06:52	02/02/17 23:27	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 08:47	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>8.17</b>	Std. Units			1		01/25/17 16:10		
Field Specific Conductance	<b>727</b>	umhos/cm			1		01/25/17 16:10		
Oxygen, Dissolved	<b>2.31</b>	mg/L			1		01/25/17 16:10	7782-44-7	
REDOX	<b>-27.6</b>	mV			1		01/25/17 16:10		
Turbidity	<b>1.61</b>	NTU			1		01/25/17 16:10		
Static Water Level	<b>789.36</b>	feet			1		01/25/17 16:10		
Temperature, Water (C)	<b>18.2</b>	deg C			1		01/25/17 16:10		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>530</b>	mg/L	20.0	8.7	1		02/01/17 15:38		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>8.0</b>	Std. Units	0.10	0.010	1		01/30/17 11:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>46.1</b>	mg/L	2.0	0.50	1		02/08/17 12:47	16887-00-6	
Fluoride	<b>0.53</b>	mg/L	0.30	0.10	1		02/08/17 12:47	16984-48-8	
Sulfate	<b>274</b>	mg/L	30.0	10.0	10		02/08/17 16:12	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Sample: MW-4R Lab ID: 40145002003 Collected: 01/25/17 15:25 Received: 01/28/17 08:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	0.24J	ug/L	1.0	0.073	1	02/02/17 06:52	02/03/17 00:27	7440-36-0	
Arsenic	0.47J	ug/L	1.0	0.099	1	02/02/17 06:52	02/03/17 00:27	7440-38-2	
Barium	24.0	ug/L	1.0	0.062	1	02/02/17 06:52	02/03/17 00:27	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	02/02/17 06:52	02/03/17 00:27	7440-41-7	
Boron	866	ug/L	10.0	2.0	1	02/02/17 06:52	02/03/17 00:27	7440-42-8	
Cadmium	0.10J	ug/L	1.0	0.089	1	02/02/17 06:52	02/03/17 00:27	7440-43-9	
Calcium	103000	ug/L	250	73.6	1	02/02/17 06:52	02/03/17 00:27	7440-70-2	
Chromium	0.40J	ug/L	1.0	0.39	1	02/02/17 06:52	02/03/17 00:27	7440-47-3	
Cobalt	0.31J	ug/L	1.0	0.036	1	02/02/17 06:52	02/03/17 00:27	7440-48-4	
Lead	0.094J	ug/L	1.0	0.040	1	02/02/17 06:52	02/03/17 00:27	7439-92-1	
Lithium	6.1	ug/L	1.0	0.11	1	02/02/17 06:52	02/03/17 00:27	7439-93-2	
Molybdenum	17.6	ug/L	1.0	0.070	1	02/02/17 06:52	02/03/17 00:27	7439-98-7	
Selenium	10.5	ug/L	1.0	0.21	1	02/02/17 06:52	02/03/17 00:27	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	02/02/17 06:52	02/03/17 00:27	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 08:50	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.27	Std. Units			1		01/25/17 15:25		
Field Specific Conductance	819	umhos/cm			1		01/25/17 15:25		
Oxygen, Dissolved	0.11	mg/L			1		01/25/17 15:25	7782-44-7	
REDOX	-0.5	mV			1		01/25/17 15:25		
Turbidity	0.43	NTU			1		01/25/17 15:25		
Static Water Level	789.64	feet			1		01/25/17 15:25		
Temperature, Water (C)	14.9	deg C			1		01/25/17 15:25		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	570	mg/L	20.0	8.7	1		02/01/17 15:39		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.2	Std. Units	0.10	0.010	1		01/31/17 10:20		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	36.5	mg/L	2.0	0.50	1		02/07/17 14:49	16887-00-6	
Fluoride	0.38	mg/L	0.30	0.10	1		02/07/17 14:49	16984-48-8	
Sulfate	144	mg/L	30.0	10.0	10		02/07/17 20:11	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

**Sample: MW-33AR**      **Lab ID: 40145002004**      Collected: 01/25/17 14:40      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.12J</b>	ug/L	1.0	0.073	1	02/02/17 06:52	02/03/17 00:34	7440-36-0	
Arsenic	<b>0.45J</b>	ug/L	1.0	0.099	1	02/02/17 06:52	02/03/17 00:34	7440-38-2	
Barium	<b>33.8</b>	ug/L	1.0	0.062	1	02/02/17 06:52	02/03/17 00:34	7440-39-3	
Beryllium	<b>&lt;0.13</b>	ug/L	1.0	0.13	1	02/02/17 06:52	02/03/17 00:34	7440-41-7	
Boron	<b>763</b>	ug/L	10.0	2.0	1	02/02/17 06:52	02/03/17 00:34	7440-42-8	
Cadmium	<b>&lt;0.089</b>	ug/L	1.0	0.089	1	02/02/17 06:52	02/03/17 00:34	7440-43-9	
Calcium	<b>57500</b>	ug/L	250	73.6	1	02/02/17 06:52	02/03/17 00:34	7440-70-2	
Chromium	<b>2.0</b>	ug/L	1.0	0.39	1	02/02/17 06:52	02/03/17 00:34	7440-47-3	
Cobalt	<b>0.065J</b>	ug/L	1.0	0.036	1	02/02/17 06:52	02/03/17 00:34	7440-48-4	
Lead	<b>0.046J</b>	ug/L	1.0	0.040	1	02/02/17 06:52	02/03/17 00:34	7439-92-1	
Lithium	<b>1.3</b>	ug/L	1.0	0.11	1	02/02/17 06:52	02/03/17 00:34	7439-93-2	
Molybdenum	<b>3.6</b>	ug/L	1.0	0.070	1	02/02/17 06:52	02/03/17 00:34	7439-98-7	
Selenium	<b>2.3</b>	ug/L	1.0	0.21	1	02/02/17 06:52	02/03/17 00:34	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	02/02/17 06:52	02/03/17 00:34	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 08:52	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>8.62</b>	Std. Units			1		01/25/17 14:40		
Field Specific Conductance	<b>797</b>	umhos/cm			1		01/25/17 14:40		
Oxygen, Dissolved	<b>6.46</b>	mg/L			1		01/25/17 14:40	7782-44-7	
REDOX	<b>193.9</b>	mV			1		01/25/17 14:40		
Turbidity	<b>0.23</b>	NTU			1		01/25/17 14:40		
Static Water Level	<b>785.88</b>	feet			1		01/25/17 14:40		
Temperature, Water (C)	<b>11.3</b>	deg C			1		01/25/17 14:40		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>426</b>	mg/L	20.0	8.7	1		02/01/17 15:39		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.6</b>	Std. Units	0.10	0.010	1		01/31/17 10:20		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>41.4</b>	mg/L	2.0	0.50	1		02/07/17 15:01	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		02/07/17 15:01	16984-48-8	
Sulfate	<b>133</b>	mg/L	15.0	5.0	5		02/07/17 18:46	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

**Sample: MW-34A**      **Lab ID: 40145002005**      Collected: 01/25/17 13:25      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	02/02/17 06:52	02/03/17 00:41	7440-36-0	
Arsenic	0.36J	ug/L	1.0	0.099	1	02/02/17 06:52	02/03/17 00:41	7440-38-2	
Barium	8.9	ug/L	1.0	0.062	1	02/02/17 06:52	02/03/17 00:41	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	02/02/17 06:52	02/03/17 00:41	7440-41-7	
Boron	214	ug/L	10.0	2.0	1	02/02/17 06:52	02/03/17 00:41	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	02/02/17 06:52	02/03/17 00:41	7440-43-9	
Calcium	58900	ug/L	250	73.6	1	02/02/17 06:52	02/03/17 00:41	7440-70-2	
Chromium	1.8	ug/L	1.0	0.39	1	02/02/17 06:52	02/03/17 00:41	7440-47-3	
Cobalt	<0.036	ug/L	1.0	0.036	1	02/02/17 06:52	02/03/17 00:41	7440-48-4	
Lead	<0.040	ug/L	1.0	0.040	1	02/02/17 06:52	02/03/17 00:41	7439-92-1	
Lithium	0.46J	ug/L	1.0	0.11	1	02/02/17 06:52	02/03/17 00:41	7439-93-2	
Molybdenum	1.0	ug/L	1.0	0.070	1	02/02/17 06:52	02/03/17 00:41	7439-98-7	
Selenium	0.82J	ug/L	1.0	0.21	1	02/02/17 06:52	02/03/17 00:41	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	02/02/17 06:52	02/03/17 00:41	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 08:54	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.71	Std. Units			1		01/25/17 13:25		
Field Specific Conductance	470.9	umhos/cm			1		01/25/17 13:25		
Oxygen, Dissolved	9.83	mg/L			1		01/25/17 13:25	7782-44-7	
REDOX	17.9	mV			1		01/25/17 13:25		
Turbidity	2.09	NTU			1		01/25/17 13:25		
Static Water Level	785.98	feet			1		01/25/17 13:25		
Temperature, Water (C)	12.3	deg C			1		01/25/17 13:25		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	310	mg/L	20.0	8.7	1		02/01/17 15:39		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.3	Std. Units	0.10	0.010	1		01/31/17 10:40		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	7.2	mg/L	2.0	0.50	1		02/07/17 15:13	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		02/07/17 15:13	16984-48-8	
Sulfate	71.2	mg/L	15.0	5.0	5		02/07/17 20:23	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA  
Pace Project No.: 40145002

**Sample: MW-84A**      **Lab ID: 4014500206**      Collected: 01/25/17 12:25      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	02/02/17 06:52	02/03/17 00:47	7440-36-0	
Arsenic	0.35J	ug/L	1.0	0.099	1	02/02/17 06:52	02/03/17 00:47	7440-38-2	
Barium	13.8	ug/L	1.0	0.062	1	02/02/17 06:52	02/03/17 00:47	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	02/02/17 06:52	02/03/17 00:47	7440-41-7	
Boron	16.1	ug/L	10.0	2.0	1	02/02/17 06:52	02/03/17 00:47	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	02/02/17 06:52	02/03/17 00:47	7440-43-9	
Calcium	70800	ug/L	250	73.6	1	02/02/17 06:52	02/03/17 00:47	7440-70-2	
Chromium	1.9	ug/L	1.0	0.39	1	02/02/17 06:52	02/03/17 00:47	7440-47-3	
Cobalt	<0.036	ug/L	1.0	0.036	1	02/02/17 06:52	02/03/17 00:47	7440-48-4	
Lead	<0.040	ug/L	1.0	0.040	1	02/02/17 06:52	02/03/17 00:47	7439-92-1	
Lithium	0.56J	ug/L	1.0	0.11	1	02/02/17 06:52	02/03/17 00:47	7439-93-2	
Molybdenum	<0.070	ug/L	1.0	0.070	1	02/02/17 06:52	02/03/17 00:47	7439-98-7	
Selenium	<0.21	ug/L	1.0	0.21	1	02/02/17 06:52	02/03/17 00:47	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	02/02/17 06:52	02/03/17 00:47	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 08:57	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	6.99	Std. Units			1		01/25/17 12:25		
Field Specific Conductance	489	umhos/cm			1		01/25/17 12:25		
Oxygen, Dissolved	6.48	mg/L			1		01/25/17 12:25	7782-44-7	
REDOX	192.9	mV			1		01/25/17 12:25		
Turbidity	0.33	NTU			1		01/25/17 12:25		
Static Water Level	786.7	feet			1		01/25/17 12:25		
Temperature, Water (C)	10.9	deg C			1		01/25/17 12:25		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	328	mg/L	20.0	8.7	1		02/01/17 15:40		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.3	Std. Units	0.10	0.010	1		01/31/17 10:40		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	4.6	mg/L	2.0	0.50	1		02/07/17 16:01	16887-00-6	
Fluoride	0.12J	mg/L	0.30	0.10	1		02/07/17 16:01	16984-48-8	
Sulfate	3.0	mg/L	3.0	1.0	1		02/07/17 16:01	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

**Sample: MW-301**      **Lab ID: 40145002007**      Collected: 01/25/17 11:45      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	02/02/17 06:52	02/03/17 00:54	7440-36-0	
Arsenic	0.13J	ug/L	1.0	0.099	1	02/02/17 06:52	02/03/17 00:54	7440-38-2	
Barium	13.5	ug/L	1.0	0.062	1	02/02/17 06:52	02/03/17 00:54	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	02/02/17 06:52	02/03/17 00:54	7440-41-7	
Boron	32.6	ug/L	10.0	2.0	1	02/02/17 06:52	02/03/17 00:54	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	02/02/17 06:52	02/03/17 00:54	7440-43-9	
Calcium	124000	ug/L	250	73.6	1	02/02/17 06:52	02/03/17 00:54	7440-70-2	
Chromium	0.53J	ug/L	1.0	0.39	1	02/02/17 06:52	02/03/17 00:54	7440-47-3	
Cobalt	0.071J	ug/L	1.0	0.036	1	02/02/17 06:52	02/03/17 00:54	7440-48-4	
Lead	<0.040	ug/L	1.0	0.040	1	02/02/17 06:52	02/03/17 00:54	7439-92-1	
Lithium	0.67J	ug/L	1.0	0.11	1	02/02/17 06:52	02/03/17 00:54	7439-93-2	
Molybdenum	<0.070	ug/L	1.0	0.070	1	02/02/17 06:52	02/03/17 00:54	7439-98-7	
Selenium	<0.21	ug/L	1.0	0.21	1	02/02/17 06:52	02/03/17 00:54	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	02/02/17 06:52	02/03/17 00:54	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 08:59	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.1	Std. Units			1		01/25/17 11:45		
Field Specific Conductance	1018	umhos/cm			1		01/25/17 11:45		
Oxygen, Dissolved	1.24	mg/L			1		01/25/17 11:45	7782-44-7	
REDOX	226.1	mV			1		01/25/17 11:45		
Turbidity	0.42	NTU			1		01/25/17 11:45		
Static Water Level	787.27	feet			1		01/25/17 11:45		
Temperature, Water (C)	8.8	deg C			1		01/25/17 11:45		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	514	mg/L	20.0	8.7	1		02/01/17 15:40		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	6.9	Std. Units	0.10	0.010	1		01/31/17 10:40		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	1.5J	mg/L	2.0	0.50	1		02/07/17 16:19	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		02/07/17 16:19	16984-48-8	
Sulfate	6.5	mg/L	3.0	1.0	1		02/07/17 16:19	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

**Sample: MW-303**      **Lab ID: 4014500208**      Collected: 01/26/17 08:55      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.23J</b>	ug/L	1.0	0.073	1	02/02/17 06:52	02/03/17 01:01	7440-36-0	
Arsenic	<b>27.0</b>	ug/L	1.0	0.099	1	02/02/17 06:52	02/03/17 01:01	7440-38-2	
Barium	<b>6.1</b>	ug/L	1.0	0.062	1	02/02/17 06:52	02/03/17 01:01	7440-39-3	
Beryllium	<b>&lt;0.13</b>	ug/L	1.0	0.13	1	02/02/17 06:52	02/03/17 01:01	7440-41-7	
Boron	<b>1790</b>	ug/L	10.0	2.0	1	02/02/17 06:52	02/03/17 01:01	7440-42-8	
Cadmium	<b>&lt;0.089</b>	ug/L	1.0	0.089	1	02/02/17 06:52	02/03/17 01:01	7440-43-9	
Calcium	<b>7330</b>	ug/L	250	73.6	1	02/02/17 06:52	02/03/17 01:01	7440-70-2	
Chromium	<b>73.4</b>	ug/L	1.0	0.39	1	02/02/17 06:52	02/03/17 01:01	7440-47-3	
Cobalt	<b>0.54J</b>	ug/L	1.0	0.036	1	02/02/17 06:52	02/03/17 01:01	7440-48-4	
Lead	<b>&lt;0.040</b>	ug/L	1.0	0.040	1	02/02/17 06:52	02/03/17 01:01	7439-92-1	
Lithium	<b>0.59J</b>	ug/L	1.0	0.11	1	02/02/17 06:52	02/03/17 01:01	7439-93-2	
Molybdenum	<b>91.2</b>	ug/L	1.0	0.070	1	02/02/17 06:52	02/03/17 01:01	7439-98-7	
Selenium	<b>32.8</b>	ug/L	1.0	0.21	1	02/02/17 06:52	02/03/17 01:01	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	02/02/17 06:52	02/03/17 01:01	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 09:01	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>9.94</b>	Std. Units			1		01/26/17 08:55		
Field Specific Conductance	<b>1134</b>	umhos/cm			1		01/26/17 08:55		
Oxygen, Dissolved	<b>6.92</b>	mg/L			1		01/26/17 08:55	7782-44-7	
REDOX	<b>-55.30</b>	mV			1		01/26/17 08:55		
Turbidity	<b>1.52</b>	NTU			1		01/26/17 08:55		
Static Water Level	<b>785.28</b>	feet			1		01/26/17 08:55		
Temperature, Water (C)	<b>11.6</b>	deg C			1		01/26/17 08:55		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>794</b>	mg/L	20.0	8.7	1		02/01/17 15:40		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>9.2</b>	Std. Units	0.10	0.010	1		01/31/17 10:40		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>14.2J</b>	mg/L	20.0	5.0	10		02/08/17 11:22	16887-00-6	D3
Fluoride	<b>&lt;1.0</b>	mg/L	3.0	1.0	10		02/08/17 11:22	16984-48-8	D3
Sulfate	<b>453</b>	mg/L	30.0	10.0	10		02/08/17 11:22	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

**Sample: MW-304**      **Lab ID: 4014500209**      Collected: 01/26/17 10:40      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	02/02/17 06:52	02/03/17 01:21	7440-36-0	
Arsenic	0.99J	ug/L	1.0	0.099	1	02/02/17 06:52	02/03/17 01:21	7440-38-2	
Barium	28.2	ug/L	1.0	0.062	1	02/02/17 06:52	02/03/17 01:21	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	02/02/17 06:52	02/03/17 01:21	7440-41-7	
Boron	614	ug/L	10.0	2.0	1	02/02/17 06:52	02/03/17 01:21	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	02/02/17 06:52	02/03/17 01:21	7440-43-9	
Calcium	65700	ug/L	250	73.6	1	02/02/17 06:52	02/03/17 01:21	7440-70-2	
Chromium	<0.39	ug/L	1.0	0.39	1	02/02/17 06:52	02/03/17 01:21	7440-47-3	
Cobalt	0.73J	ug/L	1.0	0.036	1	02/02/17 06:52	02/03/17 01:21	7440-48-4	
Lead	<0.040	ug/L	1.0	0.040	1	02/02/17 06:52	02/03/17 01:21	7439-92-1	
Lithium	<0.11	ug/L	1.0	0.11	1	02/02/17 06:52	02/03/17 01:21	7439-93-2	
Molybdenum	14.4	ug/L	1.0	0.070	1	02/02/17 06:52	02/03/17 01:21	7439-98-7	
Selenium	<0.21	ug/L	1.0	0.21	1	02/02/17 06:52	02/03/17 01:21	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	02/02/17 06:52	02/03/17 01:21	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 09:03	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.59	Std. Units			1		01/26/17 10:40		
Field Specific Conductance	624.9	umhos/cm			1		01/26/17 10:40		
Oxygen, Dissolved	1.96	mg/L			1		01/26/17 10:40	7782-44-7	
REDOX	-58.70	mV			1		01/26/17 10:40		
Turbidity	1.2	NTU			1		01/26/17 10:40		
Static Water Level	789.34	feet			1		01/26/17 10:40		
Temperature, Water (C)	12.4	deg C			1		01/26/17 10:40		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	388	mg/L	20.0	8.7	1		02/01/17 15:40		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.7	Std. Units	0.10	0.010	1		01/31/17 10:40		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	42.8	mg/L	2.0	0.50	1		02/07/17 16:46	16887-00-6	
Fluoride	0.26J	mg/L	0.30	0.10	1		02/07/17 16:46	16984-48-8	
Sulfate	56.9	mg/L	15.0	5.0	5		02/08/17 11:34	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

**Sample: MW-307**      **Lab ID: 40145002010**      Collected: 01/26/17 13:40      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	02/02/17 06:52	02/03/17 01:27	7440-36-0	
Arsenic	2.0	ug/L	1.0	0.099	1	02/02/17 06:52	02/03/17 01:27	7440-38-2	
Barium	10.7	ug/L	1.0	0.062	1	02/02/17 06:52	02/03/17 01:27	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	02/02/17 06:52	02/03/17 01:27	7440-41-7	
Boron	319	ug/L	10.0	2.0	1	02/02/17 06:52	02/03/17 01:27	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	02/02/17 06:52	02/03/17 01:27	7440-43-9	
Calcium	70300	ug/L	250	73.6	1	02/02/17 06:52	02/03/17 01:27	7440-70-2	
Chromium	<0.39	ug/L	1.0	0.39	1	02/02/17 06:52	02/03/17 01:27	7440-47-3	
Cobalt	0.33J	ug/L	1.0	0.036	1	02/02/17 06:52	02/03/17 01:27	7440-48-4	
Lead	<0.040	ug/L	1.0	0.040	1	02/02/17 06:52	02/03/17 01:27	7439-92-1	
Lithium	<0.11	ug/L	1.0	0.11	1	02/02/17 06:52	02/03/17 01:27	7439-93-2	
Molybdenum	1.0	ug/L	1.0	0.070	1	02/02/17 06:52	02/03/17 01:27	7439-98-7	
Selenium	<0.21	ug/L	1.0	0.21	1	02/02/17 06:52	02/03/17 01:27	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	02/02/17 06:52	02/03/17 01:27	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 09:06	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	6.89	Std. Units			1		01/26/17 13:40		
Field Specific Conductance	570.2	umhos/cm			1		01/26/17 13:40		
Oxygen, Dissolved	0.23	mg/L			1		01/26/17 13:40	7782-44-7	
REDOX	-119.6	mV			1		01/26/17 13:40		
Turbidity	1.9	NTU			1		01/26/17 13:40		
Static Water Level	785.36	feet			1		01/26/17 13:40		
Temperature, Water (C)	10.1	deg C			1		01/26/17 13:40		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	318	mg/L	20.0	8.7	1		02/01/17 15:41		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.5	Std. Units	0.10	0.010	1		01/31/17 10:40		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	8.7J	mg/L	10.0	2.5	5		02/07/17 16:58	16887-00-6	D3
Fluoride	<0.50	mg/L	1.5	0.50	5		02/07/17 16:58	16984-48-8	D3
Sulfate	14.2J	mg/L	15.0	5.0	5		02/07/17 16:58	14808-79-8	D3

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA  
Pace Project No.: 40145002

**Sample: MW-308**      **Lab ID: 40145002011**      Collected: 01/26/17 16:00      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	02/02/17 06:52	02/03/17 01:34	7440-36-0	
Arsenic	3.4	ug/L	1.0	0.099	1	02/02/17 06:52	02/03/17 01:34	7440-38-2	
Barium	70.8	ug/L	1.0	0.062	1	02/02/17 06:52	02/03/17 01:34	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	02/02/17 06:52	02/03/17 01:34	7440-41-7	
Boron	740	ug/L	10.0	2.0	1	02/02/17 06:52	02/03/17 01:34	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	02/02/17 06:52	02/03/17 01:34	7440-43-9	
Calcium	132000	ug/L	250	73.6	1	02/02/17 06:52	02/03/17 01:34	7440-70-2	
Chromium	0.97J	ug/L	1.0	0.39	1	02/02/17 06:52	02/03/17 01:34	7440-47-3	
Cobalt	0.28J	ug/L	1.0	0.036	1	02/02/17 06:52	02/03/17 01:34	7440-48-4	
Lead	0.28J	ug/L	1.0	0.040	1	02/02/17 06:52	02/03/17 01:34	7439-92-1	
Lithium	0.28J	ug/L	1.0	0.11	1	02/02/17 06:52	02/03/17 01:34	7439-93-2	
Molybdenum	1.2	ug/L	1.0	0.070	1	02/02/17 06:52	02/03/17 01:34	7439-98-7	
Selenium	<0.21	ug/L	1.0	0.21	1	02/02/17 06:52	02/03/17 01:34	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	02/02/17 06:52	02/03/17 01:34	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 09:08	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.38	Std. Units			1		01/26/17 16:00		
Field Specific Conductance	920	umhos/cm			1		01/26/17 16:00		
Oxygen, Dissolved	1.15	mg/L			1		01/26/17 16:00	7782-44-7	
REDOX	-105.4	mV			1		01/26/17 16:00		
Turbidity	14.9	NTU			1		01/26/17 16:00		
Static Water Level	785.73	feet			1		01/26/17 16:00		
Temperature, Water (C)	11.5	deg C			1		01/26/17 16:00		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	544	mg/L	20.0	8.7	1		02/01/17 15:41		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.4	Std. Units	0.10	0.010	1		01/31/17 10:40		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	7.5J	mg/L	10.0	2.5	5		02/07/17 17:10	16887-00-6	D3
Fluoride	<0.50	mg/L	1.5	0.50	5		02/07/17 17:10	16984-48-8	D3
Sulfate	6.1J	mg/L	15.0	5.0	5		02/07/17 17:10	14808-79-8	D3

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

**Sample: MW-306**      **Lab ID: 40145002012**      Collected: 01/26/17 17:30      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.074J</b>	ug/L	1.0	0.073	1	02/02/17 06:52	02/03/17 01:41	7440-36-0	
Arsenic	<b>0.14J</b>	ug/L	1.0	0.099	1	02/02/17 06:52	02/03/17 01:41	7440-38-2	
Barium	<b>19.2</b>	ug/L	1.0	0.062	1	02/02/17 06:52	02/03/17 01:41	7440-39-3	
Beryllium	<b>&lt;0.13</b>	ug/L	1.0	0.13	1	02/02/17 06:52	02/03/17 01:41	7440-41-7	
Boron	<b>138</b>	ug/L	10.0	2.0	1	02/02/17 06:52	02/03/17 01:41	7440-42-8	
Cadmium	<b>&lt;0.089</b>	ug/L	1.0	0.089	1	02/02/17 06:52	02/03/17 01:41	7440-43-9	
Calcium	<b>81200</b>	ug/L	250	73.6	1	02/02/17 06:52	02/03/17 01:41	7440-70-2	
Chromium	<b>1.6</b>	ug/L	1.0	0.39	1	02/02/17 06:52	02/03/17 01:41	7440-47-3	
Cobalt	<b>0.054J</b>	ug/L	1.0	0.036	1	02/02/17 06:52	02/03/17 01:41	7440-48-4	
Lead	<b>&lt;0.040</b>	ug/L	1.0	0.040	1	02/02/17 06:52	02/03/17 01:41	7439-92-1	
Lithium	<b>13.9</b>	ug/L	1.0	0.11	1	02/02/17 06:52	02/03/17 01:41	7439-93-2	
Molybdenum	<b>11.4</b>	ug/L	1.0	0.070	1	02/02/17 06:52	02/03/17 01:41	7439-98-7	
Selenium	<b>0.52J</b>	ug/L	1.0	0.21	1	02/02/17 06:52	02/03/17 01:41	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	02/02/17 06:52	02/03/17 01:41	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 09:15	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>8.98</b>	Std. Units			1		01/26/17 17:30		
Field Specific Conductance	<b>531.8</b>	umhos/cm			1		01/26/17 17:30		
Oxygen, Dissolved	<b>5.91</b>	mg/L			1		01/26/17 17:30	7782-44-7	
REDOX	<b>-16.1</b>	mV			1		01/26/17 17:30		
Turbidity	<b>0.41</b>	NTU			1		01/26/17 17:30		
Static Water Level	<b>785.5</b>	feet			1		01/26/17 17:30		
Temperature, Water (C)	<b>10.1</b>	deg C			1		01/26/17 17:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>310</b>	mg/L	20.0	8.7	1		02/01/17 15:43		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.5</b>	Std. Units	0.10	0.010	1		01/31/17 10:40		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>1.7J</b>	mg/L	2.0	0.50	1		02/07/17 17:22	16887-00-6	
Fluoride	<b>0.15J</b>	mg/L	0.30	0.10	1		02/07/17 17:22	16984-48-8	
Sulfate	<b>8.2</b>	mg/L	3.0	1.0	1		02/07/17 17:22	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

**Sample: FIELD BLANK**      **Lab ID: 40145002013**      Collected: 01/26/17 18:00      Received: 01/28/17 08:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	02/02/17 06:52	02/02/17 22:46	7440-36-0	
Arsenic	<0.099	ug/L	1.0	0.099	1	02/02/17 06:52	02/02/17 22:46	7440-38-2	
Barium	<0.062	ug/L	1.0	0.062	1	02/02/17 06:52	02/02/17 22:46	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	02/02/17 06:52	02/02/17 22:46	7440-41-7	
Boron	<2.0	ug/L	10.0	2.0	1	02/02/17 06:52	02/02/17 22:46	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	02/02/17 06:52	02/02/17 22:46	7440-43-9	
Calcium	<73.6	ug/L	250	73.6	1	02/02/17 06:52	02/02/17 22:46	7440-70-2	
Chromium	<0.39	ug/L	1.0	0.39	1	02/02/17 06:52	02/02/17 22:46	7440-47-3	
Cobalt	<0.036	ug/L	1.0	0.036	1	02/02/17 06:52	02/02/17 22:46	7440-48-4	
Lead	<0.040	ug/L	1.0	0.040	1	02/02/17 06:52	02/02/17 22:46	7439-92-1	
Lithium	<0.11	ug/L	1.0	0.11	1	02/02/17 06:52	02/02/17 22:46	7439-93-2	
Molybdenum	<0.070	ug/L	1.0	0.070	1	02/02/17 06:52	02/02/17 22:46	7439-98-7	
Selenium	<0.21	ug/L	1.0	0.21	1	02/02/17 06:52	02/02/17 22:46	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	02/02/17 06:52	02/02/17 22:46	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	02/09/17 13:00	02/10/17 09:17	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		02/01/17 15:43		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.2	Std. Units	0.10	0.010	1		01/31/17 10:40		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<0.50	mg/L	2.0	0.50	1		02/09/17 11:12	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		02/09/17 11:12	16984-48-8	
Sulfate	<1.0	mg/L	3.0	1.0	1		02/09/17 11:12	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

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QC Batch: 248000 Analysis Method: EPA 7470  
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury  
 Associated Lab Samples: 40145002001, 40145002002, 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012, 40145002013

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METHOD BLANK: 1466013 Matrix: Water  
 Associated Lab Samples: 40145002001, 40145002002, 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012, 40145002013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	02/10/17 08:31	

LABORATORY CONTROL SAMPLE: 1466014

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1466015 1466016

Parameter	Units	40145002001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.13	5	5	5.0	5.0	100	100	85-115	0	20	

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT-COLUMBIA  
Pace Project No.: 40145002

QC Batch: 247519 Analysis Method: EPA 6020  
QC Batch Method: EPA 3010 Analysis Description: 6020 MET  
Associated Lab Samples: 40145002001, 40145002002, 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012, 40145002013

METHOD BLANK: 1462496 Matrix: Water  
Associated Lab Samples: 40145002001, 40145002002, 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012, 40145002013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.073	1.0	02/02/17 22:40	
Arsenic	ug/L	<0.099	1.0	02/02/17 22:40	
Barium	ug/L	<0.062	1.0	02/02/17 22:40	
Beryllium	ug/L	<0.13	1.0	02/02/17 22:40	
Boron	ug/L	<2.0	10.0	02/02/17 22:40	
Cadmium	ug/L	<0.089	1.0	02/02/17 22:40	
Calcium	ug/L	<73.6	250	02/02/17 22:40	
Chromium	ug/L	<0.39	1.0	02/02/17 22:40	
Cobalt	ug/L	<0.036	1.0	02/02/17 22:40	
Lead	ug/L	<0.040	1.0	02/02/17 22:40	
Lithium	ug/L	<0.11	1.0	02/02/17 22:40	
Molybdenum	ug/L	0.098J	1.0	02/02/17 22:40	
Selenium	ug/L	<0.21	1.0	02/02/17 22:40	
Thallium	ug/L	<0.14	1.0	02/02/17 22:40	

LABORATORY CONTROL SAMPLE: 1462497

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	506	101	80-120	
Arsenic	ug/L	500	490	98	80-120	
Barium	ug/L	500	497	99	80-120	
Beryllium	ug/L	500	493	99	80-120	
Boron	ug/L	500	482	96	80-120	
Cadmium	ug/L	500	509	102	80-120	
Calcium	ug/L	5000	5070	101	80-120	
Chromium	ug/L	500	488	98	80-120	
Cobalt	ug/L	500	482	96	80-120	
Lead	ug/L	500	475	95	80-120	
Lithium	ug/L	500	486	97	80-120	
Molybdenum	ug/L	500	503	101	80-120	
Selenium	ug/L	500	525	105	80-120	
Thallium	ug/L	500	476	95	80-120	

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Parameter	Units	1462498		1462499		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40145002001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	0.17J	500	500	518	528	104	106	75-125	2	20		
Arsenic	ug/L	0.24J	500	500	499	508	100	101	75-125	2	20		
Barium	ug/L	17.8	500	500	516	522	100	101	75-125	1	20		
Beryllium	ug/L	<0.13	500	500	495	498	99	100	75-125	1	20		
Boron	ug/L	149	500	500	635	651	97	100	75-125	2	20		
Cadmium	ug/L	<0.089	500	500	518	530	104	106	75-125	2	20		
Calcium	ug/L	75400	5000	5000	80200	83800	95	169	75-125	5	20	P6	
Chromium	ug/L	2.6	500	500	492	503	98	100	75-125	2	20		
Cobalt	ug/L	0.083J	500	500	480	493	96	99	75-125	3	20		
Lead	ug/L	0.075J	500	500	492	506	98	101	75-125	3	20		
Lithium	ug/L	3.2	500	500	504	508	100	101	75-125	1	20		
Molybdenum	ug/L	1.6	500	500	511	526	102	105	75-125	3	20		
Selenium	ug/L	1.6	500	500	537	542	107	108	75-125	1	20		
Thallium	ug/L	<0.14	500	500	498	513	100	103	75-125	3	20		

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

QC Batch: 247495

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 40145002001, 40145002002, 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012, 40145002013

METHOD BLANK: 1462350

Matrix: Water

Associated Lab Samples: 40145002001, 40145002002, 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012, 40145002013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	02/01/17 15:37	

LABORATORY CONTROL SAMPLE: 1462351

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	586	576	98	80-120	

SAMPLE DUPLICATE: 1462352

Parameter	Units	40144955001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1900	1850	2	5	

SAMPLE DUPLICATE: 1462353

Parameter	Units	40144943001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	6310	6380	1	5	

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

QC Batch: 247324 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40145002001, 40145002002

SAMPLE DUPLICATE: 1461625

Parameter	Units	40144884001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	10.7	10.8	0	20	H6

SAMPLE DUPLICATE: 1461626

Parameter	Units	40144814001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	8.0	8.0	0	20	H6

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

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QC Batch:	247413	Analysis Method:	EPA 9040
QC Batch Method:	EPA 9040	Analysis Description:	9040 pH
Associated Lab Samples:	40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012, 40145002013		

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SAMPLE DUPLICATE: 1461965

Parameter	Units	40144881005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	8.0	8.1	1	20	H6

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SAMPLE DUPLICATE: 1461966

Parameter	Units	40145002003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.2	7.2	0	20	H6

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT-COLUMBIA  
Pace Project No.: 40145002

QC Batch: 247277 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012

METHOD BLANK: 1461484 Matrix: Water  
Associated Lab Samples: 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	02/07/17 10:48	
Fluoride	mg/L	<0.10	0.30	02/07/17 10:48	
Sulfate	mg/L	<1.0	3.0	02/07/17 10:48	

LABORATORY CONTROL SAMPLE: 1461485

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	18.5	93	90-110	
Fluoride	mg/L	2	1.9	93	90-110	
Sulfate	mg/L	20	18.4	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1461486 1461487

Parameter	Units	40144902003		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	201	200	200	421	423	110	111	90-110	0	15	M0	
Fluoride	mg/L	<0.10	2	2	2.2	2.1	107	102	90-110	5	15		
Sulfate	mg/L	23.9	20	20	46.4	44.6	112	103	90-110	4	15	M0	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1464216 1464217

Parameter	Units	40145002012		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	1.7J	20	20	21.9	22.3	101	103	90-110	2	15		
Fluoride	mg/L	0.15J	2	2	2.2	2.2	102	105	90-110	2	15		
Sulfate	mg/L	8.2	20	20	29.0	29.5	104	107	90-110	2	15		

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT-COLUMBIA  
Pace Project No.: 40145002

QC Batch: 247899 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40145002001, 40145002002, 40145002013

METHOD BLANK: 1465048 Matrix: Water  
Associated Lab Samples: 40145002001, 40145002002, 40145002013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	02/08/17 10:58	
Fluoride	mg/L	<0.10	0.30	02/08/17 10:58	
Sulfate	mg/L	<1.0	3.0	02/08/17 10:58	

LABORATORY CONTROL SAMPLE: 1465049

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	18.9	95	90-110	
Fluoride	mg/L	2	1.9	95	90-110	
Sulfate	mg/L	20	19.1	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1465050 1465051

Parameter	Units	40145002001		MSD		MSD		MS		MSD		% Rec Limits	Max RPD	Qual
		Result	MS Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec						
Chloride	mg/L	1.6J	20	20	21.8	20.7	101	96	90-110	5	15			
Fluoride	mg/L	0.13J	2	2	2.2	2.1	104	97	90-110	7	15			
Sulfate	mg/L	61.6	100	100	180	152	119	90	90-110	17	15	M0,R1		

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Sample: MW-302		Lab ID: 40145002001	Collected: 01/25/17 16:20	Received: 01/28/17 08:15	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 ± 1.22 (1.80)		pCi/L	02/22/17 10:25	13982-63-3	
		C:NA T:96%					
Radium-228	EPA 904.0	1.23 ± 0.678 (1.20)		pCi/L	02/21/17 16:30	15262-20-1	
		C:47% T:87%					
Total Radium	Total Radium Calculation	2.60 ± 1.90 (3.00)		pCi/L	02/22/17 16:54	7440-14-4	

Sample: MW-305		Lab ID: 40145002002	Collected: 01/25/17 16:10	Received: 01/28/17 08:15	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 ± 1.22 (2.50)		pCi/L	02/22/17 10:25	13982-63-3	
		C:NA T:87%					
Radium-228	EPA 904.0	0.838 ± 0.702 (1.40)		pCi/L	02/21/17 16:33	15262-20-1	
		C:48% T:82%					
Total Radium	Total Radium Calculation	0.838 ± 1.92 (3.90)		pCi/L	02/22/17 16:54	7440-14-4	

Sample: MW-4R		Lab ID: 40145002003	Collected: 01/25/17 15:25	Received: 01/28/17 08:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.984 ± 0.796 (0.444)		pCi/L	02/22/17 10:25	13982-63-3	
		C:NA T:89%					
Radium-228	EPA 904.0	0.720 ± 0.752 (1.56)		pCi/L	02/21/17 16:30	15262-20-1	
		C:45% T:80%					
Total Radium	Total Radium Calculation	1.70 ± 1.55 (2.00)		pCi/L	02/22/17 16:54	7440-14-4	

Sample: MW-33AR		Lab ID: 40145002004	Collected: 01/25/17 14:40	Received: 01/28/17 08:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.314 ± 0.756 (1.46)		pCi/L	02/22/17 10:25	13982-63-3	
		C:NA T:90%					
Radium-228	EPA 904.0	0.242 ± 0.638 (1.43)		pCi/L	02/21/17 16:28	15262-20-1	
		C:54% T:81%					
Total Radium	Total Radium Calculation	0.556 ± 1.39 (2.89)		pCi/L	02/22/17 16:54	7440-14-4	

Sample: MW-34A		Lab ID: 40145002005	Collected: 01/25/17 13:25	Received: 01/28/17 08:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.477 ± 1.29 (2.39)		pCi/L	02/22/17 10:25	13982-63-3	
		C:NA T:89%					
Radium-228	EPA 904.0	-0.459 ± 0.418 (1.07)		pCi/L	02/21/17 16:28	15262-20-1	
		C:64% T:85%					

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067 ALLIANT-COLUMBIA  
Pace Project No.: 40145002

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	<b>0.477 ± 1.71 (3.46)</b>	pCi/L	02/22/17 16:54	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.624 ± 0.868 (1.45)</b> C:NA T:91%	pCi/L	02/22/17 10:40	13982-63-3	
Radium-228	EPA 904.0	<b>0.766 ± 0.589 (1.16)</b> C:56% T:89%	pCi/L	02/21/17 16:28	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.39 ± 1.46 (2.61)</b>	pCi/L	02/22/17 16:54	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>1.46 ± 0.968 (0.439)</b> C:NA T:92%	pCi/L	02/22/17 10:40	13982-63-3	
Radium-228	EPA 904.0	<b>0.964 ± 0.681 (1.33)</b> C:52% T:88%	pCi/L	02/21/17 16:28	15262-20-1	
Total Radium	Total Radium Calculation	<b>2.42 ± 1.65 (1.77)</b>	pCi/L	02/22/17 16:54	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>-0.776 ± 1.01 (2.46)</b> C:NA T:90%	pCi/L	02/22/17 10:40	13982-63-3	
Radium-228	EPA 904.0	<b>1.24 ± 0.696 (1.27)</b> C:54% T:84%	pCi/L	02/21/17 16:28	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.24 ± 1.71 (3.73)</b>	pCi/L	02/22/17 16:54	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.426 ± 0.738 (1.32)</b> C:NA T:95%	pCi/L	02/22/17 10:40	13982-63-3	
Radium-228	EPA 904.0	<b>0.819 ± 0.602 (1.18)</b> C:54% T:90%	pCi/L	02/21/17 16:28	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.25 ± 1.34 (2.50)</b>	pCi/L	02/22/17 16:54	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>-0.523 ± 0.797 (2.09)</b> C:NA T:93%	pCi/L	02/22/17 10:40	13982-63-3	
Radium-228		EPA 904.0	<b>0.864 ± 0.669 (1.33)</b> C:56% T:86%	pCi/L	02/21/17 16:28	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.864 ± 1.47 (3.42)</b>	pCi/L	02/22/17 16:54	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.000 ± 0.772 (1.73)</b> C:NA T:90%	pCi/L	02/22/17 10:40	13982-63-3	
Radium-228		EPA 904.0	<b>1.67 ± 0.694 (1.10)</b> C:60% T:84%	pCi/L	02/21/17 16:28	15262-20-1	
Total Radium		Total Radium Calculation	<b>1.67 ± 1.47 (2.83)</b>	pCi/L	02/22/17 16:54	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>-0.148 ± 0.768 (1.78)</b> C:NA T:96%	pCi/L	02/22/17 10:57	13982-63-3	
Radium-228		EPA 904.0	<b>0.653 ± 0.524 (1.04)</b> C:66% T:86%	pCi/L	02/21/17 16:28	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.653 ± 1.29 (2.82)</b>	pCi/L	02/22/17 16:54	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.762 ± 0.795 (1.12)</b> C:NA T:95%	pCi/L	02/22/17 10:57	13982-63-3	
Radium-228		EPA 904.0	<b>1.17 ± 0.588 (0.998)</b> C:53% T:92%	pCi/L	02/21/17 16:28	15262-20-1	
Total Radium		Total Radium Calculation	<b>1.93 ± 1.38 (2.12)</b>	pCi/L	02/22/17 16:54	7440-14-4	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

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QC Batch:	249326	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
Associated Lab Samples:	40145002001, 40145002002, 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012, 40145002013		

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METHOD BLANK:	1226232	Matrix:	Water
Associated Lab Samples:	40145002001, 40145002002, 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012, 40145002013		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.122 ± 0.292 (0.730) C:NA T:100%	pCi/L	02/22/17 10:25	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

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QC Batch:	249327	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	40145002001, 40145002002, 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012, 40145002013		

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METHOD BLANK:	1226233	Matrix:	Water
Associated Lab Samples:	40145002001, 40145002002, 40145002003, 40145002004, 40145002005, 40145002006, 40145002007, 40145002008, 40145002009, 40145002010, 40145002011, 40145002012, 40145002013		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.375 ± 0.276 (0.532) C:91% T:81%	pCi/L	02/21/17 16:29	

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## QUALIFIERS

Project: 25216067 ALLIANT-COLUMBIA  
Pace Project No.: 40145002

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### DEFINITIONS

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 (%)

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40145002001	MW-302	EPA 3010	247519	EPA 6020	247591
40145002002	MW-305	EPA 3010	247519	EPA 6020	247591
40145002003	MW-4R	EPA 3010	247519	EPA 6020	247591
40145002004	MW-33AR	EPA 3010	247519	EPA 6020	247591
40145002005	MW-34A	EPA 3010	247519	EPA 6020	247591
40145002006	MW-84A	EPA 3010	247519	EPA 6020	247591
40145002007	MW-301	EPA 3010	247519	EPA 6020	247591
40145002008	MW-303	EPA 3010	247519	EPA 6020	247591
40145002009	MW-304	EPA 3010	247519	EPA 6020	247591
40145002010	MW-307	EPA 3010	247519	EPA 6020	247591
40145002011	MW-308	EPA 3010	247519	EPA 6020	247591
40145002012	MW-306	EPA 3010	247519	EPA 6020	247591
40145002013	FIELD BLANK	EPA 3010	247519	EPA 6020	247591
40145002001	MW-302	EPA 7470	248000	EPA 7470	248011
40145002002	MW-305	EPA 7470	248000	EPA 7470	248011
40145002003	MW-4R	EPA 7470	248000	EPA 7470	248011
40145002004	MW-33AR	EPA 7470	248000	EPA 7470	248011
40145002005	MW-34A	EPA 7470	248000	EPA 7470	248011
40145002006	MW-84A	EPA 7470	248000	EPA 7470	248011
40145002007	MW-301	EPA 7470	248000	EPA 7470	248011
40145002008	MW-303	EPA 7470	248000	EPA 7470	248011
40145002009	MW-304	EPA 7470	248000	EPA 7470	248011
40145002010	MW-307	EPA 7470	248000	EPA 7470	248011
40145002011	MW-308	EPA 7470	248000	EPA 7470	248011
40145002012	MW-306	EPA 7470	248000	EPA 7470	248011
40145002013	FIELD BLANK	EPA 7470	248000	EPA 7470	248011
40145002001	MW-302				
40145002002	MW-305				
40145002003	MW-4R				
40145002004	MW-33AR				
40145002005	MW-34A				
40145002006	MW-84A				
40145002007	MW-301				
40145002008	MW-303				
40145002009	MW-304				
40145002010	MW-307				
40145002011	MW-308				
40145002012	MW-306				
40145002001	MW-302	EPA 903.1	249326		
40145002002	MW-305	EPA 903.1	249326		
40145002003	MW-4R	EPA 903.1	249326		
40145002004	MW-33AR	EPA 903.1	249326		
40145002005	MW-34A	EPA 903.1	249326		
40145002006	MW-84A	EPA 903.1	249326		
40145002007	MW-301	EPA 903.1	249326		
40145002008	MW-303	EPA 903.1	249326		
40145002009	MW-304	EPA 903.1	249326		

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40145002010	MW-307	EPA 903.1	249326		
40145002011	MW-308	EPA 903.1	249326		
40145002012	MW-306	EPA 903.1	249326		
40145002013	FIELD BLANK	EPA 903.1	249326		
40145002001	MW-302	EPA 904.0	249327		
40145002002	MW-305	EPA 904.0	249327		
40145002003	MW-4R	EPA 904.0	249327		
40145002004	MW-33AR	EPA 904.0	249327		
40145002005	MW-34A	EPA 904.0	249327		
40145002006	MW-84A	EPA 904.0	249327		
40145002007	MW-301	EPA 904.0	249327		
40145002008	MW-303	EPA 904.0	249327		
40145002009	MW-304	EPA 904.0	249327		
40145002010	MW-307	EPA 904.0	249327		
40145002011	MW-308	EPA 904.0	249327		
40145002012	MW-306	EPA 904.0	249327		
40145002013	FIELD BLANK	EPA 904.0	249327		
40145002001	MW-302	Total Radium Calculation	250140		
40145002002	MW-305	Total Radium Calculation	250140		
40145002003	MW-4R	Total Radium Calculation	250140		
40145002004	MW-33AR	Total Radium Calculation	250140		
40145002005	MW-34A	Total Radium Calculation	250140		
40145002006	MW-84A	Total Radium Calculation	250140		
40145002007	MW-301	Total Radium Calculation	250140		
40145002008	MW-303	Total Radium Calculation	250140		
40145002009	MW-304	Total Radium Calculation	250140		
40145002010	MW-307	Total Radium Calculation	250140		
40145002011	MW-308	Total Radium Calculation	250140		
40145002012	MW-306	Total Radium Calculation	250140		
40145002013	FIELD BLANK	Total Radium Calculation	250140		
40145002001	MW-302	SM 2540C	247495		
40145002002	MW-305	SM 2540C	247495		
40145002003	MW-4R	SM 2540C	247495		
40145002004	MW-33AR	SM 2540C	247495		
40145002005	MW-34A	SM 2540C	247495		
40145002006	MW-84A	SM 2540C	247495		
40145002007	MW-301	SM 2540C	247495		
40145002008	MW-303	SM 2540C	247495		
40145002009	MW-304	SM 2540C	247495		
40145002010	MW-307	SM 2540C	247495		
40145002011	MW-308	SM 2540C	247495		
40145002012	MW-306	SM 2540C	247495		
40145002013	FIELD BLANK	SM 2540C	247495		
40145002001	MW-302	EPA 9040	247324		
40145002002	MW-305	EPA 9040	247324		
40145002003	MW-4R	EPA 9040	247413		

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067 ALLIANT-COLUMBIA

Pace Project No.: 40145002

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40145002004	MW-33AR	EPA 9040	247413		
40145002005	MW-34A	EPA 9040	247413		
40145002006	MW-84A	EPA 9040	247413		
40145002007	MW-301	EPA 9040	247413		
40145002008	MW-303	EPA 9040	247413		
40145002009	MW-304	EPA 9040	247413		
40145002010	MW-307	EPA 9040	247413		
40145002011	MW-308	EPA 9040	247413		
40145002012	MW-306	EPA 9040	247413		
40145002013	FIELD BLANK	EPA 9040	247413		
40145002001	MW-302	EPA 300.0	247899		
40145002002	MW-305	EPA 300.0	247899		
40145002003	MW-4R	EPA 300.0	247277		
40145002004	MW-33AR	EPA 300.0	247277		
40145002005	MW-34A	EPA 300.0	247277		
40145002006	MW-84A	EPA 300.0	247277		
40145002007	MW-301	EPA 300.0	247277		
40145002008	MW-303	EPA 300.0	247277		
40145002009	MW-304	EPA 300.0	247277		
40145002010	MW-307	EPA 300.0	247277		
40145002011	MW-308	EPA 300.0	247277		
40145002012	MW-306	EPA 300.0	247277		
40145002013	FIELD BLANK	EPA 300.0	247899		

### REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: *SCS Engineers*  
 Branch/Location: *Madison, WI*  
 Project Contact: *Meg Blodgett*  
 Phone: *608-216-7362*  
 Project Number: *25216067*  
 Project Name: *Alliant-Columbia*  
 Project State: *WI*  
 Sampled By (Print): *PAG + UJH*  
 Sampled By (Sign): *[Signature]*  
 PO #:  
 Regulatory Program:



UPPER MIDWEST REGION

MN: 612-607-1700 WI: 920-469-2436

40145002

### CHAIN OF CUSTODY

**Preservation Codes**

A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?  
(YES/NO)  
 PRESERVATION  
(CODE)\*

Y/N	Pick Letter	Analyses Requested	PH	TDS, Cl, F <sub>504</sub>	Mercury	Metals (see attached)	Radium 228	Radium 226
N	A		X	X	X	X	X	X
	A							
	D							
	D							
	D							
	D							

Quote #: *40145002*

Mail To Contact: *Meg Blodgett*

Mail To Company: *SCS Engineers*

Mail To Address: *2830 Dairy Drive  
Madison, WI 53718*

Invoice To Contact:

Invoice To Company: *SAME*

Invoice To Address:

Invoice To Phone:

CLIENT COMMENTS: *1-11 PD*

LAB COMMENTS (Lab Use Only): *1-500mip*

Profile #: *4-250*

**Data Package Options** (billable)  
 EPA Level III  
 EPA Level IV

**MS/MSD**  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air W = Water  
 B = Biota DW = Drinking Water  
 C = Charcoal GW = Ground Water  
 O = Oil SW = Surface Water  
 S = Soil WW = Waste Water  
 Sl = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
001	MW-302	1-25-17	16:20	BW
002	MW-305		16:10	
003	MW-4R		15:25	
004	MW-33AR		14:40	
005	MW-34A		13:25	
006	MW-84A		12:25	
007	MW-301		11:45	
008	MW-303	1-26-17	8:55	BW
009	MW-304		10:40	
010	MW-307		13:40	
011	MW-308		16:00	
012	MW-306		17:30	
013	Field Blank		1800	

Rush Turnaround Time Requested - Prelims  
 (Rush TAT subject to approval/surcharge)  
 Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:  
 Email #2:  
 Telephone:  
 Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By: *Wade Harms* Date/Time: *1-27-16 10:30*

Relinquished By: *[Signature]* Date/Time: *1-28-17 08:15*

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: *[Signature]* Date/Time: *08:15*

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

PACE Project No. *40145002*

Receipt Temp = *RO1* °C

Sample Receipt pH *OK / Adjusted*

Cooler Custody Seal *Present / Not Present*

Intact *Not Intact*

**Table 3. Parameters for Groundwater Monitoring to meet Federal Requirements**

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

Sample Condition Upon Receipt

Pace Analytical Services, LLC. - Green Bay WI  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302



Project # **WO# : 40145002**

Client Name: SCS

Courier:  Fed Ex  UPS  Client  Pace Other: C.S. LOGINICE

Tracking #: 242-012717



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

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used no Type of Ice:  Wet  Blue Dry  None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: RDL /Corr: \_\_\_\_\_ Biological Tissue is Frozen:  yes

Temp Blank Present:  yes  no  no

Temp should be above freezing to 6°C.

Biota Samples may be received at ≤ 0°C.

Person examining contents:

Date: 1-28-17

Initials: mm

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Date/Time:
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6. <u>TDS</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	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>W</u>	
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input checked="" type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> NaOH <input type="checkbox"/> NaOH + ZnAct
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed <u>mm</u> Lab Std #ID of preservative Date/Time:
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review:

Amelia for DM

Date: 1/28/17



## A2 Round 2 Background Sampling, Analytical Laboratory Report

May 04, 2017

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 25216067.17 WPL-COLUMBIA  
Pace Project No.: 40148168

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 12, 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,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS  
Jeff Maxted, ALLIANT ENERGY  
Marc Morandi, ALLIANT ENERGY



## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182

## CERTIFICATIONS

Project: 25216067.17 WPL-COLUMBIA  
Pace Project No.: 40148168

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### 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

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40148168001	MW-306	Water	04/10/17 14:30	04/12/17 10:30
40148168002	MW-307	Water	04/10/17 15:25	04/12/17 10:30
40148168003	MW-305	Water	04/10/17 17:20	04/12/17 10:30
40148168004	MW-308	Water	04/10/17 18:00	04/12/17 10:30
40148168005	MW-304	Water	04/10/17 18:50	04/12/17 10:30
40148168006	MW-303	Water	04/10/17 19:35	04/12/17 10:30
40148168007	M-4R	Water	04/11/17 11:15	04/12/17 10:30
40148168008	MW-33AR	Water	04/11/17 12:45	04/12/17 10:30
40148168009	FIELD BLANK	Water	04/11/17 14:15	04/12/17 10:30
40148168010	MW-34A	Water	04/11/17 14:30	04/12/17 10:30
40148168011	MW-302	Water	04/11/17 15:30	04/12/17 10:30
40148168012	MW-301	Water	04/11/17 16:15	04/12/17 10:30
40148168013	MW-84A	Water	04/11/17 17:15	04/12/17 10:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40148168001	MW-306	EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40148168002	MW-307	EPA 6020	SDW
EPA 7470	AJT			1	PASI-G
	AMH			7	PASI-G
EPA 903.1	KAC			1	PASI-PA
EPA 904.0	JJY			1	PASI-PA
Total Radium Calculation	RMK			1	PASI-PA
SM 2540C	TMK			1	PASI-G
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G
40148168003	MW-305			EPA 6020	SDW
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40148168004	MW-308	EPA 6020	SDW
EPA 7470	AJT			1	PASI-G
	AMH			7	PASI-G
EPA 903.1	KAC			1	PASI-PA
EPA 904.0	JJY			1	PASI-PA
Total Radium Calculation	RMK			1	PASI-PA
SM 2540C	TMK			1	PASI-G
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G
40148168005	MW-304			EPA 6020	SDW

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### SAMPLE ANALYTE COUNT

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40148168006	MW-303	EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40148168007	M-4R	SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
40148168008	MW-33AR		AMH	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
40148168009	FIELD BLANK	EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40148168010	MW-34A	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
40148168011	MW-302	Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40148168012	MW-301	SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
40148168013	MW-84A	EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AMH	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA

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### SAMPLE ANALYTE COUNT

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

**Sample: MW-306**      **Lab ID: 40148168001**      Collected: 04/10/17 14:30      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.21J</b>	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 01:06	7440-36-0	
Arsenic	<b>0.25J</b>	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 01:06	7440-38-2	1q
Barium	<b>14.9</b>	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 01:06	7440-39-3	
Beryllium	<b>0.14J</b>	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 01:06	7440-41-7	
Boron	<b>128</b>	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 01:06	7440-42-8	
Cadmium	<b>0.11J</b>	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 01:06	7440-43-9	
Calcium	<b>83500</b>	ug/L	2500	736	10	04/13/17 08:49	04/18/17 00:39	7440-70-2	P6
Chromium	<b>2.2</b>	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 01:06	7440-47-3	
Cobalt	<b>0.15J</b>	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 01:06	7440-48-4	
Lead	<b>0.15J</b>	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 01:06	7439-92-1	
Lithium	<b>6.8</b>	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 01:06	7439-93-2	
Molybdenum	<b>8.4</b>	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 01:06	7439-98-7	
Selenium	<b>0.77J</b>	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 01:06	7782-49-2	
Thallium	<b>0.28J</b>	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 01:06	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:00	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.56</b>	Std. Units			1		04/10/17 14:30		
Field Specific Conductance	<b>899</b>	umhos/cm			1		04/10/17 14:30		
Oxygen, Dissolved	<b>7.81</b>	mg/L			1		04/10/17 14:30	7782-44-7	
REDOX	<b>97.6</b>	mV			1		04/10/17 14:30		
Turbidity	<b>0.34</b>	NTU			1		04/10/17 14:30		
Static Water Level	<b>786.22</b>	feet			1		04/10/17 14:30		
Temperature, Water (C)	<b>9.8</b>	deg C			1		04/10/17 14:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>326</b>	mg/L	20.0	8.7	1		04/13/17 17:42		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.4</b>	Std. Units	0.10	0.010	1		04/13/17 09:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>1.1J</b>	mg/L	2.0	0.50	1		04/24/17 15:24	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		04/24/17 15:24	16984-48-8	
Sulfate	<b>6.8</b>	mg/L	3.0	1.0	1		04/24/17 15:24	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

**Sample: MW-307**      **Lab ID: 40148168002**      Collected: 04/10/17 15:25      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.29J</b>	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 01:47	7440-36-0	
Arsenic	<b>0.73J</b>	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 01:47	7440-38-2	1q
Barium	<b>9.3</b>	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 01:47	7440-39-3	
Beryllium	<b>&lt;0.13</b>	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 01:47	7440-41-7	
Boron	<b>175</b>	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 01:47	7440-42-8	
Cadmium	<b>0.27J</b>	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 01:47	7440-43-9	
Calcium	<b>68300</b>	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 01:47	7440-70-2	
Chromium	<b>1.6</b>	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 01:47	7440-47-3	
Cobalt	<b>0.58J</b>	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 01:47	7440-48-4	
Lead	<b>0.41J</b>	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 01:47	7439-92-1	
Lithium	<b>0.30J</b>	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 01:47	7439-93-2	
Molybdenum	<b>0.80J</b>	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 01:47	7439-98-7	
Selenium	<b>0.40J</b>	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 01:47	7782-49-2	
Thallium	<b>0.37J</b>	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 01:47	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:07	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.52</b>	Std. Units			1		04/10/17 15:25		
Field Specific Conductance	<b>898</b>	umhos/cm			1		04/10/17 15:25		
Oxygen, Dissolved	<b>0.28</b>	mg/L			1		04/10/17 15:25	7782-44-7	
REDOX	<b>-19.6</b>	mV			1		04/10/17 15:25		
Turbidity	<b>1.28</b>	NTU			1		04/10/17 15:25		
Static Water Level	<b>785.64</b>	feet			1		04/10/17 15:25		
Temperature, Water (C)	<b>9.2</b>	deg C			1		04/10/17 15:25		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>324</b>	mg/L	20.0	8.7	1		04/13/17 17:42		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.6</b>	Std. Units	0.10	0.010	1		04/13/17 09:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>4.1</b>	mg/L	2.0	0.50	1		04/24/17 15:35	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		04/24/17 15:35	16984-48-8	
Sulfate	<b>33.1</b>	mg/L	3.0	1.0	1		04/24/17 15:35	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA  
Pace Project No.: 40148168

**Sample: MW-305**      **Lab ID: 40148168003**      Collected: 04/10/17 17:20      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<b>0.30J</b>	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 02:01	7440-36-0	
Arsenic	<b>0.20J</b>	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 02:01	7440-38-2	1q
Barium	<b>7.1</b>	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 02:01	7440-39-3	
Beryllium	<b>&lt;0.13</b>	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 02:01	7440-41-7	
Boron	<b>782</b>	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 02:01	7440-42-8	
Cadmium	<b>&lt;0.089</b>	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 02:01	7440-43-9	
Calcium	<b>67100</b>	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 02:01	7440-70-2	
Chromium	<b>1.9</b>	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 02:01	7440-47-3	
Cobalt	<b>0.16J</b>	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 02:01	7440-48-4	
Lead	<b>&lt;0.040</b>	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 02:01	7439-92-1	
Lithium	<b>&lt;0.11</b>	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 02:01	7439-93-2	
Molybdenum	<b>42.8</b>	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 02:01	7439-98-7	
Selenium	<b>3.4</b>	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 02:01	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 02:01	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:09	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>8.62</b>	Std. Units			1		04/10/17 17:20		
Field Specific Conductance	<b>1007</b>	umhos/cm			1		04/10/17 17:20		
Oxygen, Dissolved	<b>3.11</b>	mg/L			1		04/10/17 17:20	7782-44-7	
REDOX	<b>32.9</b>	mV			1		04/10/17 17:20		
Turbidity	<b>0.40</b>	NTU			1		04/10/17 17:20		
Static Water Level	<b>789.57</b>	feet			1		04/10/17 17:20		
Temperature, Water (C)	<b>10.9</b>	deg C			1		04/10/17 17:20		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>410</b>	mg/L	20.0	8.7	1		04/13/17 17:43		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>8.2</b>	Std. Units	0.10	0.010	1		04/13/17 09:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>43.1</b>	mg/L	2.0	0.50	1		04/24/17 15:46	16887-00-6	
Fluoride	<b>0.39</b>	mg/L	0.30	0.10	1		04/24/17 15:46	16984-48-8	
Sulfate	<b>182</b>	mg/L	30.0	10.0	10		04/24/17 19:04	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

**Sample: MW-308**      **Lab ID: 40148168004**      Collected: 04/10/17 18:00      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.12J</b>	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 02:07	7440-36-0	
Arsenic	<b>3.5</b>	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 02:07	7440-38-2	
Barium	<b>95.1</b>	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 02:07	7440-39-3	
Beryllium	<b>0.17J</b>	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 02:07	7440-41-7	
Boron	<b>614</b>	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 02:07	7440-42-8	
Cadmium	<b>&lt;0.089</b>	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 02:07	7440-43-9	
Calcium	<b>129000</b>	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 02:07	7440-70-2	
Chromium	<b>9.3</b>	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 02:07	7440-47-3	
Cobalt	<b>1.6</b>	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 02:07	7440-48-4	
Lead	<b>2.5</b>	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 02:07	7439-92-1	
Lithium	<b>2.2</b>	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 02:07	7439-93-2	
Molybdenum	<b>1.4</b>	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 02:07	7439-98-7	
Selenium	<b>0.72J</b>	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 02:07	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 02:07	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:11	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.56</b>	Std. Units			1		04/10/17 18:00		
Field Specific Conductance	<b>1457</b>	umhos/cm			1		04/10/17 18:00		
Oxygen, Dissolved	<b>0.19</b>	mg/L			1		04/10/17 18:00	7782-44-7	
REDOX	<b>-106.4</b>	mV			1		04/10/17 18:00		
Turbidity	<b>113.1</b>	NTU			1		04/10/17 18:00		
Static Water Level	<b>786.51</b>	feet			1		04/10/17 18:00		
Temperature, Water (C)	<b>9.0</b>	deg C			1		04/10/17 18:00		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>526</b>	mg/L	20.0	8.7	1		04/13/17 17:43		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.4</b>	Std. Units	0.10	0.010	1		04/13/17 09:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>5.8J</b>	mg/L	10.0	2.5	5		04/24/17 15:56	16887-00-6	D3
Fluoride	<b>&lt;0.50</b>	mg/L	1.5	0.50	5		04/24/17 15:56	16984-48-8	D3
Sulfate	<b>5.5J</b>	mg/L	15.0	5.0	5		04/24/17 15:56	14808-79-8	D3

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## ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

**Sample: MW-304**      **Lab ID: 40148168005**      Collected: 04/10/17 18:50      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 02:14	7440-36-0	
Arsenic	0.98J	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 02:14	7440-38-2	1q
Barium	30.9	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 02:14	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 02:14	7440-41-7	
Boron	496	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 02:14	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 02:14	7440-43-9	
Calcium	79100	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 02:14	7440-70-2	
Chromium	0.65J	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 02:14	7440-47-3	
Cobalt	0.62J	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 02:14	7440-48-4	
Lead	0.16J	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 02:14	7439-92-1	
Lithium	0.16J	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 02:14	7439-93-2	
Molybdenum	10.1	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 02:14	7439-98-7	
Selenium	<0.21	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 02:14	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 02:14	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:14	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.64	Std. Units			1		04/10/17 18:50		
Field Specific Conductance	1.105	umhos/cm			1		04/10/17 18:50		
Oxygen, Dissolved	0.58	mg/L			1		04/10/17 18:50	7782-44-7	
REDOX	-22.20	mV			1		04/10/17 18:50		
Turbidity	5.43	NTU			1		04/10/17 18:50		
Static Water Level	788.22	feet			1		04/10/17 18:50		
Temperature, Water (C)	10.4	deg C			1		04/10/17 18:50		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	422	mg/L	20.0	8.7	1		04/13/17 17:43		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.6	Std. Units	0.10	0.010	1		04/13/17 09:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	23.5	mg/L	2.0	0.50	1		04/24/17 16:07	16887-00-6	
Fluoride	0.10J	mg/L	0.30	0.10	1		04/24/17 16:07	16984-48-8	
Sulfate	63.6	mg/L	15.0	5.0	5		04/25/17 11:35	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

**Sample: MW-303**      **Lab ID: 40148168006**      Collected: 04/10/17 19:35      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<b>0.14J</b>	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 02:21	7440-36-0	
Arsenic	<b>12.1</b>	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 02:21	7440-38-2	
Barium	<b>16.0</b>	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 02:21	7440-39-3	
Beryllium	<b>&lt;0.13</b>	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 02:21	7440-41-7	
Boron	<b>1990</b>	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 02:21	7440-42-8	
Cadmium	<b>&lt;0.089</b>	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 02:21	7440-43-9	
Calcium	<b>33700</b>	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 02:21	7440-70-2	
Chromium	<b>71.0</b>	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 02:21	7440-47-3	
Cobalt	<b>0.48J</b>	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 02:21	7440-48-4	
Lead	<b>&lt;0.040</b>	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 02:21	7439-92-1	
Lithium	<b>1.2</b>	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 02:21	7439-93-2	
Molybdenum	<b>103</b>	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 02:21	7439-98-7	
Selenium	<b>25.9</b>	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 02:21	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 02:21	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:16	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>9.85</b>	Std. Units			1		04/10/17 19:35		
Field Specific Conductance	<b>1826</b>	umhos/cm			1		04/10/17 19:35		
Oxygen, Dissolved	<b>6.88</b>	mg/L			1		04/10/17 19:35	7782-44-7	
REDOX	<b>3.90</b>	mV			1		04/10/17 19:35		
Turbidity	<b>0.74</b>	NTU			1		04/10/17 19:35		
Static Water Level	<b>786.00</b>	feet			1		04/10/17 19:35		
Temperature, Water (C)	<b>10.7</b>	deg C			1		04/10/17 19:35		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>778</b>	mg/L	20.0	8.7	1		04/13/17 17:43		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>9.1</b>	Std. Units	0.10	0.010	1		04/13/17 09:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>16.7J</b>	mg/L	40.0	10.0	20		04/24/17 19:15	16887-00-6	D3
Fluoride	<b>&lt;2.0</b>	mg/L	6.0	2.0	20		04/24/17 19:15	16984-48-8	D3
Sulfate	<b>506</b>	mg/L	60.0	20.0	20		04/24/17 19:15	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

**Sample: M-4R**      **Lab ID: 40148168007**      Collected: 04/11/17 11:15      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<b>0.14J</b>	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 02:28	7440-36-0	
Arsenic	<b>&lt;0.099</b>	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 02:28	7440-38-2	1q
Barium	<b>22.5</b>	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 02:28	7440-39-3	
Beryllium	<b>&lt;0.13</b>	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 02:28	7440-41-7	
Boron	<b>512</b>	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 02:28	7440-42-8	
Cadmium	<b>&lt;0.089</b>	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 02:28	7440-43-9	
Calcium	<b>84800</b>	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 02:28	7440-70-2	
Chromium	<b>0.70J</b>	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 02:28	7440-47-3	
Cobalt	<b>0.32J</b>	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 02:28	7440-48-4	
Lead	<b>&lt;0.040</b>	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 02:28	7439-92-1	
Lithium	<b>3.2</b>	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 02:28	7439-93-2	
Molybdenum	<b>14.5</b>	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 02:28	7439-98-7	
Selenium	<b>13.3</b>	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 02:28	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 02:28	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:23	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.55</b>	Std. Units			1		04/11/17 11:15		
Field Specific Conductance	<b>1212</b>	umhos/cm			1		04/11/17 11:15		
Oxygen, Dissolved	<b>0.92</b>	mg/L			1		04/11/17 11:15	7782-44-7	
REDOX	<b>46</b>	mV			1		04/11/17 11:15		
Turbidity	<b>0.23</b>	NTU			1		04/11/17 11:15		
Static Water Level	<b>787.95</b>	feet			1		04/11/17 11:15		
Temperature, Water (C)	<b>11.7</b>	deg C			1		04/11/17 11:15		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>484</b>	mg/L	20.0	8.7	1		04/17/17 16:43		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.5</b>	Std. Units	0.10	0.010	1		04/13/17 09:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>44.0</b>	mg/L	2.0	0.50	1		04/24/17 16:29	16887-00-6	
Fluoride	<b>0.18J</b>	mg/L	0.30	0.10	1		04/24/17 16:29	16984-48-8	
Sulfate	<b>127</b>	mg/L	15.0	5.0	5		04/24/17 19:25	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA  
Pace Project No.: 40148168

**Sample: MW-33AR**      **Lab ID: 40148168008**      Collected: 04/11/17 12:45      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 02:35	7440-36-0	
Arsenic	0.31J	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 02:35	7440-38-2	1q
Barium	35.1	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 02:35	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 02:35	7440-41-7	
Boron	760	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 02:35	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 02:35	7440-43-9	
Calcium	66800	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 02:35	7440-70-2	
Chromium	2.4	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 02:35	7440-47-3	
Cobalt	<0.036	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 02:35	7440-48-4	
Lead	<0.040	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 02:35	7439-92-1	
Lithium	1.2	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 02:35	7439-93-2	
Molybdenum	3.0	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 02:35	7439-98-7	
Selenium	2.3	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 02:35	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 02:35	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:25	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	8.19	Std. Units			1		04/11/17 12:45		
Field Specific Conductance	1165	umhos/cm			1		04/11/17 12:45		
Oxygen, Dissolved	9.98	mg/L			1		04/11/17 12:45	7782-44-7	
REDOX	833.0	mV			1		04/11/17 12:45		
Turbidity	0.45	NTU			1		04/11/17 12:45		
Static Water Level	786.39	feet			1		04/11/17 12:45		
Temperature, Water (C)	10.3	deg C			1		04/11/17 12:45		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	446	mg/L	20.0	8.7	1		04/17/17 16:44		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	8.0	Std. Units	0.10	0.010	1		04/13/17 09:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	47.1	mg/L	2.0	0.50	1		04/24/17 16:40	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		04/24/17 16:40	16984-48-8	
Sulfate	139	mg/L	15.0	5.0	5		04/24/17 19:36	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

Sample: **FIELD BLANK** Lab ID: **40148168009** Collected: 04/11/17 14:15 Received: 04/12/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	<0.073	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 00:26	7440-36-0	
Arsenic	<0.099	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 00:26	7440-38-2	1q
Barium	<0.062	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 00:26	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 00:26	7440-41-7	
Boron	<2.0	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 00:26	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 00:26	7440-43-9	
Calcium	<73.6	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 00:26	7440-70-2	
Chromium	0.56J	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 00:26	7440-47-3	
Cobalt	<0.036	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 00:26	7440-48-4	
Lead	<0.040	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 00:26	7439-92-1	
Lithium	<0.11	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 00:26	7439-93-2	
Molybdenum	<0.070	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 00:26	7439-98-7	
Selenium	<0.21	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 00:26	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 00:26	7440-28-0	
<b>7470 Mercury</b> Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Mercury	<0.13	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:28	7439-97-6	
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C									
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		04/17/17 16:44		
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Chloride	<0.50	mg/L	2.0	0.50	1		04/24/17 16:50	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		04/24/17 16:50	16984-48-8	
Sulfate	<1.0	mg/L	3.0	1.0	1		04/24/17 16:50	14808-79-8	

Sample: **MW-34A** Lab ID: **40148168010** Collected: 04/11/17 14:30 Received: 04/12/17 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Antimony	<0.073	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 02:41	7440-36-0	
Arsenic	0.29J	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 02:41	7440-38-2	1q
Barium	11.6	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 02:41	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 02:41	7440-41-7	
Boron	214	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 02:41	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 02:41	7440-43-9	
Calcium	66300	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 02:41	7440-70-2	
Chromium	2.4	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 02:41	7440-47-3	
Cobalt	0.18J	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 02:41	7440-48-4	
Lead	0.18J	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 02:41	7439-92-1	
Lithium	0.57J	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 02:41	7439-93-2	
Molybdenum	1.1	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 02:41	7439-98-7	
Selenium	1.2	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 02:41	7782-49-2	

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### ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

**Sample: MW-34A**      **Lab ID: 40148168010**      Collected: 04/11/17 14:30      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Thallium	<0.14	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 02:41	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:30	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	8.03	Std. Units			1		04/11/17 14:30		
Field Specific Conductance	843	umhos/cm			1		04/11/17 14:30		
Oxygen, Dissolved	9.96	mg/L			1		04/11/17 14:30	7782-44-7	
REDOX	82.5	mV			1		04/11/17 14:30		
Turbidity	15.96	NTU			1		04/11/17 14:30		
Static Water Level	786.30	feet			1		04/11/17 14:30		
Temperature, Water (C)	11.0	deg C			1		04/11/17 14:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	330	mg/L	20.0	8.7	1		04/17/17 16:44		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.9	Std. Units	0.10	0.010	1		04/13/17 09:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	6.2	mg/L	2.0	0.50	1		04/24/17 17:01	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		04/24/17 17:01	16984-48-8	
Sulfate	87.6	mg/L	15.0	5.0	5		04/24/17 20:19	14808-79-8	

**Sample: MW-302**      **Lab ID: 40148168011**      Collected: 04/11/17 15:30      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 03:02	7440-36-0	
Arsenic	<0.099	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 03:02	7440-38-2	1q
Barium	20.3	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 03:02	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 03:02	7440-41-7	
Boron	322	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 03:02	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 03:02	7440-43-9	
Calcium	79600	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 03:02	7440-70-2	
Chromium	2.7	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 03:02	7440-47-3	
Cobalt	0.080J	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 03:02	7440-48-4	
Lead	0.047J	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 03:02	7439-92-1	
Lithium	2.7	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 03:02	7439-93-2	
Molybdenum	1.5	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 03:02	7439-98-7	
Selenium	2.5	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 03:02	7782-49-2	

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### ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA  
Pace Project No.: 40148168

**Sample: MW-302**      **Lab ID: 40148168011**      Collected: 04/11/17 15:30      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Thallium	<0.14	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 03:02	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:32	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.63	Std. Units			1		04/11/17 15:30		
Field Specific Conductance	1114	umhos/cm			1		04/11/17 15:30		
Oxygen, Dissolved	9.53	mg/L			1		04/11/17 15:30	7782-44-7	
REDOX	107.40	mV			1		04/11/17 15:30		
Turbidity	1.68	NTU			1		04/11/17 15:30		
Static Water Level	787.55	feet			1		04/11/17 15:30		
Temperature, Water (C)	9.5	deg C			1		04/11/17 15:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	436	mg/L	20.0	8.7	1		04/17/17 16:44		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.6	Std. Units	0.10	0.010	1		04/13/17 09:50		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	1.6J	mg/L	2.0	0.50	1		04/24/17 17:45	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		04/24/17 17:45	16984-48-8	
Sulfate	81.3	mg/L	15.0	5.0	5		04/24/17 20:30	14808-79-8	

**Sample: MW-301**      **Lab ID: 40148168012**      Collected: 04/11/17 16:15      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 03:08	7440-36-0	
Arsenic	0.18J	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 03:08	7440-38-2	1q
Barium	13.2	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 03:08	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 03:08	7440-41-7	
Boron	28.8	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 03:08	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 03:08	7440-43-9	
Calcium	120000	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 03:08	7440-70-2	
Chromium	0.70J	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 03:08	7440-47-3	
Cobalt	0.064J	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 03:08	7440-48-4	
Lead	<0.040	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 03:08	7439-92-1	
Lithium	0.68J	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 03:08	7439-93-2	
Molybdenum	<0.070	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 03:08	7439-98-7	
Selenium	<0.21	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 03:08	7782-49-2	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

**Sample: MW-301**      **Lab ID: 40148168012**      Collected: 04/11/17 16:15      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Thallium	<0.14	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 03:08	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:35	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.11	Std. Units			1		04/11/17 16:15		
Field Specific Conductance	1354	umhos/cm			1		04/11/17 16:15		
Oxygen, Dissolved	1.44	mg/L			1		04/11/17 16:15	7782-44-7	
REDOX	100.9	mV			1		04/11/17 16:15		
Turbidity	0.10	NTU			1		04/11/17 16:15		
Static Water Level	787.89	feet			1		04/11/17 16:15		
Temperature, Water (C)	7.7	deg C			1		04/11/17 16:15		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	502	mg/L	20.0	8.7	1		04/17/17 16:45		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.1	Std. Units	0.10	0.010	1		04/13/17 09:50		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	2.0	mg/L	2.0	0.50	1		04/24/17 17:55	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		04/24/17 17:55	16984-48-8	
Sulfate	10.3	mg/L	3.0	1.0	1		04/24/17 17:55	14808-79-8	

**Sample: MW-84A**      **Lab ID: 40148168013**      Collected: 04/11/17 17:15      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.073	ug/L	1.0	0.073	1	04/13/17 08:49	04/18/17 03:15	7440-36-0	
Arsenic	<0.099	ug/L	1.0	0.099	1	04/13/17 08:49	04/18/17 03:15	7440-38-2	1q
Barium	14.1	ug/L	1.0	0.062	1	04/13/17 08:49	04/18/17 03:15	7440-39-3	
Beryllium	<0.13	ug/L	1.0	0.13	1	04/13/17 08:49	04/18/17 03:15	7440-41-7	
Boron	12.9	ug/L	10.0	2.0	1	04/13/17 08:49	04/18/17 03:15	7440-42-8	
Cadmium	<0.089	ug/L	1.0	0.089	1	04/13/17 08:49	04/18/17 03:15	7440-43-9	
Calcium	73200	ug/L	250	73.6	1	04/13/17 08:49	04/18/17 03:15	7440-70-2	
Chromium	2.4	ug/L	1.0	0.39	1	04/13/17 08:49	04/18/17 03:15	7440-47-3	
Cobalt	<0.036	ug/L	1.0	0.036	1	04/13/17 08:49	04/18/17 03:15	7440-48-4	
Lead	0.041J	ug/L	1.0	0.040	1	04/13/17 08:49	04/18/17 03:15	7439-92-1	
Lithium	0.55J	ug/L	1.0	0.11	1	04/13/17 08:49	04/18/17 03:15	7439-93-2	
Molybdenum	<0.070	ug/L	1.0	0.070	1	04/13/17 08:49	04/18/17 03:15	7439-98-7	
Selenium	<0.21	ug/L	1.0	0.21	1	04/13/17 08:49	04/18/17 03:15	7782-49-2	

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**ANALYTICAL RESULTS**

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

**Sample: MW-84A**      **Lab ID: 40148168013**      Collected: 04/11/17 17:15      Received: 04/12/17 10:30      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Thallium	<0.14	ug/L	1.0	0.14	1	04/13/17 08:49	04/18/17 03:15	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	04/20/17 13:30	04/21/17 08:37	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.80	Std. Units			1		04/11/17 17:15		
Field Specific Conductance	948	umhos/cm			1		04/11/17 17:15		
Oxygen, Dissolved	9.28	mg/L			1		04/11/17 17:15	7782-44-7	
REDOX	102.0	mV			1		04/11/17 17:15		
Turbidity	0.04	NTU			1		04/11/17 17:15		
Static Water Level	787.16	feet			1		04/11/17 17:15		
Temperature, Water (C)	10.6	deg C			1		04/11/17 17:15		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	342	mg/L	20.0	8.7	1		04/17/17 16:45		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.7	Std. Units	0.10	0.010	1		04/13/17 09:50		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	4.9	mg/L	2.0	0.50	1		04/24/17 18:06	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		04/24/17 18:06	16984-48-8	
Sulfate	2.8J	mg/L	3.0	1.0	1		04/24/17 18:06	14808-79-8	

**REPORT OF LABORATORY ANALYSIS**

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**QUALITY CONTROL DATA**

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

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QC Batch: 253376 Analysis Method: EPA 7470  
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury  
 Associated Lab Samples: 40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006, 40148168007,  
 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013

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METHOD BLANK: 1494649 Matrix: Water  
 Associated Lab Samples: 40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006, 40148168007,  
 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	04/21/17 07:55	

LABORATORY CONTROL SAMPLE: 1494650

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1494651 1494652

Parameter	Units	40148168001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.13	5	5	5.1	5.2	102	105	85-115	3	20	

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### QUALITY CONTROL DATA

Project: 25216067.17 WPL-COLUMBIA  
Pace Project No.: 40148168

QC Batch: 252615 Analysis Method: EPA 6020  
QC Batch Method: EPA 3010 Analysis Description: 6020 MET  
Associated Lab Samples: 40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006, 40148168007, 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013

METHOD BLANK: 1490470 Matrix: Water  
Associated Lab Samples: 40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006, 40148168007, 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.073	1.0	04/18/17 00:19	
Arsenic	ug/L	<0.099	1.0	04/18/17 00:19	
Barium	ug/L	<0.062	1.0	04/18/17 00:19	
Beryllium	ug/L	<0.13	1.0	04/18/17 00:19	
Boron	ug/L	<2.0	10.0	04/18/17 00:19	
Cadmium	ug/L	<0.089	1.0	04/18/17 00:19	
Calcium	ug/L	<73.6	250	04/18/17 00:19	
Chromium	ug/L	<0.39	1.0	04/18/17 00:19	
Cobalt	ug/L	<0.036	1.0	04/18/17 00:19	
Lead	ug/L	<0.040	1.0	04/18/17 00:19	
Lithium	ug/L	<0.11	1.0	04/18/17 00:19	
Molybdenum	ug/L	<0.070	1.0	04/18/17 00:19	
Selenium	ug/L	<0.21	1.0	04/18/17 00:19	
Thallium	ug/L	<0.14	1.0	04/18/17 00:19	

LABORATORY CONTROL SAMPLE: 1490471

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	537	107	80-120	
Arsenic	ug/L	500	513	103	80-120	
Barium	ug/L	500	525	105	80-120	
Beryllium	ug/L	500	521	104	80-120	
Boron	ug/L	500	495	99	80-120	
Cadmium	ug/L	500	537	107	80-120	
Calcium	ug/L	5000	4900	98	80-120	
Chromium	ug/L	500	516	103	80-120	
Cobalt	ug/L	500	518	104	80-120	
Lead	ug/L	500	509	102	80-120	
Lithium	ug/L	500	502	100	80-120	
Molybdenum	ug/L	500	540	108	80-120	
Selenium	ug/L	500	552	110	80-120	
Thallium	ug/L	500	513	103	80-120	

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### QUALITY CONTROL DATA

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

Parameter	Units	40148168001		1490472		1490473		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
Antimony	ug/L	0.21J	500	500	533	551	107	110	75-125	3	20			
Arsenic	ug/L	0.25J	500	500	512	530	102	106	75-125	3	20			
Barium	ug/L	14.9	500	500	536	556	104	108	75-125	4	20			
Beryllium	ug/L	0.14J	500	500	515	526	103	105	75-125	2	20			
Boron	ug/L	128	500	500	614	643	97	103	75-125	5	20			
Cadmium	ug/L	0.11J	500	500	527	547	105	109	75-125	4	20			
Calcium	ug/L	83500	5000	5000	85500	89000	40	109	75-125	4	20	P6		
Chromium	ug/L	2.2	500	500	515	529	103	105	75-125	3	20			
Cobalt	ug/L	0.15J	500	500	508	524	101	105	75-125	3	20			
Lead	ug/L	0.15J	500	500	510	529	102	106	75-125	4	20			
Lithium	ug/L	6.8	500	500	513	526	101	104	75-125	2	20			
Molybdenum	ug/L	8.4	500	500	548	567	108	112	75-125	3	20			
Selenium	ug/L	0.77J	500	500	547	570	109	114	75-125	4	20			
Thallium	ug/L	0.28J	500	500	518	537	104	107	75-125	3	20			

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### QUALITY CONTROL DATA

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

QC Batch: 252707

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006

METHOD BLANK: 1490962

Matrix: Water

Associated Lab Samples: 40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/13/17 17:39	

LABORATORY CONTROL SAMPLE: 1490963

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	557	574	103	80-120	

SAMPLE DUPLICATE: 1490964

Parameter	Units	40148227001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	214	212	1	5	

SAMPLE DUPLICATE: 1490965

Parameter	Units	40148168001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	326	318	2	5	

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### QUALITY CONTROL DATA

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

QC Batch: 252972

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 40148168007, 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013

METHOD BLANK: 1492635

Matrix: Water

Associated Lab Samples: 40148168007, 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/17/17 16:41	

LABORATORY CONTROL SAMPLE: 1492636

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	557	578	104	80-120	

SAMPLE DUPLICATE: 1492637

Parameter	Units	40148169001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	438	464	6	5	R1

SAMPLE DUPLICATE: 1492638

Parameter	Units	40148263009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	358	368	3	5	

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### QUALITY CONTROL DATA

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

QC Batch: 252688 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006, 40148168007,  
40148168008, 40148168010, 40148168011, 40148168012, 40148168013

SAMPLE DUPLICATE: 1490783

Parameter	Units	40147608013 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	6.9	7.0	1	20	H6

SAMPLE DUPLICATE: 1490784

Parameter	Units	40148067001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.7	7.6	1	20	H6

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### QUALITY CONTROL DATA

Project: 25216067.17 WPL-COLUMBIA  
Pace Project No.: 40148168

QC Batch: 253402 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006, 40148168007, 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013

METHOD BLANK: 1494899 Matrix: Water  
Associated Lab Samples: 40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006, 40148168007, 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	04/24/17 13:03	
Fluoride	mg/L	<0.10	0.30	04/24/17 13:03	
Sulfate	mg/L	<1.0	3.0	04/24/17 13:03	

LABORATORY CONTROL SAMPLE: 1494900

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.3	107	90-110	
Fluoride	mg/L	2	2.1	105	90-110	
Sulfate	mg/L	20	21.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1494901 1494902

Parameter	Units	40148146001		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	519	400	400	887	866	92	87	90-110	2	15	M0	
Fluoride	mg/L	<2.0	40	40	44.0	42.6	110	106	90-110	3	15		
Sulfate	mg/L	218	400	400	627	610	102	98	90-110	3	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1494903 1494904

Parameter	Units	40148180001		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	111	100	100	210	211	99	100	90-110	0	15		
Fluoride	mg/L	<0.50	10	10	10.9	11.0	108	109	90-110	1	15		
Sulfate	mg/L	44.2	100	100	149	150	105	106	90-110	0	15		

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

Sample: MW-306		Lab ID: 40148168001	Collected: 04/10/17 14:30	Received: 04/12/17 10:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.567 ± 0.618 (0.973)</b> C:NA T:89%	pCi/L	04/28/17 20:30	13982-63-3	
Radium-228	EPA 904.0	<b>0.319 ± 0.338 (0.703)</b> C:78% T:84%	pCi/L	04/28/17 10:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.886 ± 0.956 (1.68)</b>	pCi/L	05/04/17 13:38	7440-14-4	

Sample: MW-307		Lab ID: 40148168002	Collected: 04/10/17 15:25	Received: 04/12/17 10:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.233 ± 0.355 (0.571)</b> C:NA T:93%	pCi/L	04/28/17 20:30	13982-63-3	
Radium-228	EPA 904.0	<b>1.16 ± 0.463 (0.714)</b> C:75% T:88%	pCi/L	04/28/17 10:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.39 ± 0.818 (1.29)</b>	pCi/L	05/04/17 13:38	7440-14-4	

Sample: MW-305		Lab ID: 40148168003	Collected: 04/10/17 17:20	Received: 04/12/17 10:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.0822 ± 0.426 (0.885)</b> C:NA T:91%	pCi/L	04/28/17 20:30	13982-63-3	
Radium-228	EPA 904.0	<b>0.0598 ± 0.355 (0.812)</b> C:77% T:75%	pCi/L	04/28/17 10:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.142 ± 0.781 (1.70)</b>	pCi/L	05/04/17 13:38	7440-14-4	

Sample: MW-308		Lab ID: 40148168004	Collected: 04/10/17 18:00	Received: 04/12/17 10:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.295 ± 0.580 (1.04)</b> C:NA T:98%	pCi/L	04/28/17 20:30	13982-63-3	
Radium-228	EPA 904.0	<b>0.485 ± 0.298 (0.547)</b> C:80% T:90%	pCi/L	04/28/17 10:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.780 ± 0.878 (1.59)</b>	pCi/L	05/04/17 13:38	7440-14-4	

Sample: MW-304		Lab ID: 40148168005	Collected: 04/10/17 18:50	Received: 04/12/17 10:30	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.413 ± 0.539 (0.889)</b> C:NA T:90%	pCi/L	04/28/17 20:30	13982-63-3	
Radium-228	EPA 904.0	<b>0.327 ± 0.360 (0.755)</b> C:79% T:88%	pCi/L	04/28/17 10:45	15262-20-1	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.17 WPL-COLUMBIA  
Pace Project No.: 40148168

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-304</b> <b>Lab ID: 40148168005</b> Collected: 04/10/17 18:50      Received: 04/12/17 10:30      Matrix: Water PWS:      Site ID:      Sample Type:						
Total Radium	Total Radium Calculation	<b>0.740 ± 0.899 (1.64)</b>	pCi/L	05/04/17 13:38	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-303</b> <b>Lab ID: 40148168006</b> Collected: 04/10/17 19:35      Received: 04/12/17 10:30      Matrix: Water PWS:      Site ID:      Sample Type:						
Radium-226	EPA 903.1	<b>-0.162 ± 0.389 (0.972)</b> C:NA T:91%	pCi/L	04/28/17 20:45	13982-63-3	
Radium-228	EPA 904.0	<b>0.0160 ± 0.269 (0.624)</b> C:79% T:89%	pCi/L	04/28/17 10:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.0160 ± 0.658 (1.60)</b>	pCi/L	05/04/17 13:38	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: M-4R</b> <b>Lab ID: 40148168007</b> Collected: 04/11/17 11:15      Received: 04/12/17 10:30      Matrix: Water PWS:      Site ID:      Sample Type:						
Radium-226	EPA 903.1	<b>0.933 ± 0.694 (0.913)</b> C:NA T:90%	pCi/L	04/28/17 20:45	13982-63-3	
Radium-228	EPA 904.0	<b>0.274 ± 0.344 (0.729)</b> C:78% T:80%	pCi/L	04/28/17 10:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.21 ± 1.04 (1.64)</b>	pCi/L	05/04/17 13:38	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-33AR</b> <b>Lab ID: 40148168008</b> Collected: 04/11/17 12:45      Received: 04/12/17 10:30      Matrix: Water PWS:      Site ID:      Sample Type:						
Radium-226	EPA 903.1	<b>0.166 ± 0.515 (0.998)</b> C:NA T:92%	pCi/L	04/28/17 20:45	13982-63-3	
Radium-228	EPA 904.0	<b>0.147 ± 0.294 (0.648)</b> C:76% T:86%	pCi/L	04/28/17 10:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.313 ± 0.809 (1.65)</b>	pCi/L	05/04/17 13:38	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: FIELD BLANK</b> <b>Lab ID: 40148168009</b> Collected: 04/11/17 14:15      Received: 04/12/17 10:30      Matrix: Water PWS:      Site ID:      Sample Type:						
Radium-226	EPA 903.1	<b>0.170 ± 0.529 (1.02)</b> C:NA T:91%	pCi/L	04/28/17 20:45	13982-63-3	
Radium-228	EPA 904.0	<b>-0.129 ± 0.298 (0.727)</b> C:73% T:84%	pCi/L	04/28/17 10:51	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.170 ± 0.827 (1.75)</b>	pCi/L	05/04/17 13:38	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.000 ± 0.511 (1.08)</b> C:NA T:88%	pCi/L	04/28/17 20:45	13982-63-3	
Radium-228		EPA 904.0	<b>0.215 ± 0.302 (0.647)</b> C:78% T:81%	pCi/L	04/28/17 10:46	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.215 ± 0.813 (1.73)</b>	pCi/L	05/04/17 13:38	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.0770 ± 0.351 (0.209)</b> C:NA T:92%	pCi/L	04/28/17 20:45	13982-63-3	
Radium-228		EPA 904.0	<b>0.478 ± 0.315 (0.598)</b> C:80% T:89%	pCi/L	04/28/17 10:46	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.555 ± 0.666 (0.807)</b>	pCi/L	05/04/17 13:38	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.513 ± 0.521 (0.789)</b> C:NA T:101%	pCi/L	04/28/17 21:00	13982-63-3	
Radium-228		EPA 904.0	<b>0.833 ± 0.374 (0.602)</b> C:76% T:84%	pCi/L	04/28/17 10:46	15262-20-1	
Total Radium		Total Radium Calculation	<b>1.35 ± 0.895 (1.39)</b>	pCi/L	05/04/17 13:38	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.0768 ± 0.398 (0.826)</b> C:NA T:92%	pCi/L	04/28/17 21:00	13982-63-3	
Radium-228		EPA 904.0	<b>0.0161 ± 0.314 (0.729)</b> C:81% T:90%	pCi/L	04/28/17 12:04	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.0929 ± 0.712 (1.56)</b>	pCi/L	05/04/17 13:38	7440-14-4	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

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QC Batch:	255861	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006, 40148168007, 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013		

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METHOD BLANK:	1260080	Matrix:	Water
Associated Lab Samples:	40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006, 40148168007, 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.187 ± 0.333 (0.729) C:79% T:80%	pCi/L	04/28/17 10:43	

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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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

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QC Batch:	255860	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
Associated Lab Samples:	40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006, 40148168007, 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013		

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METHOD BLANK:	1260077	Matrix:	Water
Associated Lab Samples:	40148168001, 40148168002, 40148168003, 40148168004, 40148168005, 40148168006, 40148168007, 40148168008, 40148168009, 40148168010, 40148168011, 40148168012, 40148168013		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.221 ± 0.480 (0.886) C:NA T:96%	pCi/L	04/28/17 20:30	

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: 25216067.17 WPL-COLUMBIA  
Pace Project No.: 40148168

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### DEFINITIONS

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 (%)

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

1q Analyte was measured in the associated method blank at -0.111 ug/L.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40148168001	MW-306	EPA 3010	252615	EPA 6020	252709
40148168002	MW-307	EPA 3010	252615	EPA 6020	252709
40148168003	MW-305	EPA 3010	252615	EPA 6020	252709
40148168004	MW-308	EPA 3010	252615	EPA 6020	252709
40148168005	MW-304	EPA 3010	252615	EPA 6020	252709
40148168006	MW-303	EPA 3010	252615	EPA 6020	252709
40148168007	M-4R	EPA 3010	252615	EPA 6020	252709
40148168008	MW-33AR	EPA 3010	252615	EPA 6020	252709
40148168009	FIELD BLANK	EPA 3010	252615	EPA 6020	252709
40148168010	MW-34A	EPA 3010	252615	EPA 6020	252709
40148168011	MW-302	EPA 3010	252615	EPA 6020	252709
40148168012	MW-301	EPA 3010	252615	EPA 6020	252709
40148168013	MW-84A	EPA 3010	252615	EPA 6020	252709
40148168001	MW-306	EPA 7470	253376	EPA 7470	253397
40148168002	MW-307	EPA 7470	253376	EPA 7470	253397
40148168003	MW-305	EPA 7470	253376	EPA 7470	253397
40148168004	MW-308	EPA 7470	253376	EPA 7470	253397
40148168005	MW-304	EPA 7470	253376	EPA 7470	253397
40148168006	MW-303	EPA 7470	253376	EPA 7470	253397
40148168007	M-4R	EPA 7470	253376	EPA 7470	253397
40148168008	MW-33AR	EPA 7470	253376	EPA 7470	253397
40148168009	FIELD BLANK	EPA 7470	253376	EPA 7470	253397
40148168010	MW-34A	EPA 7470	253376	EPA 7470	253397
40148168011	MW-302	EPA 7470	253376	EPA 7470	253397
40148168012	MW-301	EPA 7470	253376	EPA 7470	253397
40148168013	MW-84A	EPA 7470	253376	EPA 7470	253397
40148168001	MW-306				
40148168002	MW-307				
40148168003	MW-305				
40148168004	MW-308				
40148168005	MW-304				
40148168006	MW-303				
40148168007	M-4R				
40148168008	MW-33AR				
40148168010	MW-34A				
40148168011	MW-302				
40148168012	MW-301				
40148168013	MW-84A				
40148168001	MW-306	EPA 903.1	255860		
40148168002	MW-307	EPA 903.1	255860		
40148168003	MW-305	EPA 903.1	255860		
40148168004	MW-308	EPA 903.1	255860		
40148168005	MW-304	EPA 903.1	255860		
40148168006	MW-303	EPA 903.1	255860		
40148168007	M-4R	EPA 903.1	255860		
40148168008	MW-33AR	EPA 903.1	255860		
40148168009	FIELD BLANK	EPA 903.1	255860		

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.17 WPL-COLUMBIA  
Pace Project No.: 40148168

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40148168010	MW-34A	EPA 903.1	255860		
40148168011	MW-302	EPA 903.1	255860		
40148168012	MW-301	EPA 903.1	255860		
40148168013	MW-84A	EPA 903.1	255860		
40148168001	MW-306	EPA 904.0	255861		
40148168002	MW-307	EPA 904.0	255861		
40148168003	MW-305	EPA 904.0	255861		
40148168004	MW-308	EPA 904.0	255861		
40148168005	MW-304	EPA 904.0	255861		
40148168006	MW-303	EPA 904.0	255861		
40148168007	M-4R	EPA 904.0	255861		
40148168008	MW-33AR	EPA 904.0	255861		
40148168009	FIELD BLANK	EPA 904.0	255861		
40148168010	MW-34A	EPA 904.0	255861		
40148168011	MW-302	EPA 904.0	255861		
40148168012	MW-301	EPA 904.0	255861		
40148168013	MW-84A	EPA 904.0	255861		
40148168001	MW-306	Total Radium Calculation	257426		
40148168002	MW-307	Total Radium Calculation	257426		
40148168003	MW-305	Total Radium Calculation	257426		
40148168004	MW-308	Total Radium Calculation	257426		
40148168005	MW-304	Total Radium Calculation	257426		
40148168006	MW-303	Total Radium Calculation	257426		
40148168007	M-4R	Total Radium Calculation	257426		
40148168008	MW-33AR	Total Radium Calculation	257426		
40148168009	FIELD BLANK	Total Radium Calculation	257426		
40148168010	MW-34A	Total Radium Calculation	257426		
40148168011	MW-302	Total Radium Calculation	257426		
40148168012	MW-301	Total Radium Calculation	257426		
40148168013	MW-84A	Total Radium Calculation	257426		
40148168001	MW-306	SM 2540C	252707		
40148168002	MW-307	SM 2540C	252707		
40148168003	MW-305	SM 2540C	252707		
40148168004	MW-308	SM 2540C	252707		
40148168005	MW-304	SM 2540C	252707		
40148168006	MW-303	SM 2540C	252707		
40148168007	M-4R	SM 2540C	252972		
40148168008	MW-33AR	SM 2540C	252972		
40148168009	FIELD BLANK	SM 2540C	252972		
40148168010	MW-34A	SM 2540C	252972		
40148168011	MW-302	SM 2540C	252972		
40148168012	MW-301	SM 2540C	252972		
40148168013	MW-84A	SM 2540C	252972		
40148168001	MW-306	EPA 9040	252688		
40148168002	MW-307	EPA 9040	252688		
40148168003	MW-305	EPA 9040	252688		

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.17 WPL-COLUMBIA

Pace Project No.: 40148168

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40148168004	MW-308	EPA 9040	252688		
40148168005	MW-304	EPA 9040	252688		
40148168006	MW-303	EPA 9040	252688		
40148168007	M-4R	EPA 9040	252688		
40148168008	MW-33AR	EPA 9040	252688		
40148168010	MW-34A	EPA 9040	252688		
40148168011	MW-302	EPA 9040	252688		
40148168012	MW-301	EPA 9040	252688		
40148168013	MW-84A	EPA 9040	252688		
40148168001	MW-306	EPA 300.0	253402		
40148168002	MW-307	EPA 300.0	253402		
40148168003	MW-305	EPA 300.0	253402		
40148168004	MW-308	EPA 300.0	253402		
40148168005	MW-304	EPA 300.0	253402		
40148168006	MW-303	EPA 300.0	253402		
40148168007	M-4R	EPA 300.0	253402		
40148168008	MW-33AR	EPA 300.0	253402		
40148168009	FIELD BLANK	EPA 300.0	253402		
40148168010	MW-34A	EPA 300.0	253402		
40148168011	MW-302	EPA 300.0	253402		
40148168012	MW-301	EPA 300.0	253402		
40148168013	MW-84A	EPA 300.0	253402		

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(Please Print Clearly)

Company Name: **SCS Engineers**  
 Branch/Location: **Madison WI**  
 Project Contact: **Tom K**  
 Phone: **608-224-2830**  
 Project Number: **25216067.17**  
 Project Name: **WPL - Columbia**  
 Project State: **WI**  
 Sampled By (Print): **Kyle Krueger**  
 Sampled By (Sign): *[Signature]*  
 PO #: \_\_\_\_\_  
 Regulatory Program: \_\_\_\_\_



# CHAIN OF CUSTODY

Preparation Codes  
 A=NONE B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H= Sodium Bisulfate Solution I= Sodium Thiosulfate J= Other

FILTERED?  
(YES/NO)  
PRESERVATION  
(CODE)\*

### Analyses Requested

Y/N	Pick Letter	
N		Radium 226
N		Metals
N		PH
N		TDS, <del>Cl, F, SO4</del>
N		Radium 228

PAGE LAB #	CLIENT FIELD ID	DATE	TIME	MATRIX
001	MW-306	4-04-17	1430	GW
002	MW-307		1525	
003	MW-305		1720	
004	MW-308		1800	
005	MW-304		1850	
006	MW-303		1935	
007	M-4R	4-11-17	1115	
008	MW-33AR		1245	
009	Field Blank		1415	W/D
010	MW-34A		1430	GW
011	MW-302		1530	
012	MW-301		1615	
013	MW-54A		1715	

Matrix Codes  
 A = Air B = Biota C = Charcoal D = Oil S = Soil SI = Sludge  
 W = Water DW = Drinking Water GW = Ground Water SW = Surface Water WW = Waste Water WP = Wipe

Rush Turnaround Time Requested - Prelims  
 (Rush TAT subject to approval/surcharge)  
 Date Needed: \_\_\_\_\_  
 Transmit Prelim Rush Results by (complete what you want):  
 Email #1: \_\_\_\_\_  
 Email #2: \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_

Relinquished By: *[Signature]* Date/Time: 4/11/17 1840  
 Relinquished By: *[Signature]* Date/Time: 4/12/17 1030  
 Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Quote #:  
 Mail To Contact: **Tom K**  
 Mail To Company: **SCS Engineers**  
 Mail To Address: **2830 Dairy Drive Madison, WI**  
 Invoice To Contact: \_\_\_\_\_  
 Invoice To Company: \_\_\_\_\_  
 Invoice To Address: **See N**  
 Invoice To Phone: \_\_\_\_\_  
 CLIENT COMMENTS: \_\_\_\_\_  
 LAB COMMENTS (Lab Use Only): **2-1LPP 3-250ml**  
 Profile # \_\_\_\_\_

2.250ml HD Missing - 250 ml Plastic cups - start on DI  
 PACE Project No. **401481108**  
 Receipt Temp = **20.1** °C  
 Sample Receipt pH **OK / Adjusted**  
 Cooler Custody Seal **Present / Not Present**  
 Intact / Not Intact

401481108



Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #: WO#: 40148168

Client Name: SCS ENGINEERS

Courier: [X] Fed Ex [ ] UPS [ ] Client [ ] Pace Other:
Tracking #: 7862 1417 1790



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

Custody Seal on Samples Present: [ ] yes [X] no Seals intact: [ ] yes [X] no

Packing Material: [ ] Bubble Wrap [ ] Bubble Bags [X] None [ ] Other

Thermometer Used: na Type of Ice: [X] Wet [ ] Blue [ ] Dry [ ] None [X] Samples on ice, cooling process has begun

Cooler Temperature: Uncorr: RO1 / Corr: Biological Tissue is Frozen: [ ] yes [ ] no

Temp Blank Present: [ ] yes [X] no [ ] no

Person examining contents:
Date: 4.12.17
Initials: mm

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

Comments:

Table with 15 rows for Chain of Custody Present, Chain of Custody Filled Out, Chain of Custody Relinquished, Sampler Name & Signature on COC, Samples Arrived within Hold Time, Short Hold Time Analysis (<72hr), Rush Turn Around Time Requested, Sufficient Volume, Correct Containers Used, Containers Intact, Filtered volume received for Dissolved tests, Sample Labels match COC, All containers needing preservation have been checked, Headspace in VOA Vials (>6mm), Trip Blank Present, Trip Blank Custody Seals Present, Pace Trip Blank Lot #.

Client Notification/ Resolution:

Person Contacted: Date/Time: If checked, see attached form for additional comments [ ]

Comments/ Resolution: 2nd cooler 7862 1417 1789 mm 41217
3rd 7862 1417 1778 mm 41217

Project Manager Review:

Signature of Project Manager

Date: 4/12/17

## A3 Round 3 Background Sampling, Analytical Laboratory Reports



June 27, 2017

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 52516067-17 ALLIANT-COLUMBIA  
Pace Project No.: 40151159

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on June 07, 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,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS  
Jeff Maxted, ALLIANT ENERGY  
Marc Morandi, ALLIANT ENERGY



## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182

## CERTIFICATIONS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

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### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182

## SAMPLE SUMMARY

Project: 52516067-17 ALLIANT-COLUMBIA  
Pace Project No.: 40151159

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40151159001	MW-305	Water	06/05/17 11:45	06/07/17 09:15
40151159002	M4R	Water	06/05/17 12:35	06/07/17 09:15
40151159003	MW-308	Water	06/05/17 15:00	06/07/17 09:15
40151159004	MW-307	Water	06/05/17 15:45	06/07/17 09:15
40151159005	MW-306	Water	06/05/17 16:30	06/07/17 09:15
40151159006	MW-304	Water	06/05/17 17:45	06/07/17 09:15
40151159007	MW303	Water	06/06/17 09:00	06/07/17 09:15
40151159008	MW-33AR	Water	06/06/17 10:00	06/07/17 09:15
40151159009	MW-34A	Water	06/06/17 10:55	06/07/17 09:15
40151159010	FIELD BLANK	Water	06/06/17 11:15	06/07/17 09:15
40151159011	MW-302	Water	06/06/17 11:40	06/07/17 09:15
40151159012	MW-84A	Water	06/06/17 12:25	06/07/17 09:15
40151159013	MW-301	Water	06/06/17 13:15	06/07/17 09:15

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 52516067-17 ALLIANT-COLUMBIA  
Pace Project No.: 40151159

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40151159001	MW-305	EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151159002	M4R	EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151159003	MW-308	EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151159004	MW-307	EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151159005	MW-306	EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151159006	MW-304	EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151159007	MW303	EPA 6020	SDW	14

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### SAMPLE ANALYTE COUNT

Project: 52516067-17 ALLIANT-COLUMBIA  
Pace Project No.: 40151159

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40151159008	MW-33AR	EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
40151159009	MW-34A	EPA 300.0	HMB	3
		EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7
40151159010	FIELD BLANK	SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	SDW	14
		EPA 7470	AJT	1
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	SDW	14
		EPA 7470	AJT	1
	RMW	7		
40151159011	MW-302	SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	SDW	14
EPA 7470	AJT	1		
	RMW	7		
40151159012	MW-84A	SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	SDW	14
EPA 7470	AJT	1		
	RMW	7		
40151159013	MW-301	EPA 300.0	HMB	3
		EPA 6020	SDW	14
		EPA 7470	AJT	1
			RMW	7

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### SAMPLE ANALYTE COUNT

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

**Sample: MW-305**      **Lab ID: 40151159001**      Collected: 06/05/17 11:45      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.55J</b>	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 02:28	7440-36-0	
Arsenic	<b>0.37J</b>	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 02:28	7440-38-2	
Barium	<b>8.2</b>	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 02:28	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 02:28	7440-41-7	
Boron	<b>1240</b>	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 02:28	7440-42-8	
Cadmium	<b>0.18J</b>	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 02:01	7440-43-9	
Calcium	<b>75500</b>	ug/L	2500	698	10	06/08/17 08:43	06/09/17 02:01	7440-70-2	P6
Chromium	<b>1.5J</b>	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 02:28	7440-47-3	
Cobalt	<b>0.26J</b>	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 02:28	7440-48-4	
Lead	<b>&lt;0.20</b>	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 16:31	7439-92-1	
Lithium	<b>0.17J</b>	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 02:28	7439-93-2	
Molybdenum	<b>41.3</b>	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 02:28	7439-98-7	
Selenium	<b>3.9</b>	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 02:28	7782-49-2	
Thallium	<b>0.15J</b>	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 16:31	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:13	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.72</b>	Std. Units			1		06/05/17 11:45		
Field Specific Conductance	<b>558.4</b>	umhos/cm			1		06/05/17 11:45		
Oxygen, Dissolved	<b>3.06</b>	mg/L			1		06/05/17 11:45	7782-44-7	
REDOX	<b>73.6</b>	mV			1		06/05/17 11:45		
Turbidity	<b>N</b>	NTU			1		06/05/17 11:45		
Static Water Level	<b>789.79</b>	feet			1		06/05/17 11:45		
Temperature, Water (C)	<b>12.8</b>	deg C			1		06/05/17 11:45		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>408</b>	mg/L	20.0	8.7	1		06/08/17 14:59		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.9</b>	Std. Units	0.10	0.010	1		06/12/17 10:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>37.1</b>	mg/L	2.0	0.50	1		06/16/17 21:38	16887-00-6	
Fluoride	<b>0.41</b>	mg/L	0.30	0.10	1		06/16/17 21:38	16984-48-8	
Sulfate	<b>185</b>	mg/L	30.0	10.0	10		06/16/17 22:32	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

**Sample: M4R**      **Lab ID: 40151159002**      Collected: 06/05/17 12:35      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.26J</b>	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 03:09	7440-36-0	
Arsenic	<b>0.33J</b>	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 03:09	7440-38-2	
Barium	<b>22.3</b>	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 03:09	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 03:09	7440-41-7	
Boron	<b>464</b>	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 03:09	7440-42-8	SD
Cadmium	<b>0.084J</b>	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 03:09	7440-43-9	
Calcium	<b>90300</b>	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 03:09	7440-70-2	
Chromium	<b>&lt;1.0</b>	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 03:09	7440-47-3	
Cobalt	<b>0.27J</b>	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 03:09	7440-48-4	
Lead	<b>&lt;0.20</b>	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 16:58	7439-92-1	
Lithium	<b>1.2</b>	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 03:09	7439-93-2	
Molybdenum	<b>11.9</b>	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 03:09	7439-98-7	
Selenium	<b>9.7</b>	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 03:09	7782-49-2	
Thallium	<b>0.18J</b>	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 16:58	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:20	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.07</b>	Std. Units			1		06/05/17 12:35		
Field Specific Conductance	<b>660.4</b>	umhos/cm			1		06/05/17 12:35		
Oxygen, Dissolved	<b>1.71</b>	mg/L			1		06/05/17 12:35	7782-44-7	
REDOX	<b>82.2</b>	mV			1		06/05/17 12:35		
Turbidity	<b>0.39</b>	NTU			1		06/05/17 12:35		
Static Water Level	<b>787.83</b>	feet			1		06/05/17 12:35		
Temperature, Water (C)	<b>12.1</b>	deg C			1		06/05/17 12:35		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>494</b>	mg/L	20.0	8.7	1		06/08/17 14:59		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.4</b>	Std. Units	0.10	0.010	1		06/12/17 10:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>37.1</b>	mg/L	2.0	0.50	1		06/16/17 21:48	16887-00-6	
Fluoride	<b>0.20J</b>	mg/L	0.30	0.10	1		06/16/17 21:48	16984-48-8	
Sulfate	<b>131</b>	mg/L	30.0	10.0	10		06/16/17 22:42	14808-79-8	

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA  
Pace Project No.: 40151159

**Sample: MW-308**      **Lab ID: 40151159003**      Collected: 06/05/17 15:00      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 03:23	7440-36-0	
Arsenic	2.3	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 03:23	7440-38-2	
Barium	66.7	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 03:23	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 03:23	7440-41-7	
Boron	565	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 03:23	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 03:23	7440-43-9	
Calcium	140000	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 03:23	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 03:23	7440-47-3	
Cobalt	0.21J	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 03:23	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 17:12	7439-92-1	
Lithium	0.18J	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 03:23	7439-93-2	
Molybdenum	2.2	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 03:23	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 03:23	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 17:12	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:22	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.09	Std. Units			1		06/05/17 15:00		
Field Specific Conductance	819	umhos/cm			1		06/05/17 15:00		
Oxygen, Dissolved	0.16	mg/L			1		06/05/17 15:00	7782-44-7	
REDOX	-76.1	mV			1		06/05/17 15:00		
Turbidity	9.85	NTU			1		06/05/17 15:00		
Static Water Level	786.46	feet			1		06/05/17 15:00		
Temperature, Water (C)	10.6	deg C			1		06/05/17 15:00		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	508	mg/L	20.0	8.7	1		06/08/17 14:59		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.2	Std. Units	0.10	0.010	1		06/12/17 10:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	5.8J	mg/L	10.0	2.5	5		06/16/17 21:59	16887-00-6	D3
Fluoride	<0.50	mg/L	1.5	0.50	5		06/16/17 21:59	16984-48-8	D3,M0
Sulfate	14.8J	mg/L	15.0	5.0	5		06/16/17 21:59	14808-79-8	D3

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

**Sample: MW-307**      **Lab ID: 40151159004**      Collected: 06/05/17 15:45      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 03:30	7440-36-0	
Arsenic	0.42J	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 03:30	7440-38-2	
Barium	7.8	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 03:30	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 03:30	7440-41-7	
Boron	178	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 03:30	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 03:30	7440-43-9	
Calcium	70600	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 03:30	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 03:30	7440-47-3	
Cobalt	0.19J	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 03:30	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 17:32	7439-92-1	
Lithium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 03:30	7439-93-2	
Molybdenum	0.44J	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 03:30	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 03:30	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 17:32	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:29	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.26	Std. Units			1		06/05/17 15:45		
Field Specific Conductance	503.9	umhos/cm			1		06/05/17 15:45		
Oxygen, Dissolved	0.19	mg/L			1		06/05/17 15:45	7782-44-7	
REDOX	-12.9	mV			1		06/05/17 15:45		
Turbidity	1.85	NTU			1		06/05/17 15:45		
Static Water Level	786.07	feet			1		06/05/17 15:45		
Temperature, Water (C)	10.5	deg C			1		06/05/17 15:45		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	324	mg/L	20.0	8.7	1		06/08/17 14:59		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.4	Std. Units	0.10	0.010	1		06/12/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	5.4	mg/L	2.0	0.50	1		06/16/17 22:53	16887-00-6	M0
Fluoride	<0.10	mg/L	0.30	0.10	1		06/16/17 22:53	16984-48-8	
Sulfate	32.6	mg/L	3.0	1.0	1		06/16/17 22:53	14808-79-8	

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

**Sample: MW-306**      **Lab ID: 40151159005**      Collected: 06/05/17 16:30      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 03:37	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 03:37	7440-38-2	
Barium	8.2	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 03:37	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 03:37	7440-41-7	
Boron	129	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 03:37	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 03:37	7440-43-9	
Calcium	85200	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 03:37	7440-70-2	
Chromium	1.8J	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 03:37	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 03:37	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 17:39	7439-92-1	
Lithium	1.6	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 03:37	7439-93-2	
Molybdenum	5.0	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 03:37	7439-98-7	
Selenium	0.48J	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 03:37	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 17:39	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:31	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.22	Std. Units			1		06/05/17 16:30		
Field Specific Conductance	495.7	umhos/cm			1		06/05/17 16:30		
Oxygen, Dissolved	9.6	mg/L			1		06/05/17 16:30	7782-44-7	
REDOX	84.3	mV			1		06/05/17 16:30		
Turbidity	0.55	NTU			1		06/05/17 16:30		
Static Water Level	786.85	feet			1		06/05/17 16:30		
Temperature, Water (C)	10	deg C			1		06/05/17 16:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	324	mg/L	20.0	8.7	1		06/08/17 15:00		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.4	Std. Units	0.10	0.010	1		06/12/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	2.3	mg/L	2.0	0.50	1		06/16/17 23:58	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		06/16/17 23:58	16984-48-8	
Sulfate	10.1	mg/L	3.0	1.0	1		06/16/17 23:58	14808-79-8	

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

**Sample: MW-304**      **Lab ID: 40151159006**      Collected: 06/05/17 17:45      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 03:43	7440-36-0	
Arsenic	1.1	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 03:43	7440-38-2	
Barium	30.9	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 03:43	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 03:43	7440-41-7	
Boron	486	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 03:43	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 03:43	7440-43-9	
Calcium	75200	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 03:43	7440-70-2	
Chromium	1.9J	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 03:43	7440-47-3	
Cobalt	0.76J	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 03:43	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 17:46	7439-92-1	
Lithium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 03:43	7439-93-2	
Molybdenum	15.6	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 03:43	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 03:43	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 17:46	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:34	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.2	Std. Units			1		06/05/17 17:45		
Field Specific Conductance	660	umhos/cm			1		06/05/17 17:45		
Oxygen, Dissolved	1.37	mg/L			1		06/05/17 17:45	7782-44-7	
REDOX	-15.3	mV			1		06/05/17 17:45		
Turbidity	12.84	NTU			1		06/05/17 17:45		
Static Water Level	788.58	feet			1		06/05/17 17:45		
Temperature, Water (C)	13.4	deg C			1		06/05/17 17:45		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	500	mg/L	20.0	8.7	1		06/08/17 15:00		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.4	Std. Units	0.10	0.010	1		06/12/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	42.3	mg/L	2.0	0.50	1		06/17/17 00:09	16887-00-6	
Fluoride	0.19J	mg/L	0.30	0.10	1		06/17/17 00:09	16984-48-8	
Sulfate	97.1	mg/L	15.0	5.0	5		06/17/17 17:14	14808-79-8	

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA  
Pace Project No.: 40151159

**Sample: MW303**      **Lab ID: 40151159007**      Collected: 06/06/17 09:00      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 03:50	7440-36-0	
Arsenic	9.1	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 03:50	7440-38-2	
Barium	14.5	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 03:50	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 03:50	7440-41-7	
Boron	1970	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 03:50	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 03:50	7440-43-9	
Calcium	35500	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 03:50	7440-70-2	
Chromium	65.1	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 03:50	7440-47-3	
Cobalt	0.42J	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 03:50	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 17:53	7439-92-1	
Lithium	1.1	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 03:50	7439-93-2	
Molybdenum	87.0	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 03:50	7439-98-7	
Selenium	18.3	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 03:50	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 17:53	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:36	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	9.1	Std. Units			1		06/06/17 09:00		
Field Specific Conductance	931	umhos/cm			1		06/06/17 09:00		
Oxygen, Dissolved	6.9	mg/L			1		06/06/17 09:00	7782-44-7	
REDOX	57.5	mV			1		06/06/17 09:00		
Turbidity	0.41	NTU			1		06/06/17 09:00		
Static Water Level	786.49	feet			1		06/06/17 09:00		
Temperature, Water (C)	11.3	deg C			1		06/06/17 09:00		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	686	mg/L	20.0	8.7	1		06/08/17 15:00		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	8.9	Std. Units	0.10	0.010	1		06/12/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	8.1	mg/L	2.0	0.50	1		06/17/17 00:20	16887-00-6	
Fluoride	0.30J	mg/L	0.30	0.10	1		06/17/17 00:20	16984-48-8	
Sulfate	445	mg/L	30.0	10.0	10		06/17/17 17:57	14808-79-8	

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

**Sample: MW-33AR**      **Lab ID: 40151159008**      Collected: 06/06/17 10:00      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 03:57	7440-36-0	
Arsenic	0.36J	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 03:57	7440-38-2	
Barium	37.7	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 03:57	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 03:57	7440-41-7	
Boron	692	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 03:57	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 03:57	7440-43-9	
Calcium	80700	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 03:57	7440-70-2	
Chromium	1.5J	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 03:57	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 03:57	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 18:00	7439-92-1	
Lithium	1.4	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 03:57	7439-93-2	
Molybdenum	1.3J	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 03:57	7439-98-7	
Selenium	1.9	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 03:57	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 18:00	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:38	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.78	Std. Units			1		06/06/17 10:00		
Field Specific Conductance	689	umhos/cm			1		06/06/17 10:00		
Oxygen, Dissolved	10.7	mg/L			1		06/06/17 10:00	7782-44-7	
REDOX	101.5	mV			1		06/06/17 10:00		
Turbidity	0.68	NTU			1		06/06/17 10:00		
Static Water Level	787.27	feet			1		06/06/17 10:00		
Temperature, Water (C)	10.9	deg C			1		06/06/17 10:00		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	492	mg/L	20.0	8.7	1		06/12/17 15:00		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.8	Std. Units	0.10	0.010	1		06/12/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	68.1	mg/L	10.0	2.5	5		06/17/17 18:08	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		06/17/17 00:30	16984-48-8	
Sulfate	151	mg/L	15.0	5.0	5		06/17/17 18:08	14808-79-8	

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

**Sample: MW-34A**      **Lab ID: 40151159009**      Collected: 06/06/17 10:55      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 04:04	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 04:04	7440-38-2	
Barium	9.9	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 04:04	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 04:04	7440-41-7	
Boron	201	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 04:04	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 04:04	7440-43-9	
Calcium	66900	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 04:04	7440-70-2	
Chromium	1.7J	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 04:04	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 04:04	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 18:06	7439-92-1	
Lithium	0.45J	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 04:04	7439-93-2	
Molybdenum	0.93J	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 04:04	7439-98-7	
Selenium	0.77J	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 04:04	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 18:06	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:40	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.57	Std. Units			1		06/06/17 10:55		
Field Specific Conductance	499.1	umhos/cm			1		06/06/17 10:55		
Oxygen, Dissolved	10.27	mg/L			1		06/06/17 10:55	7782-44-7	
REDOX	109.3	mV			1		06/06/17 10:55		
Turbidity	3.7	NTU			1		06/06/17 10:55		
Static Water Level	786.66	feet			1		06/06/17 10:55		
Temperature, Water (C)	11.0	deg C			1		06/06/17 10:55		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	366	mg/L	20.0	8.7	1		06/12/17 15:00		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.7	Std. Units	0.10	0.010	1		06/12/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	7.8	mg/L	2.0	0.50	1		06/17/17 00:41	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		06/17/17 00:41	16984-48-8	
Sulfate	106	mg/L	15.0	5.0	5		06/19/17 12:00	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

Sample: **FIELD BLANK** Lab ID: **40151159010** Collected: 06/06/17 11:15 Received: 06/07/17 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 01:47	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 01:47	7440-38-2	
Barium	<0.34	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 01:47	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 01:47	7440-41-7	
Boron	<3.3	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 01:47	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 01:47	7440-43-9	
Calcium	<69.8	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 01:47	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 01:47	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 01:47	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 16:17	7439-92-1	
Lithium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 01:47	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 01:47	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 01:47	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 16:17	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:43	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		06/12/17 15:01		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	5.9	Std. Units	0.10	0.010	1		06/12/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<0.50	mg/L	2.0	0.50	1		06/17/17 00:52	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		06/17/17 00:52	16984-48-8	
Sulfate	<1.0	mg/L	3.0	1.0	1		06/17/17 00:52	14808-79-8	

Sample: **MW-302** Lab ID: **40151159011** Collected: 06/06/17 11:40 Received: 06/07/17 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 04:24	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 04:24	7440-38-2	
Barium	22.0	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 04:24	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 04:24	7440-41-7	
Boron	671	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 04:24	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 04:24	7440-43-9	
Calcium	88900	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 04:24	7440-70-2	
Chromium	2.3J	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 04:24	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 04:24	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 18:13	7439-92-1	

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA  
Pace Project No.: 40151159

**Sample: MW-302**      **Lab ID: 40151159011**      Collected: 06/06/17 11:40      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Lithium	2.2	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 04:24	7439-93-2	
Molybdenum	1.3J	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 04:24	7439-98-7	
Selenium	2.0	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 04:24	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 18:13	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:45	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.16	Std. Units			1		06/06/17 11:40		
Field Specific Conductance	641.8	umhos/cm			1		06/06/17 11:40		
Oxygen, Dissolved	9.91	mg/L			1		06/06/17 11:40	7782-44-7	
REDOX	130.4	mV			1		06/06/17 11:40		
Turbidity	1.90	NTU			1		06/06/17 11:40		
Static Water Level	788.37	feet			1		06/06/17 11:40		
Temperature, Water (C)	10.1	deg C			1		06/06/17 11:40		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	466	mg/L	20.0	8.7	1		06/12/17 15:01		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.5	Std. Units	0.10	0.010	1		06/12/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	3.5	mg/L	2.0	0.50	1		06/17/17 01:03	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		06/17/17 01:03	16984-48-8	
Sulfate	84.6	mg/L	15.0	5.0	5		06/17/17 18:18	14808-79-8	

**Sample: MW-84A**      **Lab ID: 40151159012**      Collected: 06/06/17 12:25      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 04:31	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 04:31	7440-38-2	
Barium	13.4	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 04:31	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 04:31	7440-41-7	
Boron	14.8	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 04:31	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 04:31	7440-43-9	
Calcium	76100	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 04:31	7440-70-2	
Chromium	2.0J	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 04:31	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 04:31	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 18:20	7439-92-1	

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

**Sample: MW-84A**      **Lab ID: 40151159012**      Collected: 06/06/17 12:25      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Lithium	0.46J	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 04:31	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 04:31	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 04:31	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 18:20	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:47	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.28	Std. Units			1		06/06/17 12:25		
Field Specific Conductance	535.3	umhos/cm			1		06/06/17 12:25		
Oxygen, Dissolved	9.46	mg/L			1		06/06/17 12:25	7782-44-7	
REDOX	123.6	mV			1		06/06/17 12:25		
Turbidity	0.56	NTU			1		06/06/17 12:25		
Static Water Level	787.63	feet			1		06/06/17 12:25		
Temperature, Water (C)	11.3	deg C			1		06/06/17 12:25		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	344	mg/L	20.0	8.7	1		06/12/17 15:01		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.6	Std. Units	0.10	0.010	1		06/12/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	5.5	mg/L	2.0	0.50	1		06/17/17 01:14	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		06/17/17 01:14	16984-48-8	
Sulfate	2.7J	mg/L	3.0	1.0	1		06/17/17 01:14	14808-79-8	

**Sample: MW-301**      **Lab ID: 40151159013**      Collected: 06/06/17 13:15      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	06/08/17 08:43	06/09/17 04:38	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	06/08/17 08:43	06/09/17 04:38	7440-38-2	
Barium	11.3	ug/L	1.1	0.34	1	06/08/17 08:43	06/09/17 04:38	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	06/08/17 08:43	06/09/17 04:38	7440-41-7	
Boron	21.3	ug/L	11.0	3.3	1	06/08/17 08:43	06/09/17 04:38	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	06/08/17 08:43	06/09/17 04:38	7440-43-9	
Calcium	111000	ug/L	250	69.8	1	06/08/17 08:43	06/09/17 04:38	7440-70-2	
Chromium	2.3J	ug/L	3.4	1.0	1	06/08/17 08:43	06/09/17 04:38	7440-47-3	
Cobalt	0.13J	ug/L	1.0	0.085	1	06/08/17 08:43	06/09/17 04:38	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	06/08/17 08:43	06/09/17 18:27	7439-92-1	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

**Sample: MW-301**      **Lab ID: 40151159013**      Collected: 06/06/17 13:15      Received: 06/07/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Lithium	<b>0.62J</b>	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 04:38	7439-93-2	
Molybdenum	<b>&lt;0.44</b>	ug/L	1.5	0.44	1	06/08/17 08:43	06/09/17 04:38	7439-98-7	
Selenium	<b>&lt;0.32</b>	ug/L	1.1	0.32	1	06/08/17 08:43	06/09/17 04:38	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	06/08/17 08:43	06/09/17 18:27	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	06/15/17 12:30	06/16/17 08:50	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>6.7</b>	Std. Units			1		06/06/17 13:15		
Field Specific Conductance	<b>698.4</b>	umhos/cm			1		06/06/17 13:15		
Oxygen, Dissolved	<b>1.81</b>	mg/L			1		06/06/17 13:15	7782-44-7	
REDOX	<b>115.1</b>	mV			1		06/06/17 13:15		
Turbidity	<b>0.22</b>	NTU			1		06/06/17 13:15		
Static Water Level	<b>788.25</b>	feet			1		06/06/17 13:15		
Temperature, Water (C)	<b>8.9</b>	deg C			1		06/06/17 13:15		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>458</b>	mg/L	20.0	8.7	1		06/12/17 15:02		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.0</b>	Std. Units	0.10	0.010	1		06/12/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>3.5</b>	mg/L	2.0	0.50	1		06/17/17 01:24	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		06/17/17 01:24	16984-48-8	
Sulfate	<b>17.1</b>	mg/L	3.0	1.0	1		06/17/17 01:24	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA**

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

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QC Batch: 258671 Analysis Method: EPA 7470  
 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury  
 Associated Lab Samples: 40151159001, 40151159002, 40151159003, 40151159004, 40151159005, 40151159006, 40151159007,  
 40151159008, 40151159009, 40151159010, 40151159011, 40151159012, 40151159013

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METHOD BLANK: 1523991 Matrix: Water  
 Associated Lab Samples: 40151159001, 40151159002, 40151159003, 40151159004, 40151159005, 40151159006, 40151159007,  
 40151159008, 40151159009, 40151159010, 40151159011, 40151159012, 40151159013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	06/16/17 08:08	

LABORATORY CONTROL SAMPLE: 1523992

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1523993 1523994

Parameter	Units	40151159001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.13	5	5	4.8	5.0	96	99	85-115	3	20	

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### QUALITY CONTROL DATA

Project: 52516067-17 ALLIANT-COLUMBIA  
Pace Project No.: 40151159

QC Batch: 257984 Analysis Method: EPA 6020  
QC Batch Method: EPA 3010 Analysis Description: 6020 MET  
Associated Lab Samples: 40151159001, 40151159002, 40151159003, 40151159004, 40151159005, 40151159006, 40151159007, 40151159008, 40151159009, 40151159010, 40151159011, 40151159012, 40151159013

METHOD BLANK: 1519695 Matrix: Water  
Associated Lab Samples: 40151159001, 40151159002, 40151159003, 40151159004, 40151159005, 40151159006, 40151159007, 40151159008, 40151159009, 40151159010, 40151159011, 40151159012, 40151159013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	06/09/17 01:41	
Arsenic	ug/L	<0.28	1.0	06/09/17 01:41	
Barium	ug/L	<0.34	1.1	06/09/17 01:41	
Beryllium	ug/L	<0.18	1.0	06/09/17 01:41	
Boron	ug/L	<3.3	11.0	06/09/17 01:41	
Cadmium	ug/L	<0.081	1.0	06/09/17 01:41	
Calcium	ug/L	<69.8	250	06/09/17 01:41	
Chromium	ug/L	<1.0	3.4	06/09/17 01:41	
Cobalt	ug/L	<0.085	1.0	06/09/17 01:41	
Lead	ug/L	<0.20	1.0	06/09/17 16:10	
Lithium	ug/L	<0.14	1.0	06/09/17 01:41	
Molybdenum	ug/L	<0.44	1.5	06/09/17 01:41	
Selenium	ug/L	<0.32	1.1	06/09/17 01:41	
Thallium	ug/L	<0.14	1.0	06/09/17 16:10	

LABORATORY CONTROL SAMPLE: 1519696

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	525	105	80-120	
Arsenic	ug/L	500	504	101	80-120	
Barium	ug/L	500	507	101	80-120	
Beryllium	ug/L	500	549	110	80-120	
Boron	ug/L	500	508	102	80-120	
Cadmium	ug/L	500	532	106	80-120	
Calcium	ug/L	5000	5030	101	80-120	
Chromium	ug/L	500	494	99	80-120	
Cobalt	ug/L	500	502	100	80-120	
Lead	ug/L	500	498	100	80-120	
Lithium	ug/L	500	524	105	80-120	
Molybdenum	ug/L	500	506	101	80-120	
Selenium	ug/L	500	523	105	80-120	
Thallium	ug/L	500	505	101	80-120	

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### QUALITY CONTROL DATA

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1519697		1519698		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40151159001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	0.55J	500	500	546	529	109	106	75-125	3	20		
Arsenic	ug/L	0.37J	500	500	522	515	104	103	75-125	1	20		
Barium	ug/L	8.2	500	500	548	525	108	103	75-125	4	20		
Beryllium	ug/L	<0.18	500	500	550	534	110	107	75-125	3	20		
Boron	ug/L	1240	500	500	1800	1750	111	102	75-125	2	20		
Cadmium	ug/L	0.18J	500	500	539	533	108	107	75-125	1	20		
Calcium	ug/L	75500	5000	5000	82400	80300	139	96	75-125	3	20	P6	
Chromium	ug/L	1.5J	500	500	501	501	100	100	75-125	0	20		
Cobalt	ug/L	0.26J	500	500	505	504	101	101	75-125	0	20		
Lead	ug/L	<0.20	500	500	515	506	103	101	75-125	2	20		
Lithium	ug/L	0.17J	500	500	531	514	106	103	75-125	3	20		
Molybdenum	ug/L	41.3	500	500	565	561	105	104	75-125	1	20		
Selenium	ug/L	3.9	500	500	539	532	107	106	75-125	1	20		
Thallium	ug/L	0.15J	500	500	525	518	105	104	75-125	1	20		

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 52516067-17 ALLIANT-COLUMBIA  
Pace Project No.: 40151159

QC Batch: 258038 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 40151159001, 40151159002, 40151159003, 40151159004, 40151159005, 40151159006, 40151159007

METHOD BLANK: 1519994 Matrix: Water  
Associated Lab Samples: 40151159001, 40151159002, 40151159003, 40151159004, 40151159005, 40151159006, 40151159007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	06/08/17 14:55	

LABORATORY CONTROL SAMPLE: 1519995

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	585	576	98	80-120	

SAMPLE DUPLICATE: 1519996

Parameter	Units	40151015001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	454	452	0	5	

SAMPLE DUPLICATE: 1519997

Parameter	Units	40151093001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	270	256	5	5	

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### QUALITY CONTROL DATA

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

QC Batch: 258309 Analysis Method: SM 2540C  
 QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
 Associated Lab Samples: 40151159008, 40151159009, 40151159010, 40151159011, 40151159012, 40151159013

METHOD BLANK: 1521898 Matrix: Water  
 Associated Lab Samples: 40151159008, 40151159009, 40151159010, 40151159011, 40151159012, 40151159013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	06/12/17 14:59	

LABORATORY CONTROL SAMPLE: 1521899

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	585	580	99	80-120	

SAMPLE DUPLICATE: 1521900

Parameter	Units	40151159008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	492	496	1	5	

SAMPLE DUPLICATE: 1521901

Parameter	Units	40151149001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	302	280	8	5	R1

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### QUALITY CONTROL DATA

Project: 52516067-17 ALLIANT-COLUMBIA  
Pace Project No.: 40151159

QC Batch: 258747 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40151159001, 40151159002, 40151159003

METHOD BLANK: 1524389 Matrix: Water  
Associated Lab Samples: 40151159001, 40151159002, 40151159003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	06/16/17 15:00	
Fluoride	mg/L	<0.10	0.30	06/16/17 15:00	
Sulfate	mg/L	<1.0	3.0	06/16/17 15:00	

LABORATORY CONTROL SAMPLE: 1524390

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.7	99	90-110	
Fluoride	mg/L	2	2.0	98	90-110	
Sulfate	mg/L	20	19.7	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1524391 1524392

Parameter	Units	40151179001		MSD		MS		MSD		% Rec Limits	Max		Qual
		Result	MS Spike Conc.	Spike Conc.	Result	Result	% Rec	RPD	RPD				
Chloride	mg/L	506	400	400	882	948	94	110	90-110	7	15		
Fluoride	mg/L	<2.0	40	40	39.1	43.1	98	108	90-110	10	15		
Sulfate	mg/L	247	400	400	627	684	95	109	90-110	9	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1524393 1524394

Parameter	Units	40151159003		MSD		MS		MSD		% Rec Limits	Max		Qual
		Result	MS Spike Conc.	Spike Conc.	Result	Result	% Rec	RPD	RPD				
Chloride	mg/L	5.8J	100	100	114	113	108	107	90-110	0	15		
Fluoride	mg/L	<0.50	10	10	11.1	11.1	111	111	90-110	1	15 M0		
Sulfate	mg/L	14.8J	100	100	122	122	108	107	90-110	0	15		

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**QUALITY CONTROL DATA**

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

QC Batch:	258760	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
Associated Lab Samples:	40151159004, 40151159005, 40151159006, 40151159007, 40151159008, 40151159009, 40151159010, 40151159011, 40151159012, 40151159013		

METHOD BLANK: 1524619 Matrix: Water  
Associated Lab Samples: 40151159004, 40151159005, 40151159006, 40151159007, 40151159008, 40151159009, 40151159010, 40151159011, 40151159012, 40151159013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	06/16/17 13:45	
Fluoride	mg/L	<0.10	0.30	06/16/17 13:45	
Sulfate	mg/L	<1.0	3.0	06/16/17 13:45	

LABORATORY CONTROL SAMPLE: 1524620

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.9	104	90-110	
Fluoride	mg/L	2	2.1	103	90-110	
Sulfate	mg/L	20	20.5	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1524621 1524622

Parameter	Units	40151159004		40151159004		40151159004		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS % Rec	MSD % Rec					
Chloride	mg/L	5.4	20	20	27.4	27.5	110	111	90-110	0	15	M0
Fluoride	mg/L	<0.10	2	2	2.2	2.3	109	110	90-110	0	15	
Sulfate	mg/L	32.6	20	20	53.7	53.7	105	106	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1524623 1524624

Parameter	Units	40151164003		40151164003		40151164003		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS % Rec	MSD % Rec					
Chloride	mg/L	148	200	200	359	352	106	102	90-110	2	15	
Fluoride	mg/L	0.40	2	2	2.5	2.6	107	108	90-110	1	15	
Sulfate	mg/L	<1.0	20	20	22.2	22.6	108	110	90-110	2	15	

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## QUALIFIERS

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

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### 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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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.

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

R1 RPD value was outside control limits.

SD The serial dilution and the original analysis did not agree within  $\pm 10\%$ . The concentration is estimated due to a suspected chemical or physical interference.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40151159001	MW-305	EPA 3010	257984	EPA 6020	258081
40151159002	M4R	EPA 3010	257984	EPA 6020	258081
40151159003	MW-308	EPA 3010	257984	EPA 6020	258081
40151159004	MW-307	EPA 3010	257984	EPA 6020	258081
40151159005	MW-306	EPA 3010	257984	EPA 6020	258081
40151159006	MW-304	EPA 3010	257984	EPA 6020	258081
40151159007	MW303	EPA 3010	257984	EPA 6020	258081
40151159008	MW-33AR	EPA 3010	257984	EPA 6020	258081
40151159009	MW-34A	EPA 3010	257984	EPA 6020	258081
40151159010	FIELD BLANK	EPA 3010	257984	EPA 6020	258081
40151159011	MW-302	EPA 3010	257984	EPA 6020	258081
40151159012	MW-84A	EPA 3010	257984	EPA 6020	258081
40151159013	MW-301	EPA 3010	257984	EPA 6020	258081
40151159001	MW-305	EPA 7470	258671	EPA 7470	258717
40151159002	M4R	EPA 7470	258671	EPA 7470	258717
40151159003	MW-308	EPA 7470	258671	EPA 7470	258717
40151159004	MW-307	EPA 7470	258671	EPA 7470	258717
40151159005	MW-306	EPA 7470	258671	EPA 7470	258717
40151159006	MW-304	EPA 7470	258671	EPA 7470	258717
40151159007	MW303	EPA 7470	258671	EPA 7470	258717
40151159008	MW-33AR	EPA 7470	258671	EPA 7470	258717
40151159009	MW-34A	EPA 7470	258671	EPA 7470	258717
40151159010	FIELD BLANK	EPA 7470	258671	EPA 7470	258717
40151159011	MW-302	EPA 7470	258671	EPA 7470	258717
40151159012	MW-84A	EPA 7470	258671	EPA 7470	258717
40151159013	MW-301	EPA 7470	258671	EPA 7470	258717
40151159001	MW-305				
40151159002	M4R				
40151159003	MW-308				
40151159004	MW-307				
40151159005	MW-306				
40151159006	MW-304				
40151159007	MW303				
40151159008	MW-33AR				
40151159009	MW-34A				
40151159011	MW-302				
40151159012	MW-84A				
40151159013	MW-301				
40151159001	MW-305	SM 2540C	258038		
40151159002	M4R	SM 2540C	258038		
40151159003	MW-308	SM 2540C	258038		
40151159004	MW-307	SM 2540C	258038		
40151159005	MW-306	SM 2540C	258038		
40151159006	MW-304	SM 2540C	258038		
40151159007	MW303	SM 2540C	258038		
40151159008	MW-33AR	SM 2540C	258309		
40151159009	MW-34A	SM 2540C	258309		

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 52516067-17 ALLIANT-COLUMBIA

Pace Project No.: 40151159

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40151159010	FIELD BLANK	SM 2540C	258309		
40151159011	MW-302	SM 2540C	258309		
40151159012	MW-84A	SM 2540C	258309		
40151159013	MW-301	SM 2540C	258309		
40151159001	MW-305	EPA 9040	258305		
40151159002	M4R	EPA 9040	258305		
40151159003	MW-308	EPA 9040	258305		
40151159004	MW-307	EPA 9040	258305		
40151159005	MW-306	EPA 9040	258305		
40151159006	MW-304	EPA 9040	258305		
40151159007	MW303	EPA 9040	258305		
40151159008	MW-33AR	EPA 9040	258305		
40151159009	MW-34A	EPA 9040	258305		
40151159010	FIELD BLANK	EPA 9040	258305		
40151159011	MW-302	EPA 9040	258305		
40151159012	MW-84A	EPA 9040	258305		
40151159013	MW-301	EPA 9040	258305		
40151159001	MW-305	EPA 300.0	258747		
40151159002	M4R	EPA 300.0	258747		
40151159003	MW-308	EPA 300.0	258747		
40151159004	MW-307	EPA 300.0	258760		
40151159005	MW-306	EPA 300.0	258760		
40151159006	MW-304	EPA 300.0	258760		
40151159007	MW303	EPA 300.0	258760		
40151159008	MW-33AR	EPA 300.0	258760		
40151159009	MW-34A	EPA 300.0	258760		
40151159010	FIELD BLANK	EPA 300.0	258760		
40151159011	MW-302	EPA 300.0	258760		
40151159012	MW-84A	EPA 300.0	258760		
40151159013	MW-301	EPA 300.0	258760		

### REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: **SES Engineers**  
 Branch/Location: **85-Madison**  
 Project Contact: **Tom Karwowski**  
 Phone: **608-224-8300**  
 Project Number: **25216067-17**  
 Project Name: **Alliant-Columbia**  
 Project State: **WI**  
 Sampled By (Print): **Not Home**  
 Sampled By (Sign): *[Signature]*  
 PO #:   
 Regulatory Program:   
 Data Package Options (billable):  
 EPA Level III  On your sample (billable)  
 EPA Level IV  NOT needed on your sample  
 Matrix Codes:  
 A = Air W = Water  
 B = Bioa DW = Drinking Water  
 C = Charcoal GW = Ground Water  
 O = Oil SW = Surface Water  
 S = Soil WP = Waste Water  
 Sl = Sludge



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# CHAIN OF CUSTODY

Preservation Codes:  
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H= Sodium Bisulfate Solution I= Sodium Thiosulfate J=Other

FILED?  
 (YES/NO)  
 PRESERVATION (CODE):

PAGE LAB #	CLIENT FIELD ID	DATE	TIME	MATRIX	Analyses Requested	V/N	Pick Letter
001	MU-505	6-5-17	1445	GU	Protein 226 Protein 228	X	X
002	MUR		1335		PH	X	X
003	MU-308		1520		TDS, Cl, F, SO4	X	X
004	MU-307		1545		Metals	X	X
005	MU-306		1630				
006	MU-304		1745				
007	MU-303	6-6-17	920				
008	MU-33AR		1000				
009	MU-34A		1055				
010	Field Blank		1115				
011	MU-302		1140				
012	MU-84A		1225				
013	MU-301		1335				

Rush Turnaround Time Requested - Prelims  
 (Rush TAT subject to approval/surcharge)  
 Date Needed:   
 Transmit Prelim Rush Results by (complete what you want):  
 Email #1:   
 Email #2:   
 Telephone:   
 Fax:   
 Samples on HOLD are subject to special pricing and release of liability

Relinquished By: *[Signature]* Date/Time: 6-6-17 1520  
 Relinquished By: *[Signature]* Date/Time: 6-7-17 0915  
 Relinquished By: *[Signature]* Date/Time: 6-7-17 0915  
 Relinquished By: *[Signature]* Date/Time: 6-7-17 0915

UPPER MIDWEST REGION  
 MN: 612-607-1700 WI: 920-469-2436

*[Signature]*

40151159

Quote #:   
 Mail To Contact: **Tom Karwowski**  
 Mail To Company: **SES Engineers**  
 Mail To Address: **830 Dairy Drive Madison, WI 53718**  
 Invoice To Contact: *[Signature]*  
 Invoice To Company:  
 Invoice To Address:  
 Invoice To Phone:  
 CLIENT COMMENTS: **3-250 mlp DAA**  
 LAB COMMENTS (Lab Use Only):  
 Profile #:  
 Cooler Custody Seal Present / Not Present Intact / Not Intact  
 Receipt Temp = **ROT-c**  
 Sample Receipt pH **OK/Adjusted**

Sample Condition Upon Receipt

Pace Analytical Services, LLC. - Green Bay WI  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302

**Pace Analytical**

Client Name: SCS Engineers

Project #: WO# : 40151159



Courier:  Fed Ex  UPS  Client  Pace Other

Tracking #: 7868 1253 7148

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

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used N/A

Type of Ice:  Wet  Blue Dry None

Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROT /Corr:

Biological Tissue is Frozen:  yes  no

Temp Blank Present:  yes  no

Person examining contents:  
Date: 6-7-17  
Initials: SKW

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C.

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1. Original and a copy 6-7-17
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 type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input 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	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. 002 1-250ml <sup>A</sup> date 6/1/15
-Includes date/time/ID/Analysis Matrix:	<u>W</u>	<u>KA 6/7/17</u>
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> NaOH <input type="checkbox"/> NaOH + ZnAct
All containers needing preservation are found to be in compliance with ERA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
(HNO3, H2SO4, NaOH+ZnAct ≥9, NaOH ≥12)		
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed: <u>SKW</u> Lab Std #/ID of preservative: _____ Date/Time: _____
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: pmw for am Date: 6/7/17



June 26, 2017

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 25216067.17 ALLIANT-COLUMBIA  
Pace Project No.: 40151176

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on June 07, 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.

Revision 1 - This report replaces the June 26, 2017 report. This report has been reissued on June 26, 2017 to report the Total Radium Sum Calculation as per client request.

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

Sincerely,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS  
Jeff Maxted, ALLIANT ENERGY  
Marc Morandi, ALLIANT ENERGY



## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182

## CERTIFICATIONS

Project: 25216067.17 ALLIANT-COLUMBIA  
Pace Project No.: 40151176

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### 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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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 25216067.17 ALLIANT-COLUMBIA  
Pace Project No.: 40151176

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40151176001	MW-305	Water	06/05/17 11:45	06/07/17 09:15
40151176002	MW-4R	Water	06/05/17 12:35	06/07/17 09:15
40151176003	MW-308	Water	06/05/17 15:00	06/07/17 09:15
40151176004	MW-307	Water	06/05/17 15:45	06/07/17 09:15
40151176005	MW-306	Water	06/05/17 16:30	06/07/17 09:15
40151176006	MW-304	Water	06/05/17 17:45	06/07/17 09:15
40151176007	MW-303	Water	06/06/17 09:00	06/07/17 09:15
40151176008	MW-33AR	Water	06/06/17 10:00	06/07/17 09:15
40151176009	MW-34A	Water	06/06/17 10:55	06/07/17 09:15
40151176010	FIELD BLANK	Water	06/06/17 11:15	06/07/17 09:15
40151176011	MW-302	Water	06/06/17 11:40	06/07/17 09:15
40151176012	MW-84A	Water	06/06/17 12:25	06/07/17 09:15
40151176013	MW-301	Water	06/06/17 13:15	06/07/17 09:15

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 25216067.17 ALLIANT-COLUMBIA  
Pace Project No.: 40151176

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40151176001	MW-305	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176002	MW-4R	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176003	MW-308	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176004	MW-307	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176005	MW-306	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176006	MW-304	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176007	MW-303	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176008	MW-33AR	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176009	MW-34A	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176010	FIELD BLANK	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176011	MW-302	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176012	MW-84A	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
40151176013	MW-301	EPA 903.1	WRR	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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**SAMPLE ANALYTE COUNT**

Project: 25216067.17 ALLIANT-COLUMBIA

Pace Project No.: 40151176

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

**REPORT OF LABORATORY ANALYSIS**

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.17 ALLIANT-COLUMBIA

Pace Project No.: 40151176

Sample: MW-305		Lab ID: 40151176001	Collected: 06/05/17 11:45	Received: 06/07/17 09:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.128 ± 0.433 (0.836)</b>		pCi/L	06/20/17 12:34	13982-63-3	
		<b>C:NA T:84%</b>					
Radium-228	EPA 904.0	<b>0.711 ± 0.354 (0.611)</b>		pCi/L	06/22/17 11:31	15262-20-1	
		<b>C:91% T:79%</b>					
Total Radium	Total Radium Calculation	<b>0.839 ± 0.787 (1.45)</b>		pCi/L	06/26/17 12:35	7440-14-4	

Sample: MW-4R		Lab ID: 40151176002	Collected: 06/05/17 12:35	Received: 06/07/17 09:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.168 ± 0.331 (0.604)</b>		pCi/L	06/20/17 12:34	13982-63-3	
		<b>C:NA T:94%</b>					
Radium-228	EPA 904.0	<b>0.768 ± 0.378 (0.645)</b>		pCi/L	06/22/17 11:31	15262-20-1	
		<b>C:73% T:88%</b>					
Total Radium	Total Radium Calculation	<b>0.936 ± 0.709 (1.25)</b>		pCi/L	06/26/17 12:35	7440-14-4	

Sample: MW-308		Lab ID: 40151176003	Collected: 06/05/17 15:00	Received: 06/07/17 09:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.000 ± 0.379 (0.822)</b>		pCi/L	06/20/17 12:52	13982-63-3	
		<b>C:NA T:76%</b>					
Radium-228	EPA 904.0	<b>1.44 ± 0.507 (0.702)</b>		pCi/L	06/22/17 11:31	15262-20-1	
		<b>C:75% T:79%</b>					
Total Radium	Total Radium Calculation	<b>1.44 ± 0.886 (1.52)</b>		pCi/L	06/26/17 12:35	7440-14-4	

Sample: MW-307		Lab ID: 40151176004	Collected: 06/05/17 15:45	Received: 06/07/17 09:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.914 ± 0.582 (0.732)</b>		pCi/L	06/20/17 12:52	13982-63-3	
		<b>C:NA T:87%</b>					
Radium-228	EPA 904.0	<b>1.35 ± 0.511 (0.754)</b>		pCi/L	06/22/17 11:32	15262-20-1	
		<b>C:70% T:81%</b>					
Total Radium	Total Radium Calculation	<b>2.26 ± 1.09 (1.49)</b>		pCi/L	06/26/17 12:35	7440-14-4	

Sample: MW-306		Lab ID: 40151176005	Collected: 06/05/17 16:30	Received: 06/07/17 09:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac		Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.329 ± 0.306 (0.403)</b>		pCi/L	06/20/17 12:52	13982-63-3	
		<b>C:NA T:102%</b>					
Radium-228	EPA 904.0	<b>1.07 ± 0.416 (0.621)</b>		pCi/L	06/22/17 11:32	15262-20-1	
		<b>C:74% T:88%</b>					

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.17 ALLIANT-COLUMBIA  
Pace Project No.: 40151176

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-306</b> <b>Lab ID: 40151176005</b> Collected: 06/05/17 16:30      Received: 06/07/17 09:15      Matrix: Water PWS:      Site ID:      Sample Type:						
Total Radium	Total Radium Calculation	<b>1.40 ± 0.722 (1.02)</b>	pCi/L	06/26/17 12:35	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-304</b> <b>Lab ID: 40151176006</b> Collected: 06/05/17 17:45      Received: 06/07/17 09:15      Matrix: Water PWS:      Site ID:      Sample Type:						
Radium-226	EPA 903.1	<b>0.437 ± 0.409 (0.580)</b> C:NA T:87%	pCi/L	06/20/17 12:52	13982-63-3	
Radium-228	EPA 904.0	<b>1.44 ± 0.458 (0.546)</b> C:75% T:88%	pCi/L	06/22/17 11:32	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.88 ± 0.867 (1.13)</b>	pCi/L	06/26/17 12:35	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-303</b> <b>Lab ID: 40151176007</b> Collected: 06/06/17 09:00      Received: 06/07/17 09:15      Matrix: Water PWS:      Site ID:      Sample Type:						
Radium-226	EPA 903.1	<b>0.145 ± 0.331 (0.534)</b> C:NA T:75%	pCi/L	06/20/17 12:52	13982-63-3	
Radium-228	EPA 904.0	<b>2.26 ± 0.667 (0.782)</b> C:76% T:73%	pCi/L	06/22/17 11:32	15262-20-1	
Total Radium	Total Radium Calculation	<b>2.41 ± 0.998 (1.32)</b>	pCi/L	06/26/17 12:35	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-33AR</b> <b>Lab ID: 40151176008</b> Collected: 06/06/17 10:00      Received: 06/07/17 09:15      Matrix: Water PWS:      Site ID:      Sample Type:						
Radium-226	EPA 903.1	<b>0.300 ± 0.313 (0.441)</b> C:NA T:85%	pCi/L	06/20/17 12:52	13982-63-3	
Radium-228	EPA 904.0	<b>0.529 ± 0.483 (0.980)</b> C:73% T:62%	pCi/L	06/22/17 11:32	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.829 ± 0.796 (1.42)</b>	pCi/L	06/26/17 12:35	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-34A</b> <b>Lab ID: 40151176009</b> Collected: 06/06/17 10:55      Received: 06/07/17 09:15      Matrix: Water PWS:      Site ID:      Sample Type:						
Radium-226	EPA 903.1	<b>-0.290 ± 0.411 (0.966)</b> C:NA T:89%	pCi/L	06/20/17 14:05	13982-63-3	
Radium-228	EPA 904.0	<b>0.373 ± 0.311 (0.618)</b> C:74% T:88%	pCi/L	06/22/17 11:32	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.373 ± 0.722 (1.58)</b>	pCi/L	06/26/17 12:35	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.17 ALLIANT-COLUMBIA

Pace Project No.: 40151176

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.000 ± 0.280 (0.570)</b> C:NA T:87%	pCi/L	06/20/17 14:05	13982-63-3	
Radium-228		EPA 904.0	<b>0.547 ± 0.393 (0.772)</b> C:73% T:94%	pCi/L	06/22/17 11:34	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.547 ± 0.673 (1.34)</b>	pCi/L	06/26/17 12:35	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.649 ± 0.431 (0.195)</b> C:NA T:73%	pCi/L	06/20/17 14:05	13982-63-3	
Radium-228		EPA 904.0	<b>0.802 ± 0.517 (1.000)</b> C:72% T:81%	pCi/L	06/22/17 11:34	15262-20-1	
Total Radium		Total Radium Calculation	<b>1.45 ± 0.948 (1.20)</b>	pCi/L	06/26/17 12:35	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.270 ± 0.420 (0.727)</b> C:NA T:86%	pCi/L	06/20/17 14:05	13982-63-3	
Radium-228		EPA 904.0	<b>0.406 ± 0.523 (1.12)</b> C:78% T:73%	pCi/L	06/22/17 11:34	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.676 ± 0.943 (1.85)</b>	pCi/L	06/26/17 12:35	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.287 ± 0.466 (0.810)</b> C:NA T:92%	pCi/L	06/20/17 14:05	13982-63-3	
Radium-228		EPA 904.0	<b>1.01 ± 0.478 (0.845)</b> C:72% T:97%	pCi/L	06/22/17 11:34	15262-20-1	
Total Radium		Total Radium Calculation	<b>1.30 ± 0.944 (1.66)</b>	pCi/L	06/26/17 12:35	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067.17 ALLIANT-COLUMBIA

Pace Project No.: 40151176

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QC Batch:	261522	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
Associated Lab Samples:	40151176001, 40151176002, 40151176003, 40151176004, 40151176005, 40151176006, 40151176007, 40151176008, 40151176009, 40151176010, 40151176011, 40151176012, 40151176013		

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METHOD BLANK:	1287929	Matrix:	Water
Associated Lab Samples:	40151176001, 40151176002, 40151176003, 40151176004, 40151176005, 40151176006, 40151176007, 40151176008, 40151176009, 40151176010, 40151176011, 40151176012, 40151176013		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.142 ± 0.464 (0.955) C:NA T:73%	pCi/L	06/20/17 12:16	

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: 25216067.17 ALLIANT-COLUMBIA

Pace Project No.: 40151176

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QC Batch:	261753	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	40151176001, 40151176002, 40151176003, 40151176004, 40151176005, 40151176006, 40151176007, 40151176008, 40151176009, 40151176010, 40151176011, 40151176012, 40151176013		

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METHOD BLANK:	1288827	Matrix:	Water
Associated Lab Samples:	40151176001, 40151176002, 40151176003, 40151176004, 40151176005, 40151176006, 40151176007, 40151176008, 40151176009, 40151176010, 40151176011, 40151176012, 40151176013		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.740 ± 0.409 (0.744) C:73% T:87%	pCi/L	06/22/17 11:30	

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: 25216067.17 ALLIANT-COLUMBIA

Pace Project No.: 40151176

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### DEFINITIONS

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 (%)

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-PA Pace Analytical Services - Greensburg

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.17 ALLIANT-COLUMBIA

Pace Project No.: 40151176

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40151176001	MW-305	EPA 903.1	261522		
40151176002	MW-4R	EPA 903.1	261522		
40151176003	MW-308	EPA 903.1	261522		
40151176004	MW-307	EPA 903.1	261522		
40151176005	MW-306	EPA 903.1	261522		
40151176006	MW-304	EPA 903.1	261522		
40151176007	MW-303	EPA 903.1	261522		
40151176008	MW-33AR	EPA 903.1	261522		
40151176009	MW-34A	EPA 903.1	261522		
40151176010	FIELD BLANK	EPA 903.1	261522		
40151176011	MW-302	EPA 903.1	261522		
40151176012	MW-84A	EPA 903.1	261522		
40151176013	MW-301	EPA 903.1	261522		
40151176001	MW-305	EPA 904.0	261753		
40151176002	MW-4R	EPA 904.0	261753		
40151176003	MW-308	EPA 904.0	261753		
40151176004	MW-307	EPA 904.0	261753		
40151176005	MW-306	EPA 904.0	261753		
40151176006	MW-304	EPA 904.0	261753		
40151176007	MW-303	EPA 904.0	261753		
40151176008	MW-33AR	EPA 904.0	261753		
40151176009	MW-34A	EPA 904.0	261753		
40151176010	FIELD BLANK	EPA 904.0	261753		
40151176011	MW-302	EPA 904.0	261753		
40151176012	MW-84A	EPA 904.0	261753		
40151176013	MW-301	EPA 904.0	261753		
40151176001	MW-305	Total Radium Calculation	263135		
40151176002	MW-4R	Total Radium Calculation	263135		
40151176003	MW-308	Total Radium Calculation	263135		
40151176004	MW-307	Total Radium Calculation	263135		
40151176005	MW-306	Total Radium Calculation	263135		
40151176006	MW-304	Total Radium Calculation	263135		
40151176007	MW-303	Total Radium Calculation	263135		
40151176008	MW-33AR	Total Radium Calculation	263135		
40151176009	MW-34A	Total Radium Calculation	263135		
40151176010	FIELD BLANK	Total Radium Calculation	263135		
40151176011	MW-302	Total Radium Calculation	263135		
40151176012	MW-84A	Total Radium Calculation	263135		
40151176013	MW-301	Total Radium Calculation	263135		

### REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)



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# CHAIN OF CUSTODY

A=None B=HCl C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

UPPER MIDWEST REGION  
 MN: 612-607-1700 WI: 920-469-2436

Page 1 of 14  
 90151176

Page 13 of 14

Company Name: **SCS Engineers**  
 Branch/Location: **25-Madison**  
 Project Contact: **Tom Kawascki**  
 Phone: **608-224-3830**  
 Project Number: **25Z16067.17**  
 Project Name: **Alliant - Denmark**  
 Project State: **WI**  
 Sampled By (Print): **Jack Hawkins**  
 Sampled By (Sign): *[Signature]*  
 PO #:   
 Program: **Regulatory**

FILTERED?  
 PRESERVATION  
 (CODE)\*

Data Package Options  
 EPA Level III  
 EPA Level IV  
 On your sample (billable)  
 NOT needed on your sample

Matrix Codes  
 A = Air B = Bids C = Charcoal O = Oil S = Soil SI = Sludge  
 W = Water DW = Drinking Water GW = Ground Water SW = Surface Water WP = Waste Water

PACE LAB #	CLIENT FIELD ID	DATE	TIME	MATRIX	Analyses Requested	
					Y/N	Pick Letter
001	MW-305	6-5-17	1145	6W		
002	MW-412					
003	MW-308					
004	MW-307					
005	MW-306					
006	MW-304					
007	MW-303	6-6-17	900			
008	MW-33AR					
009	MW-344A					
010	Field Blank					
011	MW-302					
012	MW-844					
013	MW-301					

### Analyses Requested

Radium 226  
 Radium 228

Relinquished By:	Date/Time:	Received By:	Date/Time:
Jack Hawkins	6-6-17 1520	Susan Tugler	6-7-17 0915
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

Quote #:   
 Mail To Contact: **Tom Kawascki**  
 Mail To Company: **SCS Engineer**  
 Mail To Address: **2830 Dairy Dr. Madison, WI 53718**  
 Invoice To Contact: **JAHME**  
 Invoice To Company:  
 Invoice To Address:  
 Invoice To Phone:  
 CLIENT COMMENTS  
**2-1P D**

RUSH Turnaround Time Requested - Prelims  
 (Rush TAT subject to approval/surcharge)  
 Date Needed:   
 Relinquished By:   
 Date/Time:   
 Received By:   
 Date/Time:   
 PACE Project No. **40151176**  
 Receipt Temp = **ROT**  
 Sample Receipt pH **OK/Adjusted**  
 Cooler Custody Seal **Present / Not Present Intact / Not Intact**

Sample Condition Upon Receipt

Pace Analytical Services, LLC. - Green Bay WI  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302

Pace Analytical™

Client Name: SCS Engineers

Project #

WO#: 40151176

Courier:  Fed Ex  UPS  Client  Pace Other:

Tracking #: 786812537137



40151176

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

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used

N/A

Type of Ice:  Wet  Blue  Dry  None

Samples on ice, cooling process has begun

Cooler Temperature

Uncorr: ROT / Corr:

Biological Tissue is Frozen:  yes

Temp Blank Present:

yes  no

no

Person examining contents:

Date: 6-7-17

Initials: SW

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C.

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		<u>001 - 1-1Lpd time rubbed off</u> <u>002 - 2-1Lpd time rubbed off</u> <u>006 - 1-1Lpd ID rubbed off 6-7-17</u>
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> ≥ 2, NaOH+ZnAct ≥ 9, NaOH ≥ 12)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed: <u>SW</u> Lab Std #ID of preservative: _____ Date/Time: _____
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Comments/ Resolution:

2nd cooler - 786812537159

Project Manager Review:

RNW for DM

Date: 6/7/17

## A4 Round 4 Background Sampling, Analytical Laboratory Report

September 01, 2017

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on August 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,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS  
Jeff Maxted, ALLIANT ENERGY  
Marc Morandi, ALLIANT ENERGY



## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182



## CERTIFICATIONS

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

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### 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

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40154817001	MW-34A	Water	08/07/17 15:45	08/10/17 09:15
40154817002	MW-33AR	Water	08/07/17 16:40	08/10/17 09:15
40154817003	MW-305	Water	08/07/17 18:10	08/10/17 09:15
40154817004	MW-84A	Water	08/08/17 10:05	08/10/17 09:15
40154817005	MW-301	Water	08/08/17 11:00	08/10/17 09:15
40154817006	MW-302	Water	08/08/17 12:15	08/10/17 09:15
40154817007	MW-306	Water	08/08/17 14:10	08/10/17 09:15
40154817008	MW-307	Water	08/08/17 15:20	08/10/17 09:15
40154817009	MW-303	Water	08/08/17 16:35	08/10/17 09:15
40154817010	MW-304	Water	08/08/17 18:00	08/10/17 09:15
40154817011	MW-308	Water	08/09/17 12:30	08/10/17 09:15
40154817012	M-4R	Water	08/09/17 13:35	08/10/17 09:15
40154817013	FIELD BLANK	Water	08/09/17 14:00	08/10/17 09:15

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40154817001	MW-34A	EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40154817002	MW-33AR	EPA 6020	SDW
EPA 7470	AJT			1	PASI-G
	AXL			7	PASI-G
EPA 903.1	WRR			1	PASI-PA
EPA 904.0	JLW			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	TMK			1	PASI-G
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G
40154817003	MW-305			EPA 6020	SDW
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40154817004	MW-84A	EPA 6020	SDW
EPA 7470	AJT			1	PASI-G
	AXL			7	PASI-G
EPA 903.1	WRR			1	PASI-PA
EPA 904.0	JLW			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	JMN			1	PASI-G
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G
40154817005	MW-301			EPA 6020	SDW

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### SAMPLE ANALYTE COUNT

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40154817006	MW-302	EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	JMN	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
40154817007	MW-306	SM 2540C	JMN	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	JMN	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
40154817008	MW-307		AXL	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	JMN	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	JMN	1	PASI-G
EPA 9040	ALY	1	PASI-G		
EPA 300.0	HMB	3	PASI-G		
40154817009	MW-303	EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G

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### SAMPLE ANALYTE COUNT

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40154817010	MW-304		AXL	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	JMN	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	JMN	1	PASI-G
40154817011	MW-308	EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
40154817012	M-4R	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
40154817013	FIELD BLANK	EPA 300.0	HMB	3	PASI-G
		EPA 6020	SDW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
		EPA 903.1	WRR	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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**SAMPLE ANALYTE COUNT**

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G

**REPORT OF LABORATORY ANALYSIS**

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

**Sample: MW-34A**      **Lab ID: 40154817001**      Collected: 08/07/17 15:45      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 00:04	7440-36-0	
Arsenic	0.36J	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 00:04	7440-38-2	
Barium	10.2	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 00:04	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 00:04	7440-41-7	
Boron	205	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 13:47	7440-42-8	
Cadmium	0.089J	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 00:04	7440-43-9	
Calcium	67300	ug/L	2500	698	10	08/17/17 08:59	08/22/17 23:37	7440-70-2	
Chromium	1.5J	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 00:04	7440-47-3	
Cobalt	0.13J	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 00:04	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 00:04	7439-92-1	
Lithium	0.62J	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 00:04	7439-93-2	
Molybdenum	1.1J	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 00:04	7439-98-7	
Selenium	1.2	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 00:04	7782-49-2	
Thallium	0.24J	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 00:04	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:23	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.39	Std. Units			1		08/07/17 15:45		
Field Specific Conductance	510.6	umhos/cm			1		08/07/17 15:45		
Oxygen, Dissolved	8.02	mg/L			1		08/07/17 15:45	7782-44-7	
REDOX	144.8	mV			1		08/07/17 15:45		
Turbidity	2.68	NTU			1		08/07/17 15:45		
Static Water Level	785.81	feet			1		08/07/17 15:45		
Temperature, Water (C)	11.5	deg C			1		08/07/17 15:45		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	358	mg/L	20.0	8.7	1		08/11/17 16:04		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.8	Std. Units	0.10	0.010	1		08/14/17 09:52		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	7.4	mg/L	2.0	0.50	1		08/18/17 15:11	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		08/18/17 15:11	16984-48-8	
Sulfate	105	mg/L	15.0	5.0	5		08/18/17 19:23	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

**Sample: MW-33AR**      **Lab ID: 40154817002**      Collected: 08/07/17 16:40      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.35J</b>	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 00:45	7440-36-0	
Arsenic	<b>0.59J</b>	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 00:45	7440-38-2	
Barium	<b>42.4</b>	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 00:45	7440-39-3	
Beryllium	<b>0.19J</b>	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 00:45	7440-41-7	
Boron	<b>697</b>	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 14:14	7440-42-8	
Cadmium	<b>0.22J</b>	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 00:45	7440-43-9	
Calcium	<b>84800</b>	ug/L	250	69.8	1	08/17/17 08:59	08/23/17 00:45	7440-70-2	
Chromium	<b>1.7J</b>	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 00:45	7440-47-3	
Cobalt	<b>0.23J</b>	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 00:45	7440-48-4	
Lead	<b>0.35J</b>	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 00:45	7439-92-1	
Lithium	<b>1.4</b>	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 00:45	7439-93-2	
Molybdenum	<b>2.1</b>	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 00:45	7439-98-7	
Selenium	<b>2.4</b>	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 00:45	7782-49-2	
Thallium	<b>0.31J</b>	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 00:45	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:25	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.47</b>	Std. Units			1		08/07/17 16:40		
Field Specific Conductance	<b>823</b>	umhos/cm			1		08/07/17 16:40		
Oxygen, Dissolved	<b>8.1</b>	mg/L			1		08/07/17 16:40	7782-44-7	
REDOX	<b>152.1</b>	mV			1		08/07/17 16:40		
Turbidity	<b>0.32</b>	NTU			1		08/07/17 16:40		
Static Water Level	<b>786.11</b>	feet			1		08/07/17 16:40		
Temperature, Water (C)	<b>12.3</b>	deg C			1		08/07/17 16:40		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>598</b>	mg/L	20.0	8.7	1		08/11/17 16:04		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.4</b>	Std. Units	0.10	0.010	1		08/14/17 10:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>105</b>	mg/L	10.0	2.5	5		08/18/17 19:55	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		08/18/17 16:16	16984-48-8	
Sulfate	<b>164</b>	mg/L	15.0	5.0	5		08/18/17 19:55	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

**Sample: MW-305**      **Lab ID: 40154817003**      Collected: 08/07/17 18:10      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.68J</b>	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 00:58	7440-36-0	
Arsenic	<b>0.43J</b>	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 00:58	7440-38-2	
Barium	<b>12.9</b>	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 00:58	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 00:58	7440-41-7	
Boron	<b>2470</b>	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 14:28	7440-42-8	
Cadmium	<b>0.13J</b>	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 00:58	7440-43-9	
Calcium	<b>80200</b>	ug/L	250	69.8	1	08/17/17 08:59	08/23/17 00:58	7440-70-2	
Chromium	<b>&lt;1.0</b>	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 00:58	7440-47-3	
Cobalt	<b>0.20J</b>	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 00:58	7440-48-4	
Lead	<b>&lt;0.20</b>	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 00:58	7439-92-1	
Lithium	<b>0.15J</b>	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 00:58	7439-93-2	
Molybdenum	<b>68.7</b>	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 00:58	7439-98-7	
Selenium	<b>5.2</b>	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 00:58	7782-49-2	
Thallium	<b>0.20J</b>	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 00:58	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:27	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.82</b>	Std. Units			1		08/07/17 18:10		
Field Specific Conductance	<b>689.0</b>	umhos/cm			1		08/07/17 18:10		
Oxygen, Dissolved	<b>0.55</b>	mg/L			1		08/07/17 18:10	7782-44-7	
REDOX	<b>99.5</b>	mV			1		08/07/17 18:10		
Turbidity	<b>0.56</b>	NTU			1		08/07/17 18:10		
Static Water Level	<b>789.3</b>	feet			1		08/07/17 18:10		
Temperature, Water (C)	<b>21.8</b>	deg C			1		08/07/17 18:10		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>490</b>	mg/L	20.0	8.7	1		08/11/17 16:04		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.8</b>	Std. Units	0.10	0.010	1		08/14/17 10:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>46.9</b>	mg/L	2.0	0.50	1		08/18/17 16:29	16887-00-6	
Fluoride	<b>0.46</b>	mg/L	0.30	0.10	1		08/18/17 16:29	16984-48-8	
Sulfate	<b>243</b>	mg/L	30.0	10.0	10		08/18/17 20:06	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

**Sample: MW-84A**      **Lab ID: 40154817004**      Collected: 08/08/17 10:05      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 01:05	7440-36-0	
Arsenic	0.28J	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 01:05	7440-38-2	
Barium	14.0	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 01:05	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 01:05	7440-41-7	
Boron	22.9	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 14:34	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 01:05	7440-43-9	
Calcium	74900	ug/L	250	69.8	1	08/17/17 08:59	08/23/17 01:05	7440-70-2	
Chromium	1.6J	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 01:05	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 01:05	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 01:05	7439-92-1	
Lithium	0.58J	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:05	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 01:05	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 01:05	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:05	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:30	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.23	Std. Units			1		08/23/17 17:52		
Field Specific Conductance	557.2	umhos/cm			1		08/23/17 17:52		
Oxygen, Dissolved	7.5	mg/L			1		08/23/17 17:52	7782-44-7	
REDOX	204.7	mV			1		08/23/17 17:52		
Turbidity	0.08	NTU			1		08/23/17 17:52		
Static Water Level	786.68	feet			1		08/23/17 17:52		
Temperature, Water (C)	11.2	deg C			1		08/23/17 17:52		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	342	mg/L	20.0	8.7	1		08/14/17 12:31		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.4	Std. Units	0.10	0.010	1		08/14/17 10:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	5.5	mg/L	2.0	0.50	1		08/18/17 16:40	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		08/18/17 16:40	16984-48-8	
Sulfate	2.0J	mg/L	3.0	1.0	1		08/18/17 16:40	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

**Sample: MW-301**      **Lab ID: 40154817005**      Collected: 08/08/17 11:00      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 01:12	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 01:12	7440-38-2	
Barium	11.8	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 01:12	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 01:12	7440-41-7	
Boron	30.6	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 14:41	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 01:12	7440-43-9	
Calcium	108000	ug/L	250	69.8	1	08/17/17 08:59	08/23/17 01:12	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 01:12	7440-47-3	
Cobalt	0.12J	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 01:12	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 01:12	7439-92-1	
Lithium	0.60J	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:12	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 01:12	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 01:12	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:12	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:37	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	6.75	Std. Units			1		08/08/17 11:00		
Field Specific Conductance	691.7	umhos/cm			1		08/08/17 11:00		
Oxygen, Dissolved	1.43	mg/L			1		08/08/17 11:00	7782-44-7	
REDOX	187.4	mV			1		08/08/17 11:00		
Turbidity	0.18	NTU			1		08/08/17 11:00		
Static Water Level	787.34	feet			1		08/08/17 11:00		
Temperature, Water (C)	10.2	deg C			1		08/08/17 11:00		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	462	mg/L	20.0	8.7	1		08/14/17 12:32		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.0	Std. Units	0.10	0.010	1		08/14/17 10:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	5.5	mg/L	2.0	0.50	1		08/18/17 16:51	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		08/18/17 16:51	16984-48-8	
Sulfate	31.6	mg/L	3.0	1.0	1		08/18/17 16:51	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

**Sample: MW-302**      **Lab ID: 40154817006**      Collected: 08/08/17 12:15      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 01:19	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 01:19	7440-38-2	
Barium	22.2	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 01:19	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 01:19	7440-41-7	
Boron	833	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 14:48	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 01:19	7440-43-9	
Calcium	87100	ug/L	250	69.8	1	08/17/17 08:59	08/23/17 01:19	7440-70-2	
Chromium	2.0J	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 01:19	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 01:19	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 01:19	7439-92-1	
Lithium	2.4	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:19	7439-93-2	
Molybdenum	1.6	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 01:19	7439-98-7	
Selenium	2.4	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 01:19	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:19	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:39	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.04	Std. Units			1		08/08/17 12:15		
Field Specific Conductance	679	umhos/cm			1		08/08/17 12:15		
Oxygen, Dissolved	7.40	mg/L			1		08/08/17 12:15	7782-44-7	
REDOX	191.1	mV			1		08/08/17 12:15		
Turbidity	0.83	NTU			1		08/08/17 12:15		
Static Water Level	787.55	feet			1		08/08/17 12:15		
Temperature, Water (C)	11.4	deg C			1		08/08/17 12:15		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	470	mg/L	20.0	8.7	1		08/14/17 12:32		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.4	Std. Units	0.10	0.010	1		08/14/17 10:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	4.5	mg/L	2.0	0.50	1		08/18/17 17:02	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		08/18/17 17:02	16984-48-8	
Sulfate	79.0	mg/L	15.0	5.0	5		08/21/17 11:54	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

**Sample: MW-306**      **Lab ID: 40154817007**      Collected: 08/08/17 14:10      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 01:26	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 01:26	7440-38-2	
Barium	11.8	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 01:26	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 01:26	7440-41-7	
Boron	136	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 15:46	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 01:26	7440-43-9	
Calcium	84800	ug/L	250	69.8	1	08/17/17 08:59	08/23/17 01:26	7440-70-2	
Chromium	2.0J	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 01:26	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 01:26	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 01:26	7439-92-1	
Lithium	5.7	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:26	7439-93-2	
Molybdenum	6.7	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 01:26	7439-98-7	
Selenium	0.58J	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 01:26	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:26	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:41	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	6.96	Std. Units			1		08/08/17 14:10		
Field Specific Conductance	524.4	umhos/cm			1		08/08/17 14:10		
Oxygen, Dissolved	6.27	mg/L			1		08/08/17 14:10	7782-44-7	
REDOX	196.2	mV			1		08/08/17 14:10		
Turbidity	0.34	NTU			1		08/08/17 14:10		
Static Water Level	785.69	feet			1		08/08/17 14:10		
Temperature, Water (C)	12.1	deg C			1		08/08/17 14:10		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	338	mg/L	20.0	8.7	1		08/14/17 12:32		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.3	Std. Units	0.10	0.010	1		08/14/17 10:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	1.7J	mg/L	2.0	0.50	1		08/18/17 17:13	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		08/18/17 17:13	16984-48-8	
Sulfate	7.3	mg/L	3.0	1.0	1		08/18/17 17:13	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

**Sample: MW-307**      **Lab ID: 40154817008**      Collected: 08/08/17 15:20      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 01:32	7440-36-0	
Arsenic	1.5	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 01:32	7440-38-2	
Barium	13.7	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 01:32	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 01:32	7440-41-7	
Boron	373	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 15:11	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 01:32	7440-43-9	
Calcium	72500	ug/L	250	69.8	1	08/17/17 08:59	08/23/17 01:32	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 01:32	7440-47-3	
Cobalt	0.60J	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 01:32	7440-48-4	
Lead	0.21J	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 01:32	7439-92-1	
Lithium	0.21J	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:32	7439-93-2	
Molybdenum	0.74J	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 01:32	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 01:32	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:32	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:44	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	6.90	Std. Units			1		08/08/17 15:20		
Field Specific Conductance	589.9	umhos/cm			1		08/08/17 15:20		
Oxygen, Dissolved	0.14	mg/L			1		08/08/17 15:20	7782-44-7	
REDOX	-51.1	mV			1		08/08/17 15:20		
Turbidity	1.78	NTU			1		08/08/17 15:20		
Static Water Level	785.19	feet			1		08/08/17 15:20		
Temperature, Water (C)	15.0	deg C			1		08/08/17 15:20		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	350	mg/L	20.0	8.7	1		08/14/17 12:33		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.3	Std. Units	0.10	0.010	1		08/14/17 10:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	8.3	mg/L	2.0	0.50	1		08/18/17 17:24	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		08/18/17 17:24	16984-48-8	
Sulfate	6.7	mg/L	3.0	1.0	1		08/18/17 17:24	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

**Sample: MW-303**      **Lab ID: 40154817009**      Collected: 08/08/17 16:35      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 01:39	7440-36-0	
Arsenic	12.0	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 01:39	7440-38-2	
Barium	10.5	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 01:39	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 01:39	7440-41-7	
Boron	2080	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 15:18	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 01:39	7440-43-9	
Calcium	20700	ug/L	250	69.8	1	08/17/17 08:59	08/23/17 01:39	7440-70-2	
Chromium	65.3	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 01:39	7440-47-3	
Cobalt	0.37J	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 01:39	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 01:39	7439-92-1	
Lithium	0.86J	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:39	7439-93-2	
Molybdenum	81.6	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 01:39	7439-98-7	
Selenium	19.7	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 01:39	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 01:39	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:46	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	9.00	Std. Units			1		08/08/17 16:35		
Field Specific Conductance	936	umhos/cm			1		08/08/17 16:35		
Oxygen, Dissolved	5.53	mg/L			1		08/08/17 16:35	7782-44-7	
REDOX	-22.0	mV			1		08/08/17 16:35		
Turbidity	2.09	NTU			1		08/08/17 16:35		
Static Water Level	785.42	feet			1		08/08/17 16:35		
Temperature, Water (C)	12.5	deg C			1		08/08/17 16:35		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	678	mg/L	20.0	8.7	1		08/14/17 12:33		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	9.1	Std. Units	0.10	0.010	1		08/14/17 10:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	11.7J	mg/L	20.0	5.0	10		08/21/17 12:05	16887-00-6	D3
Fluoride	<1.0	mg/L	3.0	1.0	10		08/23/17 00:01	16984-48-8	D3
Sulfate	356	mg/L	30.0	10.0	10		08/21/17 12:05	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

**Sample: MW-304**      **Lab ID: 40154817010**      Collected: 08/08/17 18:00      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 02:00	7440-36-0	
Arsenic	1.0	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 02:00	7440-38-2	
Barium	33.3	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 02:00	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 02:00	7440-41-7	
Boron	570	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 15:25	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 02:00	7440-43-9	
Calcium	79700	ug/L	250	69.8	1	08/17/17 08:59	08/23/17 02:00	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 02:00	7440-47-3	
Cobalt	0.80J	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 02:00	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 02:00	7439-92-1	
Lithium	<0.14	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 02:00	7439-93-2	
Molybdenum	11.8	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 02:00	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 02:00	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 02:00	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:48	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.13	Std. Units			1		08/08/17 18:00		
Field Specific Conductance	704	umhos/cm			1		08/08/17 18:00		
Oxygen, Dissolved	0.69	mg/L			1		08/08/17 18:00	7782-44-7	
REDOX	-43.70	mV			1		08/08/17 18:00		
Turbidity	1.54	NTU			1		08/08/17 18:00		
Static Water Level	789.52	feet			1		08/08/17 18:00		
Temperature, Water (C)	17.9	deg C			1		08/08/17 18:00		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	454	mg/L	20.0	8.7	1		08/14/17 12:33		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.4	Std. Units	0.10	0.010	1		08/14/17 10:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	37.5	mg/L	2.0	0.50	1		08/18/17 17:45	16887-00-6	
Fluoride	0.12J	mg/L	0.30	0.10	1		08/18/17 17:45	16984-48-8	
Sulfate	68.5	mg/L	15.0	5.0	5		08/21/17 12:16	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

**Sample: MW-308**      **Lab ID: 40154817011**      Collected: 08/09/17 12:30      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 02:06	7440-36-0	
Arsenic	2.6	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 02:06	7440-38-2	
Barium	75.0	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 02:06	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 02:06	7440-41-7	
Boron	644	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 15:32	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 02:06	7440-43-9	
Calcium	131000	ug/L	250	69.8	1	08/17/17 08:59	08/23/17 02:06	7440-70-2	
Chromium	1.1J	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 02:06	7440-47-3	
Cobalt	0.26J	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 02:06	7440-48-4	
Lead	0.37J	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 02:06	7439-92-1	
Lithium	0.26J	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 02:06	7439-93-2	
Molybdenum	0.91J	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 02:06	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 02:06	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 02:06	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:50	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.25	Std. Units			1		08/09/17 12:30		
Field Specific Conductance	864	umhos/cm			1		08/09/17 12:30		
Oxygen, Dissolved	0.08	mg/L			1		08/09/17 12:30	7782-44-7	
REDOX	-71.4	mV			1		08/09/17 12:30		
Turbidity	16.81	NTU			1		08/09/17 12:30		
Static Water Level	785.37	feet			1		08/09/17 12:30		
Temperature, Water (C)	14.9	deg C			1		08/09/17 12:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	546	mg/L	20.0	8.7	1		08/16/17 17:01		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.3	Std. Units	0.10	0.010	1		08/14/17 10:15		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	3.7	mg/L	2.0	0.50	1		08/18/17 18:29	16887-00-6	
Fluoride	0.11J	mg/L	0.30	0.10	1		08/18/17 18:29	16984-48-8	
Sulfate	1.7J	mg/L	3.0	1.0	1		08/18/17 18:29	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

**Sample: M-4R**      **Lab ID: 40154817012**      Collected: 08/09/17 13:35      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<b>0.15J</b>	ug/L	1.0	0.15	1	08/17/17 08:59	08/23/17 02:13	7440-36-0	
Arsenic	<b>&lt;0.28</b>	ug/L	1.0	0.28	1	08/17/17 08:59	08/23/17 02:13	7440-38-2	
Barium	<b>23.8</b>	ug/L	1.1	0.34	1	08/17/17 08:59	08/23/17 02:13	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	08/17/17 08:59	08/23/17 02:13	7440-41-7	
Boron	<b>973</b>	ug/L	11.0	3.3	1	08/17/17 08:59	08/23/17 15:39	7440-42-8	
Cadmium	<b>&lt;0.081</b>	ug/L	1.0	0.081	1	08/17/17 08:59	08/23/17 02:13	7440-43-9	
Calcium	<b>91600</b>	ug/L	250	69.8	1	08/17/17 08:59	08/23/17 02:13	7440-70-2	
Chromium	<b>&lt;1.0</b>	ug/L	3.4	1.0	1	08/17/17 08:59	08/23/17 02:13	7440-47-3	
Cobalt	<b>0.21J</b>	ug/L	1.0	0.085	1	08/17/17 08:59	08/23/17 02:13	7440-48-4	
Lead	<b>&lt;0.20</b>	ug/L	1.0	0.20	1	08/17/17 08:59	08/23/17 02:13	7439-92-1	
Lithium	<b>3.7</b>	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 02:13	7439-93-2	
Molybdenum	<b>15.8</b>	ug/L	1.5	0.44	1	08/17/17 08:59	08/23/17 02:13	7439-98-7	
Selenium	<b>15.0</b>	ug/L	1.1	0.32	1	08/17/17 08:59	08/23/17 02:13	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	08/17/17 08:59	08/23/17 02:13	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:53	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.13</b>	Std. Units			1		08/09/17 13:35		
Field Specific Conductance	<b>751.0</b>	umhos/cm			1		08/09/17 13:35		
Oxygen, Dissolved	<b>0.10</b>	mg/L			1		08/09/17 13:35	7782-44-7	
REDOX	<b>-53.6</b>	mV			1		08/09/17 13:35		
Turbidity	<b>0.47</b>	NTU			1		08/09/17 13:35		
Static Water Level	<b>788.54</b>	feet			1		08/09/17 13:35		
Temperature, Water (C)	<b>15.0</b>	deg C			1		08/09/17 13:35		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>544</b>	mg/L	20.0	8.7	1		08/16/17 17:01		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.6</b>	Std. Units	0.10	0.010	1		08/14/17 10:35		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>40.8</b>	mg/L	2.0	0.50	1		08/18/17 18:40	16887-00-6	
Fluoride	<b>0.23J</b>	mg/L	0.30	0.10	1		08/18/17 18:40	16984-48-8	
Sulfate	<b>139</b>	mg/L	30.0	10.0	10		08/21/17 12:27	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

**Sample: FIELD BLANK**      **Lab ID: 40154817013**      Collected: 08/09/17 14:00      Received: 08/10/17 09:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	08/17/17 08:59	08/22/17 23:23	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	08/17/17 08:59	08/22/17 23:23	7440-38-2	
Barium	<0.34	ug/L	1.1	0.34	1	08/17/17 08:59	08/22/17 23:23	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	08/17/17 08:59	08/22/17 23:23	7440-41-7	
Boron	<3.3	ug/L	11.0	3.3	1	08/17/17 08:59	08/22/17 23:23	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	08/17/17 08:59	08/22/17 23:23	7440-43-9	
Calcium	<69.8	ug/L	250	69.8	1	08/17/17 08:59	08/22/17 23:23	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	08/17/17 08:59	08/22/17 23:23	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	08/17/17 08:59	08/22/17 23:23	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	08/17/17 08:59	08/22/17 23:23	7439-92-1	
Lithium	<0.14	ug/L	1.0	0.14	1	08/17/17 08:59	08/22/17 23:23	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	08/17/17 08:59	08/22/17 23:23	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	08/17/17 08:59	08/22/17 23:23	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	08/17/17 08:59	08/22/17 23:23	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	08/18/17 10:55	08/21/17 13:55	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		08/16/17 17:01		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	6.8	Std. Units	0.10	0.010	1		08/18/17 09:35		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<0.50	mg/L	2.0	0.50	1		08/18/17 18:50	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		08/18/17 18:50	16984-48-8	
Sulfate	<1.0	mg/L	3.0	1.0	1		08/18/17 18:50	14808-79-8	

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**QUALITY CONTROL DATA**

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

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QC Batch: 265024 Analysis Method: EPA 7470  
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury  
Associated Lab Samples: 40154817001, 40154817002, 40154817003, 40154817004, 40154817005, 40154817006, 40154817007, 40154817008, 40154817009, 40154817010, 40154817011, 40154817012, 40154817013

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METHOD BLANK: 1559010 Matrix: Water  
Associated Lab Samples: 40154817001, 40154817002, 40154817003, 40154817004, 40154817005, 40154817006, 40154817007, 40154817008, 40154817009, 40154817010, 40154817011, 40154817012, 40154817013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	08/21/17 12:57	

LABORATORY CONTROL SAMPLE: 1559011

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1559012 1559013

Parameter	Units	40154635001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.13	5	5	5.1	4.9	101	98	85-115	4	20	

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### QUALITY CONTROL DATA

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

QC Batch: 264857 Analysis Method: EPA 6020  
QC Batch Method: EPA 3010 Analysis Description: 6020 MET  
Associated Lab Samples: 40154817001, 40154817002, 40154817003, 40154817004, 40154817005, 40154817006, 40154817007, 40154817008, 40154817009, 40154817010, 40154817011, 40154817012, 40154817013

METHOD BLANK: 1558223 Matrix: Water  
Associated Lab Samples: 40154817001, 40154817002, 40154817003, 40154817004, 40154817005, 40154817006, 40154817007, 40154817008, 40154817009, 40154817010, 40154817011, 40154817012, 40154817013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	08/22/17 23:16	
Arsenic	ug/L	<0.28	1.0	08/22/17 23:16	
Barium	ug/L	<0.34	1.1	08/22/17 23:16	
Beryllium	ug/L	<0.18	1.0	08/22/17 23:16	
Boron	ug/L	<3.3	11.0	08/22/17 23:16	
Cadmium	ug/L	<0.081	1.0	08/22/17 23:16	
Calcium	ug/L	<69.8	250	08/22/17 23:16	
Chromium	ug/L	<1.0	3.4	08/22/17 23:16	
Cobalt	ug/L	<0.085	1.0	08/22/17 23:16	
Lead	ug/L	<0.20	1.0	08/22/17 23:16	
Lithium	ug/L	<0.14	1.0	08/22/17 23:16	
Molybdenum	ug/L	<0.44	1.5	08/22/17 23:16	
Selenium	ug/L	<0.32	1.1	08/22/17 23:16	
Thallium	ug/L	<0.14	1.0	08/22/17 23:16	

LABORATORY CONTROL SAMPLE: 1558224

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	555	111	80-120	
Arsenic	ug/L	500	524	105	80-120	
Barium	ug/L	500	532	106	80-120	
Beryllium	ug/L	500	559	112	80-120	
Boron	ug/L	500	526	105	80-120	
Cadmium	ug/L	500	543	109	80-120	
Calcium	ug/L	5000	5520	110	80-120	
Chromium	ug/L	500	528	106	80-120	
Cobalt	ug/L	500	518	104	80-120	
Lead	ug/L	500	507	101	80-120	
Lithium	ug/L	500	532	106	80-120	
Molybdenum	ug/L	500	540	108	80-120	
Selenium	ug/L	500	556	111	80-120	
Thallium	ug/L	500	522	104	80-120	

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### QUALITY CONTROL DATA

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1558225		1558226		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40154817001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	<0.15	500	500	556	547	111	109	75-125	2	20		
Arsenic	ug/L	0.36J	500	500	530	521	106	104	75-125	2	20		
Barium	ug/L	10.2	500	500	550	538	108	106	75-125	2	20		
Beryllium	ug/L	<0.18	500	500	558	548	112	110	75-125	2	20		
Boron	ug/L	205	500	500	785	723	116	104	75-125	8	20		
Cadmium	ug/L	0.089J	500	500	544	531	109	106	75-125	2	20		
Calcium	ug/L	67300	5000	5000	73200	71400	117	82	75-125	2	20		
Chromium	ug/L	1.5J	500	500	531	520	106	104	75-125	2	20		
Cobalt	ug/L	0.13J	500	500	518	506	104	101	75-125	2	20		
Lead	ug/L	<0.20	500	500	524	508	105	102	75-125	3	20		
Lithium	ug/L	0.62J	500	500	558	558	111	111	75-125	0	20		
Molybdenum	ug/L	1.1J	500	500	555	538	111	107	75-125	3	20		
Selenium	ug/L	1.2	500	500	555	554	111	111	75-125	0	20		
Thallium	ug/L	0.24J	500	500	538	528	108	106	75-125	2	20		

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### QUALITY CONTROL DATA

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

QC Batch: 264369 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 40154817001, 40154817002, 40154817003

METHOD BLANK: 1555754 Matrix: Water  
Associated Lab Samples: 40154817001, 40154817002, 40154817003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	08/11/17 16:03	

LABORATORY CONTROL SAMPLE: 1555755

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	553	604	109	80-120	

SAMPLE DUPLICATE: 1555756

Parameter	Units	40154687011 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	840	842	0	5	

SAMPLE DUPLICATE: 1555757

Parameter	Units	40154698001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	62.0	58.0	7	5	R1

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### QUALITY CONTROL DATA

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

QC Batch: 264778

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 40154817011, 40154817012, 40154817013

METHOD BLANK: 1557678

Matrix: Water

Associated Lab Samples: 40154817011, 40154817012, 40154817013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	08/16/17 17:00	

LABORATORY CONTROL SAMPLE: 1557679

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	553	628	114	80-120	

SAMPLE DUPLICATE: 1557680

Parameter	Units	40154754016 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1470	1450	2	5	

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### QUALITY CONTROL DATA

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

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QC Batch:	264488	Analysis Method:	EPA 9040
QC Batch Method:	EPA 9040	Analysis Description:	9040 pH
Associated Lab Samples:	40154817001, 40154817002, 40154817003, 40154817004, 40154817005, 40154817006, 40154817007, 40154817008, 40154817009, 40154817010, 40154817011, 40154817012		

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SAMPLE DUPLICATE: 1556486

Parameter	Units	40154568001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.4	7.4	0	20	H6

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SAMPLE DUPLICATE: 1556487

Parameter	Units	40154653001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.5	7.6	1	20	H6

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### QUALITY CONTROL DATA

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

QC Batch: 265022 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40154817013

SAMPLE DUPLICATE: 1559000

Parameter	Units	40154878001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.6	7.7	1	20	H6

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### QUALITY CONTROL DATA

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

QC Batch: 264732 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40154817001, 40154817002, 40154817003, 40154817004, 40154817005, 40154817006, 40154817007, 40154817008, 40154817009, 40154817010, 40154817011, 40154817012, 40154817013

METHOD BLANK: 1557449 Matrix: Water  
Associated Lab Samples: 40154817001, 40154817002, 40154817003, 40154817004, 40154817005, 40154817006, 40154817007, 40154817008, 40154817009, 40154817010, 40154817011, 40154817012, 40154817013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	08/18/17 11:24	
Fluoride	mg/L	<0.10	0.30	08/18/17 11:24	
Sulfate	mg/L	<1.0	3.0	08/18/17 11:24	

LABORATORY CONTROL SAMPLE: 1557450

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.9	105	90-110	
Fluoride	mg/L	2	2.0	102	90-110	
Sulfate	mg/L	20	20.7	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1557451 1557452

Parameter	Units	40154994001		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	4.8	20	20	25.5	23.9	103	96	90-110	6	15		
Fluoride	mg/L	0.84	2	2	2.8	2.6	98	90	90-110	6	15		
Sulfate	mg/L	19.5	20	20	39.3	37.2	99	88	90-110	6	15	MO	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1557453 1557454

Parameter	Units	40154817001		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	7.4	20	20	28.4	28.6	105	106	90-110	0	15		
Fluoride	mg/L	<0.10	2	2	2.0	2.1	101	102	90-110	1	15		
Sulfate	mg/L	105	100	100	206	206	101	101	90-110	0	15		

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

Sample: MW-34A		Lab ID: 40154817001	Collected: 08/07/17 15:45	Received: 08/10/17 09:15	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.0539 ± 0.350 (0.706)</b> C:NA T:105%	pCi/L	08/24/17 10:12	13982-63-3	
Radium-228	EPA 904.0	<b>0.294 ± 0.378 (0.805)</b> C:77% T:77%	pCi/L	08/28/17 15:30	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.348 ± 0.728 (1.51)</b>	pCi/L	09/01/17 09:09	7440-14-4	

Sample: MW-33AR		Lab ID: 40154817002	Collected: 08/07/17 16:40	Received: 08/10/17 09:15	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.426 ± 0.320 (0.165)</b> C:NA T:96%	pCi/L	08/24/17 10:30	13982-63-3	
Radium-228	EPA 904.0	<b>0.698 ± 0.435 (0.812)</b> C:75% T:75%	pCi/L	08/28/17 15:30	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.12 ± 0.755 (0.977)</b>	pCi/L	09/01/17 09:09	7440-14-4	

Sample: MW-305		Lab ID: 40154817003	Collected: 08/07/17 18:10	Received: 08/10/17 09:15	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>-0.121 ± 0.291 (0.726)</b> C:NA T:96%	pCi/L	08/24/17 10:44	13982-63-3	
Radium-228	EPA 904.0	<b>0.103 ± 0.300 (0.675)</b> C:81% T:84%	pCi/L	08/28/17 15:30	15262-20-1	1q
Total Radium	Total Radium Calculation	<b>0.103 ± 0.591 (1.40)</b>	pCi/L	09/01/17 09:09	7440-14-4	

Sample: MW-84A		Lab ID: 40154817004	Collected: 08/08/17 10:05	Received: 08/10/17 09:15	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.242 ± 0.375 (0.650)</b> C:NA T:93%	pCi/L	08/24/17 10:44	13982-63-3	
Radium-228	EPA 904.0	<b>0.267 ± 0.272 (0.559)</b> C:80% T:93%	pCi/L	08/28/17 15:30	15262-20-1	1q
Total Radium	Total Radium Calculation	<b>0.509 ± 0.647 (1.21)</b>	pCi/L	09/01/17 09:09	7440-14-4	

Sample: MW-301		Lab ID: 40154817005	Collected: 08/08/17 11:00	Received: 08/10/17 09:15	Matrix: Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>1.09 ± 0.608 (0.630)</b> C:NA T:88%	pCi/L	08/24/17 10:44	13982-63-3	
Radium-228	EPA 904.0	<b>0.647 ± 0.356 (0.635)</b> C:78% T:90%	pCi/L	08/28/17 15:30	15262-20-1	1q

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	<b>1.74 ± 0.964 (1.27)</b>	pCi/L	09/01/17 09:09	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.193 ± 0.418 (0.771)</b> C:NA T:90%	pCi/L	08/24/17 10:46	13982-63-3	
Radium-228	EPA 904.0	<b>0.538 ± 0.344 (0.636)</b> C:79% T:82%	pCi/L	08/28/17 15:32	15262-20-1	1q
Total Radium	Total Radium Calculation	<b>0.731 ± 0.762 (1.41)</b>	pCi/L	09/01/17 09:09	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.0606 ± 0.394 (0.794)</b> C:NA T:92%	pCi/L	08/24/17 10:45	13982-63-3	
Radium-228	EPA 904.0	<b>0.374 ± 0.301 (0.593)</b> C:81% T:91%	pCi/L	08/28/17 15:32	15262-20-1	1q
Total Radium	Total Radium Calculation	<b>0.435 ± 0.695 (1.39)</b>	pCi/L	09/01/17 09:09	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.309 ± 0.365 (0.573)</b> C:NA T:92%	pCi/L	08/24/17 10:45	13982-63-3	
Radium-228	EPA 904.0	<b>0.367 ± 0.308 (0.612)</b> C:79% T:90%	pCi/L	08/28/17 15:32	15262-20-1	1q
Total Radium	Total Radium Calculation	<b>0.676 ± 0.673 (1.19)</b>	pCi/L	09/01/17 09:09	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.459 ± 0.466 (0.705)</b> C:NA T:86%	pCi/L	08/24/17 10:46	13982-63-3	
Radium-228	EPA 904.0	<b>0.336 ± 0.327 (0.669)</b> C:78% T:85%	pCi/L	08/28/17 15:32	15262-20-1	1q
Total Radium	Total Radium Calculation	<b>0.795 ± 0.793 (1.37)</b>	pCi/L	09/01/17 09:09	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-304</b>		<b>Lab ID: 40154817010</b>	Collected: 08/08/17 18:00	Received: 08/10/17 09:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Radium-226	EPA 903.1	<b>0.266 ± 0.304 (0.180)</b>	pCi/L	08/24/17 10:46	13982-63-3		
Radium-228	EPA 904.0	<b>0.511 ± 0.292 (0.514)</b> <b>C:NA T:89%</b>	pCi/L	08/28/17 15:32	15262-20-1	1q	
Total Radium	Total Radium Calculation	<b>0.777 ± 0.596 (0.694)</b> <b>C:83% T:90%</b>	pCi/L	09/01/17 09:09	7440-14-4		

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-308</b>		<b>Lab ID: 40154817011</b>	Collected: 08/09/17 12:30	Received: 08/10/17 09:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Radium-226	EPA 903.1	<b>0.454 ± 0.340 (0.176)</b>	pCi/L	08/24/17 11:04	13982-63-3		
Radium-228	EPA 904.0	<b>0.722 ± 0.382 (0.662)</b> <b>C:74% T:84%</b>	pCi/L	08/28/17 15:32	15262-20-1	1q	
Total Radium	Total Radium Calculation	<b>1.18 ± 0.722 (0.838)</b>	pCi/L	09/01/17 09:09	7440-14-4		

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: M-4R</b>		<b>Lab ID: 40154817012</b>	Collected: 08/09/17 13:35	Received: 08/10/17 09:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Radium-226	EPA 903.1	<b>0.439 ± 0.446 (0.675)</b>	pCi/L	08/24/17 11:04	13982-63-3		
Radium-228	EPA 904.0	<b>0.250 ± 0.298 (0.627)</b> <b>C:79% T:88%</b>	pCi/L	08/28/17 15:32	15262-20-1	1q	
Total Radium	Total Radium Calculation	<b>0.689 ± 0.744 (1.30)</b>	pCi/L	09/01/17 09:09	7440-14-4		

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: FIELD BLANK</b>		<b>Lab ID: 40154817013</b>	Collected: 08/09/17 14:00	Received: 08/10/17 09:15	Matrix: Water		
PWS:		Site ID:	Sample Type:				
Radium-226	EPA 903.1	<b>-0.124 ± 0.456 (0.985)</b>	pCi/L	08/24/17 11:04	13982-63-3		
Radium-228	EPA 904.0	<b>0.278 ± 0.370 (0.790)</b> <b>C:76% T:81%</b>	pCi/L	08/28/17 15:32	15262-20-1	1q	
Total Radium	Total Radium Calculation	<b>0.278 ± 0.826 (1.78)</b>	pCi/L	09/01/17 09:09	7440-14-4		

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

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QC Batch:	268900	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	40154817003, 40154817004, 40154817005, 40154817006, 40154817007, 40154817008, 40154817009, 40154817010, 40154817011, 40154817012, 40154817013		

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METHOD BLANK:	1323966	Matrix:	Water
Associated Lab Samples:	40154817003, 40154817004, 40154817005, 40154817006, 40154817007, 40154817008, 40154817009, 40154817010, 40154817011, 40154817012, 40154817013		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.180 ± 0.266 (0.572) C:79% T:90%	pCi/L	08/28/17 12:04	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

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QC Batch:	268536	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
Associated Lab Samples:	40154817001, 40154817002, 40154817003, 40154817004, 40154817005, 40154817006, 40154817007, 40154817008, 40154817009, 40154817010, 40154817011, 40154817012, 40154817013		

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METHOD BLANK:	1321791	Matrix:	Water
Associated Lab Samples:	40154817001, 40154817002, 40154817003, 40154817004, 40154817005, 40154817006, 40154817007, 40154817008, 40154817009, 40154817010, 40154817011, 40154817012, 40154817013		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.545 ± 0.466 (0.632) C:NA T:87%	pCi/L	08/24/17 10:12	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

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QC Batch:	268756	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	40154817001, 40154817002		

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METHOD BLANK:	1322998	Matrix:	Water
Associated Lab Samples:	40154817001, 40154817002		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.00208 ± 0.379 (0.884) C:78% T:69%	pCi/L	08/28/17 15:27	

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## QUALIFIERS

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

### DEFINITIONS

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 (%)

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

1q	The Ra-228 LCS recovery was high and outside of the default acceptance criteria for LCS recovery at 150.91%. Samples with Ra-228 activity results below their associated MDC or the MRL are reportable without additional qualification.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
R1	RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: 25216067.17 ALLIANT-COLLUMBIA  
Pace Project No.: 40154817

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40154817001	MW-34A	EPA 3010	264857	EPA 6020	264978
40154817002	MW-33AR	EPA 3010	264857	EPA 6020	264978
40154817003	MW-305	EPA 3010	264857	EPA 6020	264978
40154817004	MW-84A	EPA 3010	264857	EPA 6020	264978
40154817005	MW-301	EPA 3010	264857	EPA 6020	264978
40154817006	MW-302	EPA 3010	264857	EPA 6020	264978
40154817007	MW-306	EPA 3010	264857	EPA 6020	264978
40154817008	MW-307	EPA 3010	264857	EPA 6020	264978
40154817009	MW-303	EPA 3010	264857	EPA 6020	264978
40154817010	MW-304	EPA 3010	264857	EPA 6020	264978
40154817011	MW-308	EPA 3010	264857	EPA 6020	264978
40154817012	M-4R	EPA 3010	264857	EPA 6020	264978
40154817013	FIELD BLANK	EPA 3010	264857	EPA 6020	264978
40154817001	MW-34A	EPA 7470	265024	EPA 7470	265083
40154817002	MW-33AR	EPA 7470	265024	EPA 7470	265083
40154817003	MW-305	EPA 7470	265024	EPA 7470	265083
40154817004	MW-84A	EPA 7470	265024	EPA 7470	265083
40154817005	MW-301	EPA 7470	265024	EPA 7470	265083
40154817006	MW-302	EPA 7470	265024	EPA 7470	265083
40154817007	MW-306	EPA 7470	265024	EPA 7470	265083
40154817008	MW-307	EPA 7470	265024	EPA 7470	265083
40154817009	MW-303	EPA 7470	265024	EPA 7470	265083
40154817010	MW-304	EPA 7470	265024	EPA 7470	265083
40154817011	MW-308	EPA 7470	265024	EPA 7470	265083
40154817012	M-4R	EPA 7470	265024	EPA 7470	265083
40154817013	FIELD BLANK	EPA 7470	265024	EPA 7470	265083
40154817001	MW-34A				
40154817002	MW-33AR				
40154817003	MW-305				
40154817004	MW-84A				
40154817005	MW-301				
40154817006	MW-302				
40154817007	MW-306				
40154817008	MW-307				
40154817009	MW-303				
40154817010	MW-304				
40154817011	MW-308				
40154817012	M-4R				
40154817001	MW-34A	EPA 903.1	268536		
40154817002	MW-33AR	EPA 903.1	268536		
40154817003	MW-305	EPA 903.1	268536		
40154817004	MW-84A	EPA 903.1	268536		
40154817005	MW-301	EPA 903.1	268536		
40154817006	MW-302	EPA 903.1	268536		
40154817007	MW-306	EPA 903.1	268536		
40154817008	MW-307	EPA 903.1	268536		
40154817009	MW-303	EPA 903.1	268536		

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40154817010	MW-304	EPA 903.1	268536		
40154817011	MW-308	EPA 903.1	268536		
40154817012	M-4R	EPA 903.1	268536		
40154817013	FIELD BLANK	EPA 903.1	268536		
40154817001	MW-34A	EPA 904.0	268756		
40154817002	MW-33AR	EPA 904.0	268756		
40154817003	MW-305	EPA 904.0	268900		
40154817004	MW-84A	EPA 904.0	268900		
40154817005	MW-301	EPA 904.0	268900		
40154817006	MW-302	EPA 904.0	268900		
40154817007	MW-306	EPA 904.0	268900		
40154817008	MW-307	EPA 904.0	268900		
40154817009	MW-303	EPA 904.0	268900		
40154817010	MW-304	EPA 904.0	268900		
40154817011	MW-308	EPA 904.0	268900		
40154817012	M-4R	EPA 904.0	268900		
40154817013	FIELD BLANK	EPA 904.0	268900		
40154817001	MW-34A	Total Radium Calculation	270299		
40154817002	MW-33AR	Total Radium Calculation	270299		
40154817003	MW-305	Total Radium Calculation	270299		
40154817004	MW-84A	Total Radium Calculation	270299		
40154817005	MW-301	Total Radium Calculation	270299		
40154817006	MW-302	Total Radium Calculation	270299		
40154817007	MW-306	Total Radium Calculation	270299		
40154817008	MW-307	Total Radium Calculation	270299		
40154817009	MW-303	Total Radium Calculation	270299		
40154817010	MW-304	Total Radium Calculation	270299		
40154817011	MW-308	Total Radium Calculation	270299		
40154817012	M-4R	Total Radium Calculation	270299		
40154817013	FIELD BLANK	Total Radium Calculation	270299		
40154817001	MW-34A	SM 2540C	264369		
40154817002	MW-33AR	SM 2540C	264369		
40154817003	MW-305	SM 2540C	264369		
40154817004	MW-84A	SM 2540C	264504		
40154817005	MW-301	SM 2540C	264504		
40154817006	MW-302	SM 2540C	264504		
40154817007	MW-306	SM 2540C	264504		
40154817008	MW-307	SM 2540C	264504		
40154817009	MW-303	SM 2540C	264504		
40154817010	MW-304	SM 2540C	264504		
40154817011	MW-308	SM 2540C	264778		
40154817012	M-4R	SM 2540C	264778		
40154817013	FIELD BLANK	SM 2540C	264778		
40154817001	MW-34A	EPA 9040	264488		
40154817002	MW-33AR	EPA 9040	264488		

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.17 ALLIANT-COLLUMBIA

Pace Project No.: 40154817

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40154817003	MW-305	EPA 9040	264488		
40154817004	MW-84A	EPA 9040	264488		
40154817005	MW-301	EPA 9040	264488		
40154817006	MW-302	EPA 9040	264488		
40154817007	MW-306	EPA 9040	264488		
40154817008	MW-307	EPA 9040	264488		
40154817009	MW-303	EPA 9040	264488		
40154817010	MW-304	EPA 9040	264488		
40154817011	MW-308	EPA 9040	264488		
40154817012	M-4R	EPA 9040	264488		
40154817013	FIELD BLANK	EPA 9040	265022		
40154817001	MW-34A	EPA 300.0	264732		
40154817002	MW-33AR	EPA 300.0	264732		
40154817003	MW-305	EPA 300.0	264732		
40154817004	MW-84A	EPA 300.0	264732		
40154817005	MW-301	EPA 300.0	264732		
40154817006	MW-302	EPA 300.0	264732		
40154817007	MW-306	EPA 300.0	264732		
40154817008	MW-307	EPA 300.0	264732		
40154817009	MW-303	EPA 300.0	264732		
40154817010	MW-304	EPA 300.0	264732		
40154817011	MW-308	EPA 300.0	264732		
40154817012	M-4R	EPA 300.0	264732		
40154817013	FIELD BLANK	EPA 300.0	264732		

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UPPER MIDWEST REGION

MN: 612-607-1700 WI: 920-469-2436

Page 1 of 1



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# CHAIN OF CUSTODY

*[Handwritten Signature]*

08/15/17

A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?  
 (YES/NO)  
 PRESERVATION  
 (CODE)\*

Company Name: SCS  
 Branch/Location: Madison, WI  
 Project Contact: Mrs. Blodgett  
 Phone: 608 216-9369  
 Project Number: 25216067.17  
 Project Name: Alliant - Columbia  
 Project State: WI  
 Sampled By (Print): Paul A. Gruber  
 Sampled By (Sign): [Signature]  
 PO #: \_\_\_\_\_

**Data Package Options**  
 EPA Level III  
 EPA Level IV  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air W = Water  
 B = Biota DW = Drinking Water  
 C = Charcoal GW = Ground Water  
 O = Oil SW = Surface Water  
 S = Soil WW = Waste Water  
 SI = Sludge WP = Wipe

FACE LAB #	CLIENT FIELD ID	DATE	COLLECTION TIME	MATRIX
001	MW-344	8-16-15	15:45	GUW
002	MW-33AR	16:40		
003	MW-3D5	18:10		
004	MW-84A	8-31-16	10:05	
005	MW-301	11:00		
006	MW-302	12:15		
007	MW-306	14:10		
008	MW-307	15:30		
009	MW-303	16:35		
010	MW-304	18:00		
011	MW-308	8-17-17	12:30	
012	M-4	13:35		
013	Field Blank	14:10	01E	

### Analyses Requested

Y/N	Pick Letter	Analysis
D	N/A	Radium 226
D		Radium 228
D		B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Ki, Hg, Mo, Se, Th,
D		Ph, CL, SO4, F, TO5

**Quote #:** \_\_\_\_\_  
**Mail To Contact:** \_\_\_\_\_  
**Mail To Company:** \_\_\_\_\_  
**Mail To Address:** \_\_\_\_\_  
**Invoice To Contact:** \_\_\_\_\_  
**Invoice To Company:** \_\_\_\_\_  
**Invoice To Address:** \_\_\_\_\_  
**Invoice To Phone:** \_\_\_\_\_  
**CLIENT COMMENTS**  
 3-250mlp ADD 2-16p

**Relinquished By:** Paul A. Gruber **Date/Time:** 8-9-17 14:00  
**Relinquished By:** [Signature] **Date/Time:** 8/10/17 0915  
**Relinquished By:** [Signature] **Date/Time:** 8/15/17 0915  
**Relinquished By:** [Signature] **Date/Time:** 8/15/17 0915  
**Relinquished By:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_  
**Relinquished By:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_  
**Relinquished By:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_

**FACE Project No.** 40152817  
**Receipt Temp =** RO1 °C  
**Sample Receipt pH** OK/Adjusted  
**Cooler Custody Seal Present / Not Present** Intact / Not Intact  
**Version 6.0 08/14/06**

# Pace Container Order #265168

0154817

**Addresses**

Order By :	Ship To :	Return To:
Company <u>SCS ENGINEERS</u>	Company <u>SCS ENGINEERS (Pace Analytical)</u>	Company <u>Pace Analytical Green Bay</u>
Contact <u>Blodgett, Meghan</u>	Contact <u>Paul Grover</u>	Contact <u>Milewsky, Dan</u>
Email <u>mbloodgett@scsengineers.com</u>	Email <u>pgrover@scsengineers.com</u>	Email <u>dan.milewsky@pacelabs.com</u>
Address <u>2830 Dairy Drive</u>	Address <u>2830 Dairy Drive</u>	Address <u>1241 Bellevue Street</u>
Address 2 _____	Address 2 _____	Address 2 <u>Suite 9</u>
City <u>Madison</u>	City <u>Madison</u>	City <u>Green Bay</u>
State <u>WI</u> Zip <u>53718</u>	State <u>WI</u> Zip <u>53718</u>	State <u>WI</u> Zip <u>54302</u>
Phone <u>608-216-7362</u>	Phone <u>608-216-7362</u>	Phone <u>(920)469-2436</u>

**Info**

<b>Project Name</b> <u>CCR Rule Alliant Columbia (25216067)</u>	<b>Due Date</b> <u>08/01/2017</u>	<b>Profile</b> _____	<b>Quote</b> _____
<b>Project Manager</b> <u>Milewsky, Dan</u>	<b>Return</b> _____	<b>Carrier</b> <u>Most Economical</u>	<b>Location</b> _____

<b>Trip Blanks</b> <input type="checkbox"/> Include Trip Blanks	<b>Bottle Labels</b> <input type="checkbox"/> Blank <input type="checkbox"/> Pre-Printed No Sample IDs <input checked="" type="checkbox"/> Pre-Printed With Sample IDs	<b>Bottles</b> <input type="checkbox"/> Boxed Cases <input type="checkbox"/> Individually Wrapped <input checked="" type="checkbox"/> Grouped By Sample
<b>Return Shipping Labels</b> <input type="checkbox"/> No Shipper Number <input type="checkbox"/> With Shipper Number	<b>Misc</b> <input type="checkbox"/> Sampling Instructions <input type="checkbox"/> Custody Seal <input type="checkbox"/> Temp. Blanks <input checked="" type="checkbox"/> Coolers _____ <input type="checkbox"/> Syringes _____	
<b>COC Options</b> <input checked="" type="checkbox"/> Number of Blanks <u>2</u> <input type="checkbox"/> Pre-Printed _____	<input type="checkbox"/> Extra Bubble Wrap <input type="checkbox"/> Short Hold/Rush Stickers <input checked="" type="checkbox"/> DI Water <u>3 Liter(s)</u> <input type="checkbox"/> USDA Regulated Soils	

# of Samples	Matrix	Test	Container	Total	# of QC	Lot #	Notes
14	WT	Radium 226	1L plastic HNO3	14	0	061017-2AJN	
14	WT	Radium 228	1L plastic HNO3	14	0	061017-2AJN	
14	WT	pH	250mL plastic unpres	14	0	M-7-123-07BB	
14	WT	TDS, Cl, F, SO4	250mL plastic unpres	14	0	M-7-123-07BB	
14	WT	Metals	250mL plastic w/HNO3	14	0	M-7-095-03BB	

**Hazard Shipping Placard In Place : NA**

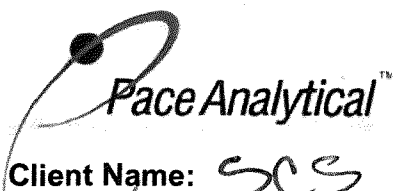
- \*Sample receiving hours are Monday through Friday 8:00 am to 6:00 pm and Saturday from 9:00 am to 12:00 pm unless special arrangements are made with your project manager.
- \*Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.
- \*Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage and disposal.
- \*Payment term are net 30 days.
- \*Please include the proposal number on the chain of custody to insure proper billing.

**Sample Notes**

Metals = B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li Hg, Mo, Se, Ti, Hg  
 ALL SAMPLES UNFILTERED

<b>Ship Date :</b>	<u>07/31/2017</u>
<b>Prepared By:</b>	<u>Mai Yer Her</u>
<b>Verified By:</b>	_____





Sample Condition Upon Receipt

Pace Analytical Services, LLC. - Green Bay WI  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302

Project #:

WO#: 40154817

Client Name: SCS



Courier:  Fed Ex  UPS  Client  Pace Other:

Tracking #: 787425751484, 787425751473, 787425751490

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

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used: NA Type of Ice:  Wet  Blue  Dry  None  Samples on ice, cooling process has begun

Cooler Temperature: Uncorr: ICorr: ROI Biological Tissue is Frozen:  yes  no

Temp Blank Present:  yes  no

Person examining contents:  
Date: 8/10/17  
Initials: KJ

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C.

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input 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. 11p are not Pace containers
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	KJ 8/10/17
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. old ID on samples is M-4R. Time matches
-Includes date/time/ID/Analysis Matrix:	W	
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> NaOH <input type="checkbox"/> NaOH + ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed: KJ Lab Std #ID of preservative: Date/Time:
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments   
Person Contacted: Date/Time:  
Comments/ Resolution:

Project Manager Review: RMR for DM Date: 8/10/17

## A5 Round 5 Background Sampling, Analytical Laboratory Report

November 13, 2017

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 25216067.17 COLUMBIA CCR  
Pace Project No.: 40159490

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 26, 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,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS  
Kyle Kramer, SCS ENGINEERS  
Jeff Maxted, ALLIANT ENERGY  
Marc Morandi, ALLIANT ENERGY



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

08/30/2019 - Classification: Internal - ECRM6700182

## CERTIFICATIONS

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

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### 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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### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182

### SAMPLE SUMMARY

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40159490001	MW 301	Water	10/23/17 12:25	10/26/17 09:55
40159490002	MW 302	Water	10/24/17 16:20	10/26/17 09:55
40159490003	MW 303	Water	10/23/17 17:30	10/26/17 09:55
40159490004	MW 304	Water	10/23/17 16:30	10/26/17 09:55
40159490005	MW 305	Water	10/24/17 10:35	10/26/17 09:55
40159490006	MW 306	Water	10/23/17 13:40	10/26/17 09:55
40159490007	MW 307	Water	10/23/17 15:00	10/26/17 09:55
40159490008	MW 308	Water	10/23/17 15:40	10/26/17 09:55
40159490009	FIELD BLANK	Water	10/24/17 16:45	10/26/17 09:55
40159490010	M4R	Water	10/24/17 09:55	10/26/17 09:55
40159490011	MW33AR	Water	10/24/17 13:40	10/26/17 09:55
40159490012	MW34A	Water	10/24/17 15:25	10/26/17 09:55
40159490013	MW84A	Water	10/24/17 14:30	10/26/17 09:55

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 25216067.17 COLUMBIA CCR  
Pace Project No.: 40159490

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40159490001	MW 301	EPA 6020	DS1	2	PASI-G
			RMW	7	PASI-G
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
40159490002	MW 302	EPA 6020	DS1	2	PASI-G
			RMW	7	PASI-G
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
40159490003	MW 303	EPA 6020	DS1	2	PASI-G
			RMW	7	PASI-G
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
40159490004	MW 304	EPA 6020	DS1	2	PASI-G
			RMW	7	PASI-G
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
40159490005	MW 305	EPA 6020	DS1	2	PASI-G
			RMW	7	PASI-G
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
40159490006	MW 306	EPA 6020	DS1	14	PASI-G
			EPA 7470	AJT	1
			RMW	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
40159490007	MW 307	EPA 6020	DS1	14	PASI-G
			EPA 7470	AJT	1
			RMW	7	PASI-G

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40159490008	MW 308	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			RMW	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		40159490009	FIELD BLANK	EPA 9040	ALY
EPA 300.0	HMB			3	PASI-G
EPA 6020	DS1			14	PASI-G
EPA 7470	AJT			1	PASI-G
EPA 903.1	KAC			1	PASI-PA
EPA 904.0	JLW			1	PASI-PA
Total Radium Calculation	RMK			1	PASI-PA
SM 2540C	TMK			1	PASI-G
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G
EPA 6020	DS1			2	PASI-G
	RMW			7	PASI-G
SM 2540C	TMK			1	PASI-G
EPA 9040	ALY			1	PASI-G
40159490011	MW33AR	EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	2	PASI-G
			RMW	7	PASI-G
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
40159490012	MW34A	EPA 6020	DS1	2	PASI-G
			RMW	7	PASI-G
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	2	PASI-G

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40159490013	MW84A	EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	2	PASI-G
			RMW	7	PASI-G
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

**Sample: MW 301**      **Lab ID: 40159490001**      Collected: 10/23/17 12:25      Received: 10/26/17 09:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020      Preparation Method: EPA 3010							
Boron	<b>34.3</b>	ug/L	11.0	3.3	1	10/31/17 10:40	11/04/17 04:43	7440-42-8	
Calcium	<b>87200</b>	ug/L	250	69.8	1	10/31/17 10:40	11/04/17 04:43	7440-70-2	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.37</b>	Std. Units			1		10/23/17 12:25		
Field Specific Conductance	<b>561</b>	umhos/cm			1		10/23/17 12:25		
Oxygen, Dissolved	<b>1.1</b>	mg/L			1		10/23/17 12:25	7782-44-7	
REDOX	<b>204</b>	mV			1		10/23/17 12:25		
Turbidity	<b>1.52</b>	NTU			1		10/23/17 12:25		
Static Water Level	<b>785.89</b>	feet			1		10/23/17 12:25		
Temperature, Water (C)	<b>11.1</b>	deg C			1		10/23/17 12:25		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>362</b>	mg/L	20.0	8.7	1		10/30/17 17:46		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.3</b>	Std. Units	0.10	0.010	1		10/31/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>4.0</b>	mg/L	2.0	0.50	1		11/08/17 13:03	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		11/08/17 13:03	16984-48-8	
Sulfate	<b>27.5</b>	mg/L	3.0	1.0	1		11/08/17 13:03	14808-79-8	

**Sample: MW 302**      **Lab ID: 40159490002**      Collected: 10/24/17 16:20      Received: 10/26/17 09:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020      Preparation Method: EPA 3010							
Boron	<b>691</b>	ug/L	11.0	3.3	1	10/31/17 10:40	11/04/17 04:50	7440-42-8	
Calcium	<b>94400</b>	ug/L	250	69.8	1	10/31/17 10:40	11/04/17 04:50	7440-70-2	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>8.23</b>	Std. Units			1		10/24/17 16:20		
Field Specific Conductance	<b>596</b>	umhos/cm			1		10/24/17 16:20		
Oxygen, Dissolved	<b>8.7</b>	mg/L			1		10/24/17 16:20	7782-44-7	
REDOX	<b>220</b>	mV			1		10/24/17 16:20		
Turbidity	<b>2.61</b>	NTU			1		10/24/17 16:20		
Static Water Level	<b>785.94</b>	feet			1		10/24/17 16:20		
Temperature, Water (C)	<b>11.4</b>	deg C			1		10/24/17 16:20		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>446</b>	mg/L	20.0	8.7	1		10/31/17 14:43		

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067.17 COLUMBIA CCR  
Pace Project No.: 40159490

Sample: MW 302 Lab ID: 40159490002 Collected: 10/24/17 16:20 Received: 10/26/17 09:55 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>9040 pH</b> Analytical Method: EPA 9040									
pH	7.2	Std. Units	0.10	0.010	1		10/31/17 10:55		H6
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Chloride	6.9	mg/L	2.0	0.50	1		11/08/17 13:34	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		11/08/17 13:34	16984-48-8	
Sulfate	78.4	mg/L	15.0	5.0	5		11/08/17 18:09	14808-79-8	

Sample: MW 303 Lab ID: 40159490003 Collected: 10/23/17 17:30 Received: 10/26/17 09:55 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Boron	1870	ug/L	11.0	3.3	1	11/01/17 07:05	11/06/17 22:37	7440-42-8	
Calcium	8850	ug/L	250	69.8	1	11/01/17 07:05	11/04/17 09:14	7440-70-2	
<b>Field Data</b> Analytical Method:									
Field pH	9.2	Std. Units			1		10/23/17 17:30		
Field Specific Conductance	1093	umhos/cm			1		10/23/17 17:30		
Oxygen, Dissolved	5.4	mg/L			1		10/23/17 17:30	7782-44-7	
REDOX	285	mV			1		10/23/17 17:30		
Turbidity	5.67	NTU			1		10/23/17 17:30		
Static Water Level	783.92	feet			1		10/23/17 17:30		
Temperature, Water (C)	12.3	deg C			1		10/23/17 17:30		
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C									
Total Dissolved Solids	806	mg/L	20.0	8.7	1		10/30/17 17:46		
<b>9040 pH</b> Analytical Method: EPA 9040									
pH	9.3	Std. Units	0.10	0.010	1		10/31/17 10:55		H6
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Chloride	8.3J	mg/L	10.0	2.5	5		11/08/17 18:19	16887-00-6	D3
Fluoride	<0.50	mg/L	1.5	0.50	5		11/08/17 18:19	16984-48-8	D3
Sulfate	467	mg/L	60.0	20.0	20		11/09/17 13:28	14808-79-8	

Sample: MW 304 Lab ID: 40159490004 Collected: 10/23/17 16:30 Received: 10/26/17 09:55 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Boron	732	ug/L	11.0	3.3	1	11/01/17 07:05	11/06/17 22:45	7440-42-8	
Calcium	78300	ug/L	250	69.8	1	11/01/17 07:05	11/04/17 09:22	7440-70-2	

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### ANALYTICAL RESULTS

Project: 25216067.17 COLUMBIA CCR  
Pace Project No.: 40159490

<b>Sample: MW 304</b>									
<b>Lab ID: 40159490004</b>									
Collected: 10/23/17 16:30 Received: 10/26/17 09:55 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Field Data</b>									
Analytical Method:									
Field pH	7.78	Std. Units			1		10/23/17 16:30		
Field Specific Conductance	628	umhos/cm			1		10/23/17 16:30		
Oxygen, Dissolved	0.3	mg/L			1		10/23/17 16:30	7782-44-7	
REDOX	94	mV			1		10/23/17 16:30		
Turbidity	6.2	NTU			1		10/23/17 16:30		
Static Water Level	788.97	feet			1		10/23/17 16:30		
Temperature, Water (C)	17.4	deg C			1		10/23/17 16:30		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C									
Total Dissolved Solids	390	mg/L	20.0	8.7	1		10/30/17 17:46		
<b>9040 pH</b>									
Analytical Method: EPA 9040									
pH	7.5	Std. Units	0.10	0.010	1		10/31/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>									
Analytical Method: EPA 300.0									
Chloride	39.5	mg/L	2.0	0.50	1		11/08/17 13:56	16887-00-6	
Fluoride	0.13J	mg/L	0.30	0.10	1		11/08/17 13:56	16984-48-8	
Sulfate	57.2	mg/L	3.0	1.0	1		11/08/17 13:56	14808-79-8	

<b>Sample: MW 305</b>									
<b>Lab ID: 40159490005</b>									
Collected: 10/24/17 10:35 Received: 10/26/17 09:55 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Boron	2200	ug/L	11.0	3.3	1	11/01/17 07:05	11/06/17 22:52	7440-42-8	
Calcium	94100	ug/L	250	69.8	1	11/01/17 07:05	11/04/17 09:29	7440-70-2	
<b>Field Data</b>									
Analytical Method:									
Field pH	8.48	Std. Units			1		10/24/17 10:35		
Field Specific Conductance	630	umhos/cm			1		10/24/17 10:35		
Oxygen, Dissolved	1.3	mg/L			1		10/24/17 10:35	7782-44-7	
REDOX	115	mV			1		10/24/17 10:35		
Turbidity	2.67	NTU			1		10/24/17 10:35		
Static Water Level	788.14	feet			1		10/24/17 10:35		
Temperature, Water (C)	26.7	deg C			1		10/24/17 10:35		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C									
Total Dissolved Solids	490	mg/L	20.0	8.7	1		10/31/17 14:43		
<b>9040 pH</b>									
Analytical Method: EPA 9040									
pH	8.0	Std. Units	0.10	0.010	1		10/31/17 10:55		H6

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### ANALYTICAL RESULTS

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: MW 305</b> <b>Lab ID: 40159490005</b> Collected: 10/24/17 10:35      Received: 10/26/17 09:55      Matrix: Water									
Analytical Method: EPA 300.0									
Chloride	50.2	mg/L	2.0	0.50	1		11/08/17 14:06	16887-00-6	
Fluoride	0.64	mg/L	0.30	0.10	1		11/08/17 14:06	16984-48-8	
Sulfate	252	mg/L	15.0	5.0	5		11/08/17 18:30	14808-79-8	

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: MW 306</b> <b>Lab ID: 40159490006</b> Collected: 10/23/17 13:40      Received: 10/26/17 09:55      Matrix: Water									
Analytical Method: EPA 6020      Preparation Method: EPA 3010									
Antimony	0.17J	ug/L	1.0	0.15	1	11/01/17 07:05	11/06/17 22:59	7440-36-0	B
Arsenic	0.29J	ug/L	1.0	0.28	1	11/01/17 07:05	11/06/17 22:59	7440-38-2	
Barium	16.1	ug/L	1.1	0.34	1	11/01/17 07:05	11/06/17 22:59	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	11/01/17 07:05	11/06/17 22:59	7440-41-7	
Boron	145	ug/L	11.0	3.3	1	11/01/17 07:05	11/06/17 22:59	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	11/01/17 07:05	11/06/17 22:59	7440-43-9	
Calcium	90700	ug/L	250	69.8	1	11/01/17 07:05	11/04/17 09:37	7440-70-2	
Chromium	2.9J	ug/L	3.4	1.0	1	11/01/17 07:05	11/04/17 09:37	7440-47-3	
Cobalt	0.20J	ug/L	1.0	0.085	1	11/01/17 07:05	11/04/17 09:37	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	11/01/17 07:05	11/06/17 22:59	7439-92-1	
Lithium	8.6	ug/L	1.0	0.14	1	11/01/17 07:05	11/06/17 22:59	7439-93-2	
Molybdenum	9.6	ug/L	1.5	0.44	1	11/01/17 07:05	11/06/17 22:59	7439-98-7	
Selenium	0.84J	ug/L	1.1	0.32	1	11/01/17 07:05	11/06/17 22:59	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/01/17 07:05	11/06/17 22:59	7440-28-0	

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>7470 Mercury</b> Analytical Method: EPA 7470      Preparation Method: EPA 7470									
Mercury	<0.13	ug/L	0.42	0.13	1	11/03/17 10:45	11/06/17 09:13	7439-97-6	

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Field Data</b> Analytical Method:									
Field pH	7.7	Std. Units			1		10/23/17 13:40		
Field Specific Conductance	477	umhos/cm			1		10/23/17 13:40		
Oxygen, Dissolved	5	mg/L			1		10/23/17 13:40	7782-44-7	
REDOX	234	mV			1		10/23/17 13:40		
Turbidity	32.64	NTU			1		10/23/17 13:40		
Static Water Level	783.97	feet			1		10/23/17 13:40		
Temperature, Water (C)	13.4	deg C			1		10/23/17 13:40		

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C									
Total Dissolved Solids	310	mg/L	20.0	8.7	1		10/30/17 17:46		

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>9040 pH</b> Analytical Method: EPA 9040									
pH	7.4	Std. Units	0.10	0.010	1		10/31/17 10:55		H6

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### ANALYTICAL RESULTS

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

**Sample: MW 306**      **Lab ID: 40159490006**      Collected: 10/23/17 13:40      Received: 10/26/17 09:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>1.0J</b>	mg/L	2.0	0.50	1		11/08/17 14:17	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		11/08/17 14:17	16984-48-8	
Sulfate	<b>8.7</b>	mg/L	3.0	1.0	1		11/08/17 14:17	14808-79-8	

**Sample: MW 307**      **Lab ID: 40159490007**      Collected: 10/23/17 15:00      Received: 10/26/17 09:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020      Preparation Method: EPA 3010							
Antimony	<b>&lt;0.15</b>	ug/L	1.0	0.15	1	11/01/17 07:05	11/06/17 23:07	7440-36-0	
Arsenic	<b>3.0</b>	ug/L	1.0	0.28	1	11/01/17 07:05	11/06/17 23:07	7440-38-2	
Barium	<b>15.1</b>	ug/L	1.1	0.34	1	11/01/17 07:05	11/06/17 23:07	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	11/01/17 07:05	11/06/17 23:07	7440-41-7	
Boron	<b>434</b>	ug/L	11.0	3.3	1	11/01/17 07:05	11/06/17 23:07	7440-42-8	
Cadmium	<b>&lt;0.081</b>	ug/L	1.0	0.081	1	11/01/17 07:05	11/06/17 23:07	7440-43-9	
Calcium	<b>83700</b>	ug/L	250	69.8	1	11/01/17 07:05	11/04/17 09:59	7440-70-2	
Chromium	<b>&lt;1.0</b>	ug/L	3.4	1.0	1	11/01/17 07:05	11/04/17 09:59	7440-47-3	
Cobalt	<b>0.43J</b>	ug/L	1.0	0.085	1	11/01/17 07:05	11/04/17 09:59	7440-48-4	
Lead	<b>&lt;0.20</b>	ug/L	1.0	0.20	1	11/01/17 07:05	11/06/17 23:07	7439-92-1	
Lithium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	11/01/17 07:05	11/06/17 23:07	7439-93-2	
Molybdenum	<b>1.5J</b>	ug/L	1.5	0.44	1	11/01/17 07:05	11/06/17 23:07	7439-98-7	B
Selenium	<b>&lt;0.32</b>	ug/L	1.1	0.32	1	11/01/17 07:05	11/06/17 23:07	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	11/01/17 07:05	11/06/17 23:07	7440-28-0	

<b>7470 Mercury</b>		Analytical Method: EPA 7470      Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	11/03/17 10:45	11/06/17 09:15	7439-97-6	

<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.75</b>	Std. Units			1		10/23/17 15:00		
Field Specific Conductance	<b>591</b>	umhos/cm			1		10/23/17 15:00		
Oxygen, Dissolved	<b>0.3</b>	mg/L			1		10/23/17 15:00	7782-44-7	
REDOX	<b>101</b>	mV			1		10/23/17 15:00		
Turbidity	<b>3.87</b>	NTU			1		10/23/17 15:00		
Static Water Level	<b>784.79</b>	feet			1		10/23/17 15:00		
Temperature, Water (C)	<b>14.5</b>	deg C			1		10/23/17 15:00		

<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>362</b>	mg/L	20.0	8.7	1		10/30/17 17:47		

<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.4</b>	Std. Units	0.10	0.010	1		10/31/17 10:55		H6

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### ANALYTICAL RESULTS

Project: 25216067.17 COLUMBIA CCR  
Pace Project No.: 40159490

**Sample: MW 307**      **Lab ID: 40159490007**      Collected: 10/23/17 15:00      Received: 10/26/17 09:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	12.9	mg/L	10.0	2.5	5		11/09/17 10:29	16887-00-6	
Fluoride	<0.50	mg/L	1.5	0.50	5		11/09/17 10:29	16984-48-8	D3
Sulfate	10.7J	mg/L	15.0	5.0	5		11/09/17 10:29	14808-79-8	D3

**Sample: MW 308**      **Lab ID: 40159490008**      Collected: 10/23/17 15:40      Received: 10/26/17 09:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020      Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	11/01/17 07:05	11/06/17 23:14	7440-36-0	
Arsenic	5.1	ug/L	1.0	0.28	1	11/01/17 07:05	11/06/17 23:14	7440-38-2	
Barium	86.6	ug/L	1.1	0.34	1	11/01/17 07:05	11/06/17 23:14	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	11/01/17 07:05	11/06/17 23:14	7440-41-7	
Boron	707	ug/L	11.0	3.3	1	11/01/17 07:05	11/06/17 23:14	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	11/01/17 07:05	11/06/17 23:14	7440-43-9	
Calcium	134000	ug/L	250	69.8	1	11/01/17 07:05	11/04/17 10:07	7440-70-2	
Chromium	4.0	ug/L	3.4	1.0	1	11/01/17 07:05	11/04/17 10:07	7440-47-3	
Cobalt	0.85J	ug/L	1.0	0.085	1	11/01/17 07:05	11/04/17 10:07	7440-48-4	
Lead	1.2	ug/L	1.0	0.20	1	11/01/17 07:05	11/06/17 23:14	7439-92-1	
Lithium	0.96J	ug/L	1.0	0.14	1	11/01/17 07:05	11/06/17 23:14	7439-93-2	
Molybdenum	1.2J	ug/L	1.5	0.44	1	11/01/17 07:05	11/06/17 23:14	7439-98-7	B
Selenium	0.35J	ug/L	1.1	0.32	1	11/01/17 07:05	11/06/17 23:14	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/01/17 07:05	11/06/17 23:14	7440-28-0	

<b>7470 Mercury</b>		Analytical Method: EPA 7470      Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	11/03/17 10:45	11/06/17 09:22	7439-97-6	

<b>Field Data</b>		Analytical Method:							
Field pH	7.51	Std. Units			1		10/23/17 15:40		
Field Specific Conductance	810	umhos/cm			1		10/23/17 15:40		
Oxygen, Dissolved	0.2	mg/L			1		10/23/17 15:40	7782-44-7	
REDOX	100	mV			1		10/23/17 15:40		
Turbidity	38.62	NTU			1		10/23/17 15:40		
Static Water Level	784.17	feet			1		10/23/17 15:40		
Temperature, Water (C)	14.6	deg C			1		10/23/17 15:40		

<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	486	mg/L	20.0	8.7	1		10/30/17 17:47		

<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	7.3	Std. Units	0.10	0.010	1		10/31/17 10:55		H6

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### ANALYTICAL RESULTS

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

**Sample: MW 308**      **Lab ID: 40159490008**      Collected: 10/23/17 15:40      Received: 10/26/17 09:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>5.6J</b>	mg/L	10.0	2.5	5		11/09/17 10:39	16887-00-6	D3
Fluoride	<b>&lt;0.50</b>	mg/L	1.5	0.50	5		11/09/17 10:39	16984-48-8	D3
Sulfate	<b>&lt;5.0</b>	mg/L	15.0	5.0	5		11/09/17 10:39	14808-79-8	D3

**Sample: FIELD BLANK**      **Lab ID: 40159490009**      Collected: 10/24/17 16:45      Received: 10/26/17 09:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020      Preparation Method: EPA 3010							
Antimony	<b>0.17J</b>	ug/L	1.0	0.15	1	11/01/17 07:05	11/06/17 21:08	7440-36-0	B
Arsenic	<b>&lt;0.28</b>	ug/L	1.0	0.28	1	11/01/17 07:05	11/06/17 21:08	7440-38-2	
Barium	<b>&lt;0.34</b>	ug/L	1.1	0.34	1	11/01/17 07:05	11/06/17 21:08	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	11/01/17 07:05	11/06/17 21:08	7440-41-7	
Boron	<b>&lt;3.3</b>	ug/L	11.0	3.3	1	11/01/17 07:05	11/06/17 21:08	7440-42-8	
Cadmium	<b>&lt;0.081</b>	ug/L	1.0	0.081	1	11/01/17 07:05	11/06/17 21:08	7440-43-9	
Calcium	<b>&lt;69.8</b>	ug/L	250	69.8	1	11/01/17 07:05	11/04/17 07:15	7440-70-2	
Chromium	<b>&lt;1.0</b>	ug/L	3.4	1.0	1	11/01/17 07:05	11/04/17 07:15	7440-47-3	
Cobalt	<b>&lt;0.085</b>	ug/L	1.0	0.085	1	11/01/17 07:05	11/04/17 07:15	7440-48-4	
Lead	<b>&lt;0.20</b>	ug/L	1.0	0.20	1	11/01/17 07:05	11/06/17 21:08	7439-92-1	
Lithium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	11/01/17 07:05	11/06/17 21:08	7439-93-2	
Molybdenum	<b>&lt;0.44</b>	ug/L	1.5	0.44	1	11/01/17 07:05	11/06/17 21:08	7439-98-7	
Selenium	<b>&lt;0.32</b>	ug/L	1.1	0.32	1	11/01/17 07:05	11/06/17 21:08	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	11/01/17 07:05	11/06/17 21:08	7440-28-0	

<b>7470 Mercury</b>		Analytical Method: EPA 7470      Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	11/03/17 10:45	11/06/17 09:24	7439-97-6	

<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>&lt;8.7</b>	mg/L	20.0	8.7	1		10/31/17 14:43		

<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>6.3</b>	Std. Units	0.10	0.010	1		10/31/17 10:55		H6

<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>&lt;0.50</b>	mg/L	2.0	0.50	1		11/09/17 10:50	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		11/09/17 10:50	16984-48-8	
Sulfate	<b>&lt;1.0</b>	mg/L	3.0	1.0	1		11/09/17 10:50	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

**Sample: M4R**      **Lab ID: 40159490010**      Collected: 10/24/17 09:55      Received: 10/26/17 09:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Boron	<b>1910</b>	ug/L	11.0	3.3	1	11/01/17 07:05	11/06/17 23:22	7440-42-8	
Calcium	<b>67100</b>	ug/L	250	69.8	1	11/01/17 07:05	11/04/17 10:14	7440-70-2	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.52</b>	Std. Units			1		10/24/17 09:55		
Field Specific Conductance	<b>612</b>	umhos/cm			1		10/24/17 09:55		
Oxygen, Dissolved	<b>0.6</b>	mg/L			1		10/24/17 09:55	7782-44-7	
REDOX	<b>170</b>	mV			1		10/24/17 09:55		
Turbidity	<b>2.71</b>	NTU			1		10/24/17 09:55		
Static Water Level	<b>788</b>	feet			1		10/24/17 09:55		
Temperature, Water (C)	<b>15.8</b>	deg C			1		10/24/17 09:55		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>474</b>	mg/L	20.0	8.7	1		10/31/17 14:43		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.5</b>	Std. Units	0.10	0.010	1		10/31/17 10:55		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>49.3</b>	mg/L	10.0	2.5	5		11/08/17 18:40	16887-00-6	
Fluoride	<b>&lt;0.50</b>	mg/L	1.5	0.50	5		11/08/17 18:40	16984-48-8	D3
Sulfate	<b>187</b>	mg/L	15.0	5.0	5		11/08/17 18:40	14808-79-8	

**Sample: MW33AR**      **Lab ID: 40159490011**      Collected: 10/24/17 13:40      Received: 10/26/17 09:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Boron	<b>678</b>	ug/L	11.0	3.3	1	11/01/17 07:05	11/06/17 23:29	7440-42-8	
Calcium	<b>98200</b>	ug/L	250	69.8	1	11/01/17 07:05	11/04/17 10:22	7440-70-2	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.81</b>	Std. Units			1		10/24/17 13:40		
Field Specific Conductance	<b>804</b>	umhos/cm			1		10/24/17 13:40		
Oxygen, Dissolved	<b>9.5</b>	mg/L			1		10/24/17 13:40	7782-44-7	
REDOX	<b>191</b>	mV			1		10/24/17 13:40		
Turbidity	<b>3.24</b>	NTU			1		10/24/17 13:40		
Static Water Level	<b>784.13</b>	feet			1		10/24/17 13:40		
Temperature, Water (C)	<b>12.5</b>	deg C			1		10/24/17 13:40		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>606</b>	mg/L	20.0	8.7	1		10/31/17 14:44		

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**ANALYTICAL RESULTS**

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

Sample: MW33AR Lab ID: 40159490011 Collected: 10/24/17 13:40 Received: 10/26/17 09:55 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>9040 pH</b> Analytical Method: EPA 9040									
pH	7.7	Std. Units	0.10	0.010	1		11/06/17 10:45		H6
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Chloride	119	mg/L	10.0	2.5	5		11/09/17 11:43	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		11/09/17 11:11	16984-48-8	
Sulfate	175	mg/L	15.0	5.0	5		11/09/17 11:43	14808-79-8	

Sample: MW34A Lab ID: 40159490012 Collected: 10/24/17 15:25 Received: 10/26/17 09:55 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Boron	208	ug/L	11.0	3.3	1	11/01/17 07:05	11/06/17 23:52	7440-42-8	
Calcium	69600	ug/L	250	69.8	1	11/01/17 07:05	11/04/17 10:29	7440-70-2	
<b>Field Data</b> Analytical Method:									
Field pH	7.67	Std. Units			1		10/24/17 15:25		
Field Specific Conductance	454	umhos/cm			1		10/24/17 15:25		
Oxygen, Dissolved	9.9	mg/L			1		10/24/17 15:25	7782-44-7	
REDOX	207	mV			1		10/24/17 15:25		
Turbidity	14.34	NTU			1		10/24/17 15:25		
Static Water Level	784.50	feet			1		10/24/17 15:25		
Temperature, Water (C)	11.7	deg C			1		10/24/17 15:25		
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C									
Total Dissolved Solids	340	mg/L	20.0	8.7	1		10/31/17 14:44		
<b>9040 pH</b> Analytical Method: EPA 9040									
pH	7.7	Std. Units	0.10	0.010	1		11/06/17 10:45		H6
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Chloride	7.6	mg/L	2.0	0.50	1		11/09/17 11:22	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		11/09/17 11:22	16984-48-8	
Sulfate	98.0	mg/L	15.0	5.0	5		11/10/17 05:25	14808-79-8	

Sample: MW84A Lab ID: 40159490013 Collected: 10/24/17 14:30 Received: 10/26/17 09:55 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Boron	13.8	ug/L	11.0	3.3	1	11/01/17 07:05	11/06/17 23:59	7440-42-8	
Calcium	77500	ug/L	250	69.8	1	11/01/17 07:05	11/04/17 10:37	7440-70-2	

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### ANALYTICAL RESULTS

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

**Sample: MW84A**      **Lab ID: 40159490013**      Collected: 10/24/17 14:30      Received: 10/26/17 09:55      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.68</b>	Std. Units			1		10/24/17 14:30		
Field Specific Conductance	<b>491</b>	umhos/cm			1		10/24/17 14:30		
Oxygen, Dissolved	<b>9.3</b>	mg/L			1		10/24/17 14:30	7782-44-7	
REDOX	<b>210</b>	mV			1		10/24/17 14:30		
Turbidity	<b>2.93</b>	NTU			1		10/24/17 14:30		
Static Water Level	<b>785.32</b>	feet			1		10/24/17 14:30		
Temperature, Water (C)	<b>11.1</b>	deg C			1		10/24/17 14:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>314</b>	mg/L	20.0	8.7	1		10/31/17 14:44		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH	<b>7.6</b>	Std. Units	0.10	0.010	1		11/06/17 11:05		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>5.1</b>	mg/L	2.0	0.50	1		11/09/17 11:32	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		11/09/17 11:32	16984-48-8	
Sulfate	<b>2.2J</b>	mg/L	3.0	1.0	1		11/09/17 11:32	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 25216067.17 COLUMBIA CCR  
Pace Project No.: 40159490

QC Batch: 272937 Analysis Method: EPA 7470  
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury  
Associated Lab Samples: 40159490006, 40159490007, 40159490008, 40159490009

METHOD BLANK: 1605932 Matrix: Water  
Associated Lab Samples: 40159490006, 40159490007, 40159490008, 40159490009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	11/06/17 08:52	

LABORATORY CONTROL SAMPLE: 1605933

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.3	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1605934 1605935

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40159478001 Result	Spike Conc.	Spike Conc.	Conc.								
Mercury	ug/L	<0.13	5	5	5	5.9	5.8	119	116	85-115	2	20	M0

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### QUALITY CONTROL DATA

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

QC Batch: 272475 Analysis Method: EPA 6020  
QC Batch Method: EPA 3010 Analysis Description: 6020 MET  
Associated Lab Samples: 40159490001, 40159490002

METHOD BLANK: 1602625 Matrix: Water

Associated Lab Samples: 40159490001, 40159490002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.3	11.0	11/04/17 00:43	
Calcium	ug/L	<69.8	250	11/04/17 00:43	

LABORATORY CONTROL SAMPLE: 1602626

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	500	448	90	80-120	
Calcium	ug/L	5000	4680	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1602627 1602628

Parameter	Units	40159197001		1602627		1602628		% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
Boron	ug/L	159	500	620	625	92	93	75-125	1	20	
Calcium	ug/L	56200	5000	55200	59100	-19	58	75-125	7	20	P6

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### QUALITY CONTROL DATA

Project: 25216067.17 COLUMBIA CCR  
Pace Project No.: 40159490

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QC Batch: 272592 Analysis Method: EPA 6020  
QC Batch Method: EPA 3010 Analysis Description: 6020 MET  
Associated Lab Samples: 40159490003, 40159490004, 40159490005, 40159490006, 40159490007, 40159490008, 40159490009, 40159490010, 40159490011, 40159490012, 40159490013

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METHOD BLANK: 1603396 Matrix: Water  
Associated Lab Samples: 40159490003, 40159490004, 40159490005, 40159490006, 40159490007, 40159490008, 40159490009, 40159490010, 40159490011, 40159490012, 40159490013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	0.18J	1.0	11/06/17 20:53	
Arsenic	ug/L	<0.28	1.0	11/06/17 20:53	
Barium	ug/L	<0.34	1.1	11/06/17 20:53	
Beryllium	ug/L	<0.18	1.0	11/06/17 20:53	
Boron	ug/L	<3.3	11.0	11/06/17 20:53	
Cadmium	ug/L	<0.081	1.0	11/06/17 20:53	
Calcium	ug/L	<69.8	250	11/04/17 07:00	
Chromium	ug/L	<1.0	3.4	11/04/17 07:00	
Cobalt	ug/L	<0.085	1.0	11/04/17 07:00	
Lead	ug/L	<0.20	1.0	11/06/17 20:53	
Lithium	ug/L	<0.14	1.0	11/06/17 20:53	
Molybdenum	ug/L	0.46J	1.5	11/06/17 20:53	
Selenium	ug/L	<0.32	1.1	11/06/17 20:53	
Thallium	ug/L	<0.14	1.0	11/06/17 20:53	

LABORATORY CONTROL SAMPLE: 1603397

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	535	107	80-120	
Arsenic	ug/L	500	504	101	80-120	
Barium	ug/L	500	537	107	80-120	
Beryllium	ug/L	500	533	107	80-120	
Boron	ug/L	500	513	103	80-120	
Cadmium	ug/L	500	524	105	80-120	
Calcium	ug/L	5000	5090	102	80-120	
Chromium	ug/L	500	506	101	80-120	
Cobalt	ug/L	500	501	100	80-120	
Lead	ug/L	500	481	96	80-120	
Lithium	ug/L	500	516	103	80-120	
Molybdenum	ug/L	500	508	102	80-120	
Selenium	ug/L	500	530	106	80-120	
Thallium	ug/L	500	492	98	80-120	

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### QUALITY CONTROL DATA

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

Parameter	Units	40159682002		1603398		1603399		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
Antimony	ug/L	0.00074J mg/L	500	500	530	519	106	104	75-125	2	20			
Arsenic	ug/L	0.0037 mg/L	500	500	481	484	95	96	75-125	1	20			
Barium	ug/L	0.091 mg/L	500	500	619	605	106	103	75-125	2	20			
Beryllium	ug/L	0.00037J mg/L	500	500	451	413	90	83	75-125	9	20			
Boron	ug/L	77.5	500	500	517	456	88	76	75-125	13	20			
Cadmium	ug/L	0.00059J mg/L	500	500	507	497	101	99	75-125	2	20			
Calcium	ug/L	79.9 mg/L	5000	5000	80800	79800	17	-1	75-125	1	20	P6		
Chromium	ug/L	0.0099 mg/L	500	500	494	483	97	95	75-125	2	20			
Cobalt	ug/L	0.0044 mg/L	500	500	480	472	95	93	75-125	2	20			
Lead	ug/L	0.0047 mg/L	500	500	473	465	94	92	75-125	2	20			
Lithium	ug/L	5.7	500	500	439	395	87	78	75-125	11	20			
Molybdenum	ug/L	6.0	500	500	482	472	95	93	75-125	2	20			
Selenium	ug/L	0.0035 mg/L	500	500	502	504	100	100	75-125	0	20			
Thallium	ug/L	0.00052J mg/L	500	500	484	471	97	94	75-125	3	20			

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### QUALITY CONTROL DATA

Project: 25216067.17 COLUMBIA CCR  
Pace Project No.: 40159490

QC Batch: 272411 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 40159490001, 40159490003, 40159490004, 40159490006, 40159490007, 40159490008

METHOD BLANK: 1602166 Matrix: Water  
Associated Lab Samples: 40159490001, 40159490003, 40159490004, 40159490006, 40159490007, 40159490008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/30/17 17:43	

LABORATORY CONTROL SAMPLE: 1602167

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	635	548	86	80-120	

SAMPLE DUPLICATE: 1602168

Parameter	Units	40159477001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	508	508	0	5	

SAMPLE DUPLICATE: 1602169

Parameter	Units	40159478001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	540	538	0	5	

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### QUALITY CONTROL DATA

Project: 25216067.17 COLUMBIA CCR  
Pace Project No.: 40159490

QC Batch: 272529 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 40159490002, 40159490005, 40159490009, 40159490010, 40159490011, 40159490012, 40159490013

METHOD BLANK: 1602887 Matrix: Water  
Associated Lab Samples: 40159490002, 40159490005, 40159490009, 40159490010, 40159490011, 40159490012, 40159490013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/31/17 14:41	

LABORATORY CONTROL SAMPLE: 1602888

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	635	564	89	80-120	

SAMPLE DUPLICATE: 1602889

Parameter	Units	40159525009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	530	534	1	5	

SAMPLE DUPLICATE: 1602890

Parameter	Units	40159525011 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	308	326	6	5	R1

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### QUALITY CONTROL DATA

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

QC Batch: 272530 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40159490001, 40159490002, 40159490003, 40159490004, 40159490005, 40159490006, 40159490007, 40159490008, 40159490009, 40159490010

SAMPLE DUPLICATE: 1602902

Parameter	Units	40159479003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.9	7.9	0	20	H6

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### QUALITY CONTROL DATA

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

QC Batch: 273140 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40159490011, 40159490012, 40159490013

SAMPLE DUPLICATE: 1607353

Parameter	Units	40159286001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	5.0	5.0	1	20	H6

SAMPLE DUPLICATE: 1607354

Parameter	Units	40159490011 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.7	7.7	0	20	H6

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**QUALITY CONTROL DATA**

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

QC Batch:	273181	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
Associated Lab Samples:	40159490001, 40159490002, 40159490003, 40159490004, 40159490005, 40159490006, 40159490007, 40159490008, 40159490009, 40159490010, 40159490011, 40159490012, 40159490013		

METHOD BLANK: 1607457 Matrix: Water  
 Associated Lab Samples: 40159490001, 40159490002, 40159490003, 40159490004, 40159490005, 40159490006, 40159490007, 40159490008, 40159490009, 40159490010, 40159490011, 40159490012, 40159490013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	11/08/17 12:00	
Fluoride	mg/L	<0.10	0.30	11/08/17 12:00	
Sulfate	mg/L	<1.0	3.0	11/08/17 12:00	

LABORATORY CONTROL SAMPLE: 1607458

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	103	90-110	
Fluoride	mg/L	2	2.0	102	90-110	
Sulfate	mg/L	20	20.6	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1607459 1607460

Parameter	Units	40159490001		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	4.0	20	20	25.0	25.1	105	105	90-110	0	15		
Fluoride	mg/L	<0.10	2	2	2.1	2.1	105	105	90-110	0	15		
Sulfate	mg/L	27.5	20	20	48.2	49.6	103	110	90-110	3	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1607461 1607462

Parameter	Units	40159565001		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	5870	10000	10000	16600	16500	107	106	90-110	1	15		
Fluoride	mg/L	240	1000	1000	1310	1310	107	107	90-110	0	15		
Sulfate	mg/L	ND	10000	10000	10600	10500	105	104	90-110	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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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.271 ± 0.376 (0.628)</b> C:NA T:90%	pCi/L	11/08/17 12:45	13982-63-3	
Radium-228		EPA 904.0	<b>0.231 ± 0.317 (0.679)</b> C:80% T:88%	pCi/L	11/06/17 11:54	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.502 ± 0.693 (1.31)</b>	pCi/L	11/13/17 13:00	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.511 ± 0.478 (0.678)</b> C:NA T:85%	pCi/L	11/08/17 12:45	13982-63-3	
Radium-228		EPA 904.0	<b>0.231 ± 0.282 (0.595)</b> C:88% T:87%	pCi/L	11/06/17 11:54	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.742 ± 0.760 (1.27)</b>	pCi/L	11/13/17 13:00	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>-0.077 ± 0.397 (0.919)</b> C:NA T:82%	pCi/L	11/08/17 12:45	13982-63-3	
Radium-228		EPA 904.0	<b>0.318 ± 0.312 (0.639)</b> C:81% T:94%	pCi/L	11/06/17 11:54	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.318 ± 0.709 (1.56)</b>	pCi/L	11/13/17 13:00	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.249 ± 0.346 (0.578)</b> C:NA T:93%	pCi/L	11/08/17 12:45	13982-63-3	
Radium-228		EPA 904.0	<b>0.376 ± 0.368 (0.756)</b> C:83% T:74%	pCi/L	11/06/17 11:53	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.625 ± 0.714 (1.33)</b>	pCi/L	11/13/17 13:00	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

QC Batch: 277632 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 40159490006, 40159490007, 40159490008, 40159490009

METHOD BLANK: 1364211 Matrix: Water

Associated Lab Samples: 40159490006, 40159490007, 40159490008, 40159490009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.153 ± 0.282 (0.619) C:84% T:94%	pCi/L	11/06/17 11:52	

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: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

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QC Batch:	277631	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
Associated Lab Samples:	40159490006, 40159490007, 40159490008, 40159490009		

---

METHOD BLANK:	1364209	Matrix:	Water
Associated Lab Samples:	40159490006, 40159490007, 40159490008, 40159490009		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.301 (0.612) C:NA T:90%	pCi/L	11/08/17 12:17	

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: 25216067.17 COLUMBIA CCR  
Pace Project No.: 40159490

---

### DEFINITIONS

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 (%)

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40159490001	MW 301	EPA 3010	272475	EPA 6020	272659
40159490002	MW 302	EPA 3010	272475	EPA 6020	272659
40159490003	MW 303	EPA 3010	272592	EPA 6020	272717
40159490004	MW 304	EPA 3010	272592	EPA 6020	272717
40159490005	MW 305	EPA 3010	272592	EPA 6020	272717
40159490006	MW 306	EPA 3010	272592	EPA 6020	272717
40159490007	MW 307	EPA 3010	272592	EPA 6020	272717
40159490008	MW 308	EPA 3010	272592	EPA 6020	272717
40159490009	FIELD BLANK	EPA 3010	272592	EPA 6020	272717
40159490010	M4R	EPA 3010	272592	EPA 6020	272717
40159490011	MW33AR	EPA 3010	272592	EPA 6020	272717
40159490012	MW34A	EPA 3010	272592	EPA 6020	272717
40159490013	MW84A	EPA 3010	272592	EPA 6020	272717
40159490006	MW 306	EPA 7470	272937	EPA 7470	273089
40159490007	MW 307	EPA 7470	272937	EPA 7470	273089
40159490008	MW 308	EPA 7470	272937	EPA 7470	273089
40159490009	FIELD BLANK	EPA 7470	272937	EPA 7470	273089
40159490001	MW 301				
40159490002	MW 302				
40159490003	MW 303				
40159490004	MW 304				
40159490005	MW 305				
40159490006	MW 306				
40159490007	MW 307				
40159490008	MW 308				
40159490010	M4R				
40159490011	MW33AR				
40159490012	MW34A				
40159490013	MW84A				
40159490006	MW 306	EPA 903.1	277631		
40159490007	MW 307	EPA 903.1	277631		
40159490008	MW 308	EPA 903.1	277631		
40159490009	FIELD BLANK	EPA 903.1	277631		
40159490006	MW 306	EPA 904.0	277632		
40159490007	MW 307	EPA 904.0	277632		
40159490008	MW 308	EPA 904.0	277632		
40159490009	FIELD BLANK	EPA 904.0	277632		
40159490006	MW 306	Total Radium Calculation	278885		
40159490007	MW 307	Total Radium Calculation	278885		
40159490008	MW 308	Total Radium Calculation	278885		
40159490009	FIELD BLANK	Total Radium Calculation	278885		
40159490001	MW 301	SM 2540C	272411		
40159490002	MW 302	SM 2540C	272529		
40159490003	MW 303	SM 2540C	272411		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.17 COLUMBIA CCR

Pace Project No.: 40159490

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40159490004	MW 304	SM 2540C	272411		
40159490005	MW 305	SM 2540C	272529		
40159490006	MW 306	SM 2540C	272411		
40159490007	MW 307	SM 2540C	272411		
40159490008	MW 308	SM 2540C	272411		
40159490009	FIELD BLANK	SM 2540C	272529		
40159490010	M4R	SM 2540C	272529		
40159490011	MW33AR	SM 2540C	272529		
40159490012	MW34A	SM 2540C	272529		
40159490013	MW84A	SM 2540C	272529		
40159490001	MW 301	EPA 9040	272530		
40159490002	MW 302	EPA 9040	272530		
40159490003	MW 303	EPA 9040	272530		
40159490004	MW 304	EPA 9040	272530		
40159490005	MW 305	EPA 9040	272530		
40159490006	MW 306	EPA 9040	272530		
40159490007	MW 307	EPA 9040	272530		
40159490008	MW 308	EPA 9040	272530		
40159490009	FIELD BLANK	EPA 9040	272530		
40159490010	M4R	EPA 9040	272530		
40159490011	MW33AR	EPA 9040	273140		
40159490012	MW34A	EPA 9040	273140		
40159490013	MW84A	EPA 9040	273140		
40159490001	MW 301	EPA 300.0	273181		
40159490002	MW 302	EPA 300.0	273181		
40159490003	MW 303	EPA 300.0	273181		
40159490004	MW 304	EPA 300.0	273181		
40159490005	MW 305	EPA 300.0	273181		
40159490006	MW 306	EPA 300.0	273181		
40159490007	MW 307	EPA 300.0	273181		
40159490008	MW 308	EPA 300.0	273181		
40159490009	FIELD BLANK	EPA 300.0	273181		
40159490010	M4R	EPA 300.0	273181		
40159490011	MW33AR	EPA 300.0	273181		
40159490012	MW34A	EPA 300.0	273181		
40159490013	MW84A	EPA 300.0	273181		

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(Please Print Clearly)



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# CHAIN OF CUSTODY

UPPER MIDWEST REGION

WI: 612-607-1700 MN: 920-469-2436

Page 1 of

40159490

A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?  
 (YES/NO)  
 PRESERVATION  
 (CODE)\*

Company Name: SCS ENGINEERS  
 Branch/Location: Mason  
 Project Contact: Tom Krawski  
 Phone: 608 224 2830  
 Project Number: 35216067  
 Project Name: Columbia  
 Project State: Wisconsin  
 Sampled By (Print): ZACH WATSON  
 Sampled By (Sign): [Signature]  
 PO #: \_\_\_\_\_

**Data Package Options**  
 EPA Level III  
 EPA Level IV  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A= Air B= Biotia C= Chemical D= Oil E= Soil F= Sludge  
 W= Water GW= Ground Water SW= Surface Water WW= Waste Water WP= Wipe

PAGE LAB #	CLIENT FIELD ID	DATE	COLLECTION TIME	MATRIX
001	MW501	10/23	1225	GW
002	MW502	10/24	1620	W
003	MW503	10/23	1730	W
004	MW504	10/23	1630	W
005	MW505	10/24	1635	W
006	MW506	10/23	1340	W
007	MW507	10/23	1520	W
008	MW508	10/23	1540	W
009	Field Blank	10/24	1645	W
010	M4R	10/24	955	W
011	MW399R	10/24	1340	W
012	MW344A	10/24	1525	W
013	MW849A	10/24	1430	W

Rush Turnaround Time Requested - Prelims  
 (Rush TAT subject to approval/surcharge)  
 Date Needed: \_\_\_\_\_

Transmit Prelim Results by (complete what you want):  
 Email #1: \_\_\_\_\_  
 Email #2: \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_

Analyses Requested	Y/N	
	Y	N
Metals	D	N
Radium 226 228	D	N
Boron	D	N
pH	N	N
TDS Cl F SO4	N	N

Relinquished By: Zach Watson Date/Time: 10 25 17 1000  
 Relinquished By: [Signature] Date/Time: 10 26 17 0955  
 Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

**Quote #:** \_\_\_\_\_  
**Mail To Contact:** \_\_\_\_\_  
**Mail To Company:** \_\_\_\_\_  
**Mail To Address:** \_\_\_\_\_  
**Invoice To Contact:** \_\_\_\_\_  
**Invoice To Company:** \_\_\_\_\_  
**Invoice To Address:** \_\_\_\_\_  
**Invoice To Phone:** \_\_\_\_\_  
**CLIENT COMMENTS:** \_\_\_\_\_  
**LAB COMMENTS (Lab Use Only):** 3-250m PHD  
4-250m PHD  
ADD2-16A  
**Profile #** \_\_\_\_\_  
**PACE Project No.:** 40159490  
 Receipt Temp = 122 °C  
 Sample Receipt pH OK / Adjusted  
 Cooler/Gustody Seal Present / Not Present  
 Intact / Not Intact

# Pace Container Order #278773

40159440

## Addresses

Order By :	Ship To :	Return To:
Company <u>SCS ENGINEERS</u>	Company <u>SCS ENGINEERS (Pace Analytical)</u>	Company <u>Pace Analytical Green Bay</u>
Contact <u>Blodgett, Meghan</u>	Contact <u>Kyle Kramer</u>	Contact <u>Milewsky, Dan</u>
Email <u>mbloodgett@scsengineers.com</u>	Email <u>kkramer@scsengineers.com</u>	Email <u>dan.milewsky@pacelabs.com</u>
Address <u>2830 Dairy Drive</u>	Address <u>2830 Dairy Drive</u>	Address <u>1241 Bellevue Street</u>
Address 2 _____	Address 2 _____	Address 2 <u>Suite 9</u>
City <u>Madison</u>	City <u>Madison</u>	City <u>Green Bay</u>
State <u>WI</u> Zip <u>53718</u>	State <u>WI</u> Zip <u>53718</u>	State <u>WI</u> Zip <u>54302</u>
Phone <u>608-216-7362</u>	Phone <u>608-216-7362</u>	Phone <u>(920)469-2436</u>

## Info

Project Name <u>CCR Rule Alliant Columbia (25216067)</u>	Due Date <u>09/29/2017</u>	Profile _____	Quote _____
Project Manager <u>Milewsky, Dan</u>	Return _____	Carrier <u>Most Economical</u>	Location _____

### Trip Blanks

Include Trip Blanks

### Bottle Labels

- Blank  
 Pre-Printed No Sample IDs  
 Pre-Printed With Sample IDs

### Bottles

- Boxed Cases  
 Individually Wrapped  
 Grouped By Sample

### Return Shipping Labels

- No Shipper Number  
 With Shipper Number

### Misc

- Sampling Instructions  
 Custody Seal  
 Temp. Blanks  
 Coolers \_\_\_\_\_  
 Syringes \_\_\_\_\_
- Extra Bubble Wrap  
 Short Hold/Rush Stickers  
 DI Water 3 Liter(s)  
 USDA Regulated Soils

### COC Options

- Number of Blanks 1  
 Pre-Printed \_\_\_\_\_

# of Samples	Matrix	Test	Container	Total	# of QC	Lot #	Notes
4	WT	Radium 226	1-1L Plastic w/ HNO3	4	0	082117-2AJN	
4	WT	Radium 228	1-1L Plastic w/ HNO3	4	0	082117-2AJN	
4	WT	Metals	250mL plastic w/HNO3	4	0	M-7-240-03BB	
14	WT	Boron	250mL plastic HNO3	14	0	M-7-240-03BB	
14	WT	pH	250mL plastic unpres	14	0	M-7-123-07BB	
14	WT	TDS, Cl, F, SO4	250mL plastic unpres	14	0	M-7-123-07BB	

## Hazard Shipping Placard In Place : NA

- \*Sample receiving hours are Monday through Friday 8:00 am to 6:00 pm and Saturday from 9:00 am to 12:00 pm unless special arrangements are made with your project manager.
- \*Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.
- \*Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage and disposal.
- \*Payment term are net 30 days.
- \*Please include the proposal number on the chain of custody to insure proper billing.

### Sample Notes

Metals = B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li Hg, Mo, Se, Tl  
 ALL SAMPLES UNFILTERED

Ship Date : 09/28/2017

Prepared By: Mai Yer Her

Verified By: \_\_\_\_\_



Sample Condition Upon Receipt

Pace Analytical Services, LLC. - Green Bay WI
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #:

WO#: 40159490

Client Name: SCS

Courier: Fed Ex UPS Client Pace Other: CS Logistics

Tracking #:



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

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used: NA Type of Ice: Wet Blue Dry None Samples on ice, cooling process has begun

Cooler Temperature: Uncorr: /Corr: 20 Biological Tissue is Frozen: yes no

Temp Blank Present: yes no

Person examining contents:
Date: 10/26/17
Initials: [Signature]

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Comments:

Table with 15 rows of checklist items and checkboxes. Includes items like 'Chain of Custody Present', 'Short Hold Time Analysis', 'Rush Turn Around Time Requested', etc.

Client Notification/ Resolution: If checked, see attached form for additional comments
Person Contacted: Date/Time:
Comments/ Resolution:

Project Manager Review: [Signature] Date: 10/25/17

## A6 Round 6 Background Sampling, Analytical Laboratory Reports

May 18, 2018

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 25216067.18 WPL COLUMBIA CCR  
Pace Project No.: 40168058

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 26, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS  
Nicole Kron, SCS ENGINEERS  
Jeff Maxted, ALLIANT ENERGY  
Marc Morandi, ALLIANT ENERGY



## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182

## CERTIFICATIONS

Project: 25216067.18 WPL COLUMBIA CCR  
Pace Project No.: 40168058

---

### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601  
ANAB DOD-ELAP Rad Accreditation #: L2417  
Alabama Certification #: 41590  
Arizona Certification #: AZ0734  
Arkansas Certification  
California Certification #: 04222CA  
Colorado Certification #: PA01547  
Connecticut Certification #: PH-0694  
Delaware Certification  
EPA Region 4 DW Rad  
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 #: KY90133  
KY WW Permit #: KY0098221  
KY WW Permit #: KY0000221  
Louisiana DHH/TNI Certification #: LA180012  
Louisiana DEQ/TNI Certification #: 4086  
Maine Certification #: 2017020  
Maryland Certification #: 308  
Massachusetts Certification #: M-PA1457  
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235  
Montana Certification #: Cert0082  
Nebraska Certification #: NE-OS-29-14  
Nevada Certification #: PA014572018-1  
New Hampshire/TNI Certification #: 297617  
New Jersey/TNI Certification #: PA051  
New Mexico Certification #: PA01457  
New York/TNI Certification #: 10888  
North Carolina Certification #: 42706  
North Dakota Certification #: R-190  
Ohio EPA Rad Approval: #41249  
Oregon/TNI Certification #: PA200002-010  
Pennsylvania/TNI Certification #: 65-00282  
Puerto Rico Certification #: PA01457  
Rhode Island Certification #: 65-00282  
South Dakota Certification  
Tennessee Certification #: 02867  
Texas/TNI Certification #: T104704188-17-3  
Utah/TNI Certification #: PA014572017-9  
USDA Soil Permit #: P330-17-00091  
Vermont Dept. of Health: ID# VT-0282  
Virgin Island/PADEP Certification  
Virginia/VELAP Certification #: 9526  
Washington Certification #: C868  
West Virginia DEP Certification #: 143  
West Virginia DHHR Certification #: 9964C  
Wisconsin Approve List for Rad  
Wyoming Certification #: 8TMS-L

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### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40168058001	M-4R	Water	04/23/18 14:30	04/26/18 09:20
40168058002	MW 305	Water	04/23/18 15:30	04/26/18 09:20
40168058003	MW 303	Water	04/24/18 08:50	04/26/18 09:20
40168058004	FIELD BLANK	Water	04/24/18 09:45	04/26/18 09:20
40168058005	MW 304	Water	04/24/18 10:05	04/26/18 09:20
40168058006	MW 308	Water	04/24/18 11:20	04/26/18 09:20
40168058007	MW 34A	Water	04/24/18 13:15	04/26/18 09:20
40168058008	MW 33AR	Water	04/24/18 14:30	04/26/18 09:20
40168058009	MW 302	Water	04/24/18 15:55	04/26/18 09:20
40168058010	MW 84A	Water	04/25/18 08:55	04/26/18 09:20
40168058011	MW 301	Water	04/25/18 09:45	04/26/18 09:20

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08/30/2019 - Classification: Internal - ECRM6700182



### SAMPLE ANALYTE COUNT

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory		
40168058001	M-4R	EPA 6020	DS1	14	PASI-G		
		EPA 7470	AJT	1	PASI-G		
			AXL	7	PASI-G		
		EPA 903.1	KAC	1	PASI-PA		
		EPA 904.0	JLW	1	PASI-PA		
		Total Radium Calculation	CMC	1	PASI-PA		
		SM 2540C	TMK	1	PASI-G		
		EPA 9040	ALY	1	PASI-G		
		EPA 300.0	HMB	3	PASI-G		
		40168058002	MW 305	EPA 6020	DS1	14	PASI-G
EPA 7470	AJT			1	PASI-G		
	AXL			7	PASI-G		
EPA 903.1	KAC			1	PASI-PA		
EPA 904.0	JLW			1	PASI-PA		
Total Radium Calculation	CMC			1	PASI-PA		
SM 2540C	TMK			1	PASI-G		
EPA 9040	ALY			1	PASI-G		
EPA 300.0	HMB			3	PASI-G		
40168058003	MW 303			EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G		
			AXL	7	PASI-G		
		EPA 903.1	KAC	1	PASI-PA		
		EPA 904.0	JLW	1	PASI-PA		
		Total Radium Calculation	CMC	1	PASI-PA		
		SM 2540C	TMK	1	PASI-G		
		EPA 9040	ALY	1	PASI-G		
		EPA 300.0	HMB	3	PASI-G		
		40168058004	FIELD BLANK	EPA 6020	DS1	14	PASI-G
EPA 7470	AJT			1	PASI-G		
EPA 903.1	KAC			1	PASI-PA		
EPA 904.0	JLW			1	PASI-PA		
Total Radium Calculation	CMC			1	PASI-PA		
SM 2540C	TMK			1	PASI-G		
EPA 9040	ALY			1	PASI-G		
EPA 300.0	HMB			3	PASI-G		
40168058005	MW 304			EPA 6020	DS1	14	PASI-G
				EPA 7470	AJT	1	PASI-G

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### SAMPLE ANALYTE COUNT

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory		
40168058006	MW 308		AXL	7	PASI-G		
		EPA 903.1	KAC	1	PASI-PA		
		EPA 904.0	JLW	1	PASI-PA		
		Total Radium Calculation	CMC	1	PASI-PA		
		SM 2540C	TMK	1	PASI-G		
		EPA 9040	ALY	1	PASI-G		
		EPA 300.0	HMB	3	PASI-G		
		EPA 6020	DS1	14	PASI-G		
		EPA 7470	AJT	1	PASI-G		
			AXL	7	PASI-G		
		EPA 903.1	KAC	1	PASI-PA		
		EPA 904.0	JLW	1	PASI-PA		
		Total Radium Calculation	CMC	1	PASI-PA		
		SM 2540C	TMK	1	PASI-G		
40168058007	MW 34A	EPA 9040	ALY	1	PASI-G		
		EPA 300.0	HMB	3	PASI-G		
		EPA 6020	DS1	2	PASI-G		
			AXL	7	PASI-G		
		SM 2540C	TMK	1	PASI-G		
		EPA 9040	ALY	1	PASI-G		
		EPA 300.0	HMB	3	PASI-G		
		40168058008	MW 33AR	EPA 6020	DS1	2	PASI-G
					AXL	7	PASI-G
				SM 2540C	TMK	1	PASI-G
EPA 9040	ALY			1	PASI-G		
EPA 300.0	HMB			3	PASI-G		
40168058009	MW 302			EPA 6020	DS1	2	PASI-G
					AXL	7	PASI-G
				SM 2540C	TMK	1	PASI-G
				EPA 9040	ALY	1	PASI-G
				EPA 300.0	HMB	3	PASI-G
		40168058010	MW 84A	EPA 6020	DS1	14	PASI-G
				EPA 7470	AJT	1	PASI-G
					AXL	7	PASI-G
				EPA 903.1	KAC	1	PASI-PA
				EPA 904.0	JLW	1	PASI-PA
Total Radium Calculation	CMC			1	PASI-PA		

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### SAMPLE ANALYTE COUNT

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40168058011	MW 301	SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

**Sample: M-4R**      **Lab ID: 40168058001**      Collected: 04/23/18 14:30      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<b>&lt;0.15</b>	ug/L	1.0	0.15	1	04/27/18 07:54	05/02/18 04:17	7440-36-0	
Arsenic	<b>0.36J</b>	ug/L	1.0	0.28	1	04/27/18 07:54	05/02/18 04:17	7440-38-2	
Barium	<b>16.5</b>	ug/L	1.1	0.34	1	04/27/18 07:54	05/02/18 04:17	7440-39-3	
Beryllium	<b>0.30J</b>	ug/L	1.0	0.18	1	04/27/18 07:54	05/02/18 04:17	7440-41-7	
Boron	<b>905</b>	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 04:17	7440-42-8	
Cadmium	<b>&lt;0.081</b>	ug/L	1.0	0.081	1	04/27/18 07:54	05/02/18 04:17	7440-43-9	1q
Calcium	<b>86400</b>	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 04:17	7440-70-2	
Chromium	<b>&lt;1.0</b>	ug/L	3.4	1.0	1	04/27/18 07:54	05/02/18 04:17	7440-47-3	
Cobalt	<b>0.16J</b>	ug/L	1.0	0.085	1	04/27/18 07:54	05/02/18 04:17	7440-48-4	
Lead	<b>&lt;0.20</b>	ug/L	1.0	0.20	1	04/27/18 07:54	05/02/18 04:17	7439-92-1	
Lithium	<b>4.8</b>	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:17	7439-93-2	
Molybdenum	<b>19.1</b>	ug/L	1.5	0.44	1	04/27/18 07:54	05/02/18 04:17	7439-98-7	
Selenium	<b>8.6</b>	ug/L	1.1	0.32	1	04/27/18 07:54	05/02/18 04:17	7782-49-2	
Thallium	<b>0.21J</b>	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:17	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	05/01/18 12:20	05/02/18 09:01	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.44</b>	Std. Units			1		04/23/18 14:30		
Field Specific Conductance	<b>790</b>	umhos/cm			1		04/23/18 14:30		
Oxygen, Dissolved	<b>1.16</b>	mg/L			1		04/23/18 14:30	7782-44-7	
REDOX	<b>40.1</b>	mV			1		04/23/18 14:30		
Turbidity	<b>0.42</b>	NTU			1		04/23/18 14:30		
Static Water Level	<b>790.43</b>	feet			1		04/23/18 14:30		
Temperature, Water (C)	<b>10.6</b>	deg C			1		04/23/18 14:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>516</b>	mg/L	20.0	8.7	1		04/30/18 16:54		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	<b>7.4</b>	Std. Units	0.10	0.010	1		04/30/18 10:19		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>51.6</b>	mg/L	2.0	0.50	1		05/01/18 20:18	16887-00-6	
Fluoride	<b>0.16J</b>	mg/L	0.30	0.10	1		05/01/18 20:18	16984-48-8	
Sulfate	<b>162</b>	mg/L	15.0	5.0	5		05/01/18 22:18	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

**Sample: MW 305**      **Lab ID: 40168058002**      Collected: 04/23/18 15:30      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<b>0.26J</b>	ug/L	1.0	0.15	1	04/27/18 07:54	05/02/18 04:25	7440-36-0	
Arsenic	<b>0.48J</b>	ug/L	1.0	0.28	1	04/27/18 07:54	05/02/18 04:25	7440-38-2	
Barium	<b>6.0</b>	ug/L	1.1	0.34	1	04/27/18 07:54	05/02/18 04:25	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	04/27/18 07:54	05/02/18 04:25	7440-41-7	
Boron	<b>1200</b>	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 04:25	7440-42-8	
Cadmium	<b>&lt;0.081</b>	ug/L	1.0	0.081	1	04/27/18 07:54	05/02/18 04:25	7440-43-9	1q
Calcium	<b>64800</b>	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 04:25	7440-70-2	
Chromium	<b>&lt;1.0</b>	ug/L	3.4	1.0	1	04/27/18 07:54	05/02/18 04:25	7440-47-3	
Cobalt	<b>&lt;0.085</b>	ug/L	1.0	0.085	1	04/27/18 07:54	05/02/18 04:25	7440-48-4	
Lead	<b>&lt;0.20</b>	ug/L	1.0	0.20	1	04/27/18 07:54	05/02/18 04:25	7439-92-1	
Lithium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:25	7439-93-2	
Molybdenum	<b>54.4</b>	ug/L	1.5	0.44	1	04/27/18 07:54	05/02/18 04:25	7439-98-7	
Selenium	<b>6.9</b>	ug/L	1.1	0.32	1	04/27/18 07:54	05/02/18 04:25	7782-49-2	
Thallium	<b>0.16J</b>	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:25	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	05/01/18 12:20	05/02/18 09:08	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>9.12</b>	Std. Units			1		04/23/18 15:30		
Field Specific Conductance	<b>579.5</b>	umhos/cm			1		04/23/18 15:30		
Oxygen, Dissolved	<b>0.78</b>	mg/L			1		04/23/18 15:30	7782-44-7	
REDOX	<b>-3.3</b>	mV			1		04/23/18 15:30		
Turbidity	<b>5.98</b>	NTU			1		04/23/18 15:30		
Static Water Level	<b>787.67</b>	feet			1		04/23/18 15:30		
Temperature, Water (C)	<b>12.1</b>	deg C			1		04/23/18 15:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>386</b>	mg/L	20.0	8.7	1		04/30/18 16:54		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	<b>8.2</b>	Std. Units	0.10	0.010	1		04/30/18 10:21		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>50.6</b>	mg/L	2.0	0.50	1		05/01/18 20:31	16887-00-6	
Fluoride	<b>0.37</b>	mg/L	0.30	0.10	1		05/01/18 20:31	16984-48-8	
Sulfate	<b>191</b>	mg/L	15.0	5.0	5		05/01/18 22:31	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

**Sample: MW 303**      **Lab ID: 40168058003**      Collected: 04/24/18 08:50      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<b>0.28J</b>	ug/L	1.0	0.15	1	04/27/18 07:54	05/02/18 04:33	7440-36-0	
Arsenic	<b>39.1</b>	ug/L	1.0	0.28	1	04/27/18 07:54	05/02/18 04:33	7440-38-2	
Barium	<b>5.1</b>	ug/L	1.1	0.34	1	04/27/18 07:54	05/02/18 04:33	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	04/27/18 07:54	05/02/18 04:33	7440-41-7	
Boron	<b>2330</b>	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 04:33	7440-42-8	
Cadmium	<b>&lt;0.081</b>	ug/L	1.0	0.081	1	04/27/18 07:54	05/02/18 04:33	7440-43-9	1q
Calcium	<b>4610</b>	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 04:33	7440-70-2	
Chromium	<b>97.1</b>	ug/L	3.4	1.0	1	04/27/18 07:54	05/02/18 04:33	7440-47-3	
Cobalt	<b>0.80J</b>	ug/L	1.0	0.085	1	04/27/18 07:54	05/02/18 04:33	7440-48-4	
Lead	<b>&lt;0.20</b>	ug/L	1.0	0.20	1	04/27/18 07:54	05/02/18 04:33	7439-92-1	
Lithium	<b>0.61J</b>	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:33	7439-93-2	
Molybdenum	<b>138</b>	ug/L	1.5	0.44	1	04/27/18 07:54	05/02/18 04:33	7439-98-7	
Selenium	<b>52.9</b>	ug/L	1.1	0.32	1	04/27/18 07:54	05/02/18 04:33	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:33	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	05/01/18 12:20	05/02/18 09:10	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>10.01</b>	Std. Units			1		04/24/18 08:50		
Field Specific Conductance	<b>1447</b>	umhos/cm			1		04/24/18 08:50		
Oxygen, Dissolved	<b>4.53</b>	mg/L			1		04/24/18 08:50	7782-44-7	
REDOX	<b>-22.3</b>	mV			1		04/24/18 08:50		
Turbidity	<b>1.42</b>	NTU			1		04/24/18 08:50		
Static Water Level	<b>783.27</b>	feet			1		04/24/18 08:50		
Temperature, Water (C)	<b>10.9</b>	deg C			1		04/24/18 08:50		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>948</b>	mg/L	20.0	8.7	1		04/30/18 16:56		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	<b>9.4</b>	Std. Units	0.10	0.010	1		04/30/18 10:24		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>&lt;10.0</b>	mg/L	40.0	10.0	20		05/02/18 10:42	16887-00-6	D3
Fluoride	<b>&lt;2.0</b>	mg/L	6.0	2.0	20		05/02/18 10:42	16984-48-8	D3
Sulfate	<b>527</b>	mg/L	60.0	20.0	20		05/02/18 10:42	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.18 WPL COLUMBIA CCR  
Pace Project No.: 40168058

Sample: **FIELD BLANK** Lab ID: **40168058004** Collected: 04/24/18 09:45 Received: 04/26/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	04/27/18 07:54	05/02/18 02:23	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	04/27/18 07:54	05/02/18 02:23	7440-38-2	
Barium	<0.34	ug/L	1.1	0.34	1	04/27/18 07:54	05/02/18 02:23	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	04/27/18 07:54	05/02/18 02:23	7440-41-7	
Boron	<3.3	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 02:23	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	04/27/18 07:54	05/02/18 02:23	7440-43-9	1q
Calcium	<69.8	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 02:23	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	04/27/18 07:54	05/02/18 02:23	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	04/27/18 07:54	05/02/18 02:23	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	04/27/18 07:54	05/02/18 02:23	7439-92-1	
Lithium	<0.14	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 02:23	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	04/27/18 07:54	05/02/18 02:23	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	04/27/18 07:54	05/02/18 02:23	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 02:23	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	05/01/18 12:20	05/02/18 09:13	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		04/30/18 16:56		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	5.8	Std. Units	0.10	0.010	1		04/30/18 10:26		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<0.50	mg/L	2.0	0.50	1		05/01/18 21:38	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		05/01/18 21:38	16984-48-8	
Sulfate	<1.0	mg/L	3.0	1.0	1		05/01/18 21:38	14808-79-8	

Sample: **MW 304** Lab ID: **40168058005** Collected: 04/24/18 10:05 Received: 04/26/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	04/27/18 07:54	05/02/18 04:40	7440-36-0	
Arsenic	0.64J	ug/L	1.0	0.28	1	04/27/18 07:54	05/02/18 04:40	7440-38-2	
Barium	26.2	ug/L	1.1	0.34	1	04/27/18 07:54	05/02/18 04:40	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	04/27/18 07:54	05/02/18 04:40	7440-41-7	
Boron	430	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 04:40	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	04/27/18 07:54	05/02/18 04:40	7440-43-9	1q
Calcium	77900	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 04:40	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	04/27/18 07:54	05/02/18 04:40	7440-47-3	
Cobalt	0.36J	ug/L	1.0	0.085	1	04/27/18 07:54	05/02/18 04:40	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	04/27/18 07:54	05/02/18 04:40	7439-92-1	

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### ANALYTICAL RESULTS

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

**Sample: MW 304**      **Lab ID: 40168058005**      Collected: 04/24/18 10:05      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Lithium	<0.14	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:40	7439-93-2	
Molybdenum	3.2	ug/L	1.5	0.44	1	04/27/18 07:54	05/02/18 04:40	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	04/27/18 07:54	05/02/18 04:40	7782-49-2	
Thallium	0.15J	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:40	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	05/01/18 12:20	05/02/18 09:15	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.16	Std. Units			1		04/24/18 10:05		
Field Specific Conductance	686.4	umhos/cm			1		04/24/18 10:05		
Oxygen, Dissolved	1.45	mg/L			1		04/24/18 10:05	7782-44-7	
REDOX	-18.0	mV			1		04/24/18 10:05		
Turbidity	1.22	NTU			1		04/24/18 10:05		
Static Water Level	789.69	feet			1		04/24/18 10:05		
Temperature, Water (C)	10.6	deg C			1		04/24/18 10:05		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	406	mg/L	20.0	8.7	1		04/30/18 16:56		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	7.4	Std. Units	0.10	0.010	1		04/30/18 10:30		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	30.1	mg/L	2.0	0.50	1		05/01/18 21:51	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		05/01/18 21:51	16984-48-8	
Sulfate	43.5	mg/L	3.0	1.0	1		05/01/18 21:51	14808-79-8	

**Sample: MW 308**      **Lab ID: 40168058006**      Collected: 04/24/18 11:20      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	04/27/18 07:54	05/02/18 04:48	7440-36-0	
Arsenic	4.9	ug/L	1.0	0.28	1	04/27/18 07:54	05/02/18 04:48	7440-38-2	
Barium	85.4	ug/L	1.1	0.34	1	04/27/18 07:54	05/02/18 04:48	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	04/27/18 07:54	05/02/18 04:48	7440-41-7	
Boron	584	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 04:48	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	04/27/18 07:54	05/02/18 04:48	7440-43-9	1q
Calcium	126000	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 04:48	7440-70-2	
Chromium	7.9	ug/L	3.4	1.0	1	04/27/18 07:54	05/02/18 04:48	7440-47-3	
Cobalt	1.7	ug/L	1.0	0.085	1	04/27/18 07:54	05/02/18 04:48	7440-48-4	
Lead	2.5	ug/L	1.0	0.20	1	04/27/18 07:54	05/02/18 04:48	7439-92-1	

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### ANALYTICAL RESULTS

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

**Sample: MW 308**      **Lab ID: 40168058006**      Collected: 04/24/18 11:20      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Lithium	2.1	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:48	7439-93-2	
Molybdenum	0.54J	ug/L	1.5	0.44	1	04/27/18 07:54	05/02/18 04:48	7439-98-7	
Selenium	0.45J	ug/L	1.1	0.32	1	04/27/18 07:54	05/02/18 04:48	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:48	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	05/01/18 12:20	05/02/18 09:22	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.10	Std. Units			1		04/24/18 11:20		
Field Specific Conductance	902	umhos/cm			1		04/24/18 11:20		
Oxygen, Dissolved	0.11	mg/L			1		04/24/18 11:20	7782-44-7	
REDOX	-184.0	mV			1		04/24/18 11:20		
Turbidity	133.7	NTU			1		04/24/18 11:20		
Static Water Level	782.65	feet			1		04/24/18 11:20		
Temperature, Water (C)	10.5	deg C			1		04/24/18 11:20		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	512	mg/L	20.0	8.7	1		04/30/18 16:56		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	7.2	Std. Units	0.10	0.010	1		04/30/18 10:32		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	3.7J	mg/L	10.0	2.5	5		05/01/18 22:04	16887-00-6	D3
Fluoride	<0.50	mg/L	1.5	0.50	5		05/01/18 22:04	16984-48-8	D3
Sulfate	<5.0	mg/L	15.0	5.0	5		05/01/18 22:04	14808-79-8	D3

**Sample: MW 34A**      **Lab ID: 40168058007**      Collected: 04/24/18 13:15      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Boron	209	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 05:11	7440-42-8	
Calcium	69600	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 05:11	7440-70-2	
<b>Field Data</b>		Analytical Method:							
Field pH	7.80	Std. Units			1		04/24/18 13:15		
Field Specific Conductance	581.4	umhos/cm			1		04/24/18 13:15		
Oxygen, Dissolved	2.45	mg/L			1		04/24/18 13:15	7782-44-7	
REDOX	38.3	mV			1		04/24/18 13:15		
Turbidity	2.72	NTU			1		04/24/18 13:15		
Static Water Level	781.77	feet			1		04/24/18 13:15		

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### ANALYTICAL RESULTS

Project: 25216067.18 WPL COLUMBIA CCR  
Pace Project No.: 40168058

**Sample: MW 34A**      **Lab ID: 40168058007**      Collected: 04/24/18 13:15      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Field Data</b>									
Analytical Method:									
Temperature, Water (C)	11.0	deg C			1		04/24/18 13:15		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C									
Total Dissolved Solids	412	mg/L	20.0	8.7	1		04/30/18 16:56		
<b>9040 pH</b>									
Analytical Method: EPA 9040									
pH at 25 Degrees C	7.7	Std. Units	0.10	0.010	1		05/01/18 10:37		H6
<b>300.0 IC Anions 28 Days</b>									
Analytical Method: EPA 300.0									
Chloride	8.2	mg/L	2.0	0.50	1		05/03/18 13:21	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		05/03/18 13:21	16984-48-8	
Sulfate	144	mg/L	15.0	5.0	5		05/04/18 01:18	14808-79-8	

**Sample: MW 33AR**      **Lab ID: 40168058008**      Collected: 04/24/18 14:30      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020      Preparation Method: EPA 3010									
Boron	601	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 05:18	7440-42-8	
Calcium	99800	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 05:18	7440-70-2	
<b>Field Data</b>									
Analytical Method:									
Field pH	7.74	Std. Units			1		04/24/18 14:30		
Field Specific Conductance	1079	umhos/cm			1		04/24/18 14:30		
Oxygen, Dissolved	3.00	mg/L			1		04/24/18 14:30	7782-44-7	
REDOX	33.8	mV			1		04/24/18 14:30		
Turbidity	0.61	NTU			1		04/24/18 14:30		
Static Water Level	783.09	feet			1		04/24/18 14:30		
Temperature, Water (C)	10.9	deg C			1		04/24/18 14:30		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C									
Total Dissolved Solids	692	mg/L	20.0	8.7	1		04/30/18 16:56		
<b>9040 pH</b>									
Analytical Method: EPA 9040									
pH at 25 Degrees C	7.7	Std. Units	0.10	0.010	1		05/01/18 10:43		H6
<b>300.0 IC Anions 28 Days</b>									
Analytical Method: EPA 300.0									
Chloride	188	mg/L	10.0	2.5	5		05/04/18 01:50	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		05/03/18 13:53	16984-48-8	
Sulfate	163	mg/L	15.0	5.0	5		05/04/18 01:50	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067.18 WPL COLUMBIA CCR  
Pace Project No.: 40168058

Sample: MW 302 Lab ID: 40168058009 Collected: 04/24/18 15:55 Received: 04/26/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Boron	1950	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 05:26	7440-42-8	
Calcium	110000	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 05:26	7440-70-2	
<b>Field Data</b>		Analytical Method:							
Field pH	7.21	Std. Units			1		04/24/18 15:55		
Field Specific Conductance	894	umhos/cm			1		04/24/18 15:55		
Oxygen, Dissolved	2.80	mg/L			1		04/24/18 15:55	7782-44-7	
REDOX	49.1	mV			1		04/24/18 15:55		
Turbidity	3.42	NTU			1		04/24/18 15:55		
Static Water Level	784.37	feet			1		04/24/18 15:55		
Temperature, Water (C)	10.7	deg C			1		04/24/18 15:55		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	598	mg/L	20.0	8.7	1		04/30/18 16:57		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	7.4	Std. Units	0.10	0.010	1		05/01/18 10:46		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	15.0	mg/L	2.0	0.50	1		05/03/18 14:03	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		05/03/18 14:03	16984-48-8	
Sulfate	109	mg/L	15.0	5.0	5		05/04/18 02:00	14808-79-8	

Sample: MW 84A Lab ID: 40168058010 Collected: 04/25/18 08:55 Received: 04/26/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	04/27/18 07:54	05/02/18 05:33	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	04/27/18 07:54	05/02/18 05:33	7440-38-2	
Barium	14.6	ug/L	1.1	0.34	1	04/27/18 07:54	05/02/18 05:33	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	04/27/18 07:54	05/02/18 05:33	7440-41-7	
Boron	25.0	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 05:33	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	04/27/18 07:54	05/02/18 05:33	7440-43-9	1q
Calcium	76600	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 05:33	7440-70-2	
Chromium	2.4J	ug/L	3.4	1.0	1	04/27/18 07:54	05/02/18 05:33	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	04/27/18 07:54	05/02/18 05:33	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	04/27/18 07:54	05/02/18 05:33	7439-92-1	
Lithium	0.50J	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 05:33	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	04/27/18 07:54	05/02/18 05:33	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	04/27/18 07:54	05/02/18 05:33	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 05:33	7440-28-0	

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### ANALYTICAL RESULTS

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

**Sample: MW 84A**      **Lab ID: 40168058010**      Collected: 04/25/18 08:55      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>7470 Mercury</b> Analytical Method: EPA 7470      Preparation Method: EPA 7470									
Mercury	<0.13	ug/L	0.42	0.13	1	05/01/18 12:20	05/02/18 09:24	7439-97-6	
<b>Field Data</b> Analytical Method:									
Field pH	7.45	Std. Units			1		04/25/18 08:55		
Field Specific Conductance	581.7	umhos/cm			1		04/25/18 08:55		
Oxygen, Dissolved	3.94	mg/L			1		04/25/18 08:55	7782-44-7	
REDOX	53.3	mV			1		04/25/18 08:55		
Turbidity	0.81	NTU			1		04/25/18 08:55		
Static Water Level	785.88	feet			1		04/25/18 08:55		
Temperature, Water (C)	10.2	deg C			1		04/25/18 08:55		
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C									
Total Dissolved Solids	328	mg/L	20.0	8.7	1		04/30/18 16:57		
<b>9040 pH</b> Analytical Method: EPA 9040									
pH at 25 Degrees C	7.6	Std. Units	0.10	0.010	1		05/01/18 10:46		H6
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0									
Chloride	4.8	mg/L	2.0	0.50	1		05/03/18 14:14	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		05/03/18 14:14	16984-48-8	
Sulfate	2.8J	mg/L	3.0	1.0	1		05/03/18 14:14	14808-79-8	

**Sample: MW 301**      **Lab ID: 40168058011**      Collected: 04/25/18 09:45      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020      Preparation Method: EPA 3010									
Antimony	<0.15	ug/L	1.0	0.15	1	04/27/18 07:54	05/02/18 05:41	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	04/27/18 07:54	05/02/18 05:41	7440-38-2	
Barium	9.3	ug/L	1.1	0.34	1	04/27/18 07:54	05/02/18 05:41	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	04/27/18 07:54	05/02/18 05:41	7440-41-7	
Boron	24.3	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 05:41	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	04/27/18 07:54	05/02/18 05:41	7440-43-9	1q
Calcium	112000	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 05:41	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	04/27/18 07:54	05/02/18 05:41	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	04/27/18 07:54	05/02/18 05:41	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	04/27/18 07:54	05/02/18 05:41	7439-92-1	
Lithium	0.55J	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 05:41	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	04/27/18 07:54	05/02/18 05:41	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	04/27/18 07:54	05/02/18 05:41	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 05:41	7440-28-0	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

**Sample: MW 301**      **Lab ID: 40168058011**      Collected: 04/25/18 09:45      Received: 04/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>7470 Mercury</b>									
Analytical Method: EPA 7470    Preparation Method: EPA 7470									
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	05/01/18 12:20	05/02/18 09:27	7439-97-6	
<b>Field Data</b>									
Analytical Method:									
Field pH	<b>6.76</b>	Std. Units			1		04/25/18 09:45		
Field Specific Conductance	<b>774</b>	umhos/cm			1		04/25/18 09:45		
Oxygen, Dissolved	<b>2.35</b>	mg/L			1		04/25/18 09:45	7782-44-7	
REDOX	<b>74.3</b>	mV			1		04/25/18 09:45		
Turbidity	<b>1.12</b>	NTU			1		04/25/18 09:45		
Static Water Level	<b>785.29</b>	feet			1		04/25/18 09:45		
Temperature, Water (C)	<b>7.4</b>	deg C			1		04/25/18 09:45		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C									
Total Dissolved Solids	<b>464</b>	mg/L	20.0	8.7	1		04/30/18 16:58		
<b>9040 pH</b>									
Analytical Method: EPA 9040									
pH at 25 Degrees C	<b>7.0</b>	Std. Units	0.10	0.010	1		05/01/18 10:47		H6
<b>300.0 IC Anions 28 Days</b>									
Analytical Method: EPA 300.0									
Chloride	<b>2.3</b>	mg/L	2.0	0.50	1		05/03/18 14:24	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		05/03/18 14:24	16984-48-8	
Sulfate	<b>8.6</b>	mg/L	3.0	1.0	1		05/03/18 14:24	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 25216067.18 WPL COLUMBIA CCR  
Pace Project No.: 40168058

QC Batch: 287510 Analysis Method: EPA 7470  
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury  
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006, 40168058010, 40168058011

METHOD BLANK: 1682104 Matrix: Water  
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006, 40168058010, 40168058011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	05/02/18 08:57	

LABORATORY CONTROL SAMPLE: 1682105

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1682106 1682107

Parameter	Units	40168058001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.13	5	5	5.3	5.2	106	105	85-115	1	20	

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### QUALITY CONTROL DATA

Project: 25216067.18 WPL COLUMBIA CCR  
Pace Project No.: 40168058

QC Batch: 287177 Analysis Method: EPA 6020  
QC Batch Method: EPA 3010 Analysis Description: 6020 MET  
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006, 40168058007, 40168058008, 40168058009, 40168058010, 40168058011

METHOD BLANK: 1679947 Matrix: Water  
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006, 40168058007, 40168058008, 40168058009, 40168058010, 40168058011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	05/02/18 02:08	
Arsenic	ug/L	<0.28	1.0	05/02/18 02:08	
Barium	ug/L	<0.34	1.1	05/02/18 02:08	
Beryllium	ug/L	<0.18	1.0	05/02/18 02:08	
Boron	ug/L	<3.3	11.0	05/02/18 02:08	
Cadmium	ug/L	<0.081	1.0	05/02/18 02:08	
Calcium	ug/L	<69.8	250	05/02/18 02:08	
Chromium	ug/L	<1.0	3.4	05/02/18 02:08	
Cobalt	ug/L	<0.085	1.0	05/02/18 02:08	
Lead	ug/L	<0.20	1.0	05/02/18 02:08	
Lithium	ug/L	<0.14	1.0	05/02/18 02:08	
Molybdenum	ug/L	<0.44	1.5	05/02/18 02:08	
Selenium	ug/L	<0.32	1.1	05/02/18 02:08	
Thallium	ug/L	<0.14	1.0	05/02/18 02:08	

LABORATORY CONTROL SAMPLE: 1679948

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	516	103	80-120	
Arsenic	ug/L	500	504	101	80-120	
Barium	ug/L	500	487	97	80-120	
Beryllium	ug/L	500	512	102	80-120	
Boron	ug/L	500	493	99	80-120	
Cadmium	ug/L	500	518	104	80-120	
Calcium	ug/L	5000	4960	99	80-120	
Chromium	ug/L	500	493	99	80-120	
Cobalt	ug/L	500	484	97	80-120	
Lead	ug/L	500	487	97	80-120	
Lithium	ug/L	500	486	97	80-120	
Molybdenum	ug/L	500	502	100	80-120	
Selenium	ug/L	500	531	106	80-120	
Thallium	ug/L	500	506	101	80-120	

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### QUALITY CONTROL DATA

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

Parameter	Units	1679949		1679950		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		40167914001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Antimony	ug/L	0.36J	500	500	518	509	103	102	75-125	2	20	
Arsenic	ug/L	0.77J	500	500	511	499	102	100	75-125	2	20	
Barium	ug/L	21.3	500	500	512	505	98	97	75-125	1	20	
Beryllium	ug/L	0.20J	500	500	479	478	96	96	75-125	0	20	
Boron	ug/L	30.4	500	500	473	496	89	93	75-125	5	20	
Cadmium	ug/L	0.27J	500	500	504	496	101	99	75-125	2	20	
Calcium	ug/L	39600	5000	5000	44500	44900	98	105	75-125	1	20	
Chromium	ug/L	2.3J	500	500	484	475	96	95	75-125	2	20	
Cobalt	ug/L	0.39J	500	500	466	460	93	92	75-125	1	20	
Lead	ug/L	0.39J	500	500	491	485	98	97	75-125	1	20	
Lithium	ug/L	1.1	500	500	455	455	91	91	75-125	0	20	
Molybdenum	ug/L	2.0	500	500	510	501	102	100	75-125	2	20	
Selenium	ug/L	0.60J	500	500	528	517	105	103	75-125	2	20	
Thallium	ug/L	0.83J	500	500	513	508	102	101	75-125	1	20	

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### QUALITY CONTROL DATA

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

QC Batch: 287436

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006, 40168058007, 40168058008, 40168058009, 40168058010, 40168058011

METHOD BLANK: 1681718

Matrix: Water

Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006, 40168058007, 40168058008, 40168058009, 40168058010, 40168058011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/30/18 16:53	

LABORATORY CONTROL SAMPLE: 1681719

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	575	568	99	80-120	

SAMPLE DUPLICATE: 1681720

Parameter	Units	40168017001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	754	738	2	5	

SAMPLE DUPLICATE: 1681721

Parameter	Units	40168119001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	544	560	3	5	

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**QUALITY CONTROL DATA**

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

QC Batch: 287352 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006

SAMPLE DUPLICATE: 1681498

Parameter	Units	40167862001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	9.9	9.9	0	20	H6

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**QUALITY CONTROL DATA**

Project: 25216067.18 WPL COLUMBIA CCR  
Pace Project No.: 40168058

QC Batch: 287429 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006

METHOD BLANK: 1681703 Matrix: Water  
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	05/01/18 10:54	
Fluoride	mg/L	<0.10	0.30	05/01/18 10:54	
Sulfate	mg/L	<1.0	3.0	05/01/18 10:54	

LABORATORY CONTROL SAMPLE: 1681704

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.0	100	90-110	
Fluoride	mg/L	2	1.9	96	90-110	
Sulfate	mg/L	20	19.7	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1681705 1681706

Parameter	Units	40168051009		MSD		MS		MSD		% Rec Limits	Max	
		Result	MS Spike Conc.	Spike Conc.	Result	MSD Result	% Rec	% Rec	RPD		RPD	Qual
Chloride	mg/L	23.2	100	100	136	135	113	112	90-110	1	15	M0
Fluoride	mg/L	<0.50	10	10	11.3	11.3	113	113	90-110	1	15	M0
Sulfate	mg/L	54.4	100	100	166	165	111	110	90-110	1	15	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1681707 1681708

Parameter	Units	40168054002		MSD		MS		MSD		% Rec Limits	Max	
		Result	MS Spike Conc.	Spike Conc.	Result	MSD Result	% Rec	% Rec	RPD		RPD	Qual
Chloride	mg/L	120	100	100	227	228	106	108	90-110	0	15	
Fluoride	mg/L	<0.50	10	10	11.2	11.2	112	112	90-110	0	15	M0
Sulfate	mg/L	<5.0	100	100	115	113	115	113	90-110	1	15	M0

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### QUALITY CONTROL DATA

Project: 25216067.18 WPL COLUMBIA CCR  
Pace Project No.: 40168058

QC Batch: 287522 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40168058007, 40168058008, 40168058009, 40168058010, 40168058011

METHOD BLANK: 1682168 Matrix: Water  
Associated Lab Samples: 40168058007, 40168058008, 40168058009, 40168058010, 40168058011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	05/03/18 10:43	
Fluoride	mg/L	<0.10	0.30	05/03/18 10:43	
Sulfate	mg/L	<1.0	3.0	05/03/18 10:43	

LABORATORY CONTROL SAMPLE: 1682169

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.2	106	90-110	
Fluoride	mg/L	2	2.1	107	90-110	
Sulfate	mg/L	20	21.0	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1682170 1682171

Parameter	Units	40168058007		MSD		MSD		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	8.2	20	20	30.1	30.3	109	110	90-110	1	15		
Fluoride	mg/L	<0.10	2	2	2.2	2.2	108	109	90-110	1	15		
Sulfate	mg/L	144	100	100	239	237	95	93	90-110	1	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1682172 1682173

Parameter	Units	40168111011		MSD		MSD		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	191	100	100	284	281	93	90	90-110	1	15		
Fluoride	mg/L	<200	4000	4000	4290	4320	107	108	90-110	1	15		
Sulfate	mg/L	<5.0	100	100	109	110	107	108	90-110	1	15		

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### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

Sample: M-4R		Lab ID: 40168058001	Collected: 04/23/18 14:30	Received: 04/26/18 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	<b>0.217 ± 0.377 (0.673)</b> C:NA T:77%	pCi/L	05/16/18 20:56	13982-63-3	
Radium-228	EPA 904.0	<b>0.524 ± 0.456 (0.935)</b> C:79% T:87%	pCi/L	05/16/18 12:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.741 ± 0.833 (1.61)</b>	pCi/L	05/17/18 14:47	7440-14-4	

Sample: MW 305		Lab ID: 40168058002	Collected: 04/23/18 15:30	Received: 04/26/18 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	<b>0.189 ± 0.327 (0.584)</b> C:NA T:92%	pCi/L	05/16/18 21:10	13982-63-3	
Radium-228	EPA 904.0	<b>0.164 ± 0.498 (1.11)</b> C:81% T:74%	pCi/L	05/16/18 12:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.353 ± 0.825 (1.69)</b>	pCi/L	05/17/18 14:47	7440-14-4	

Sample: MW 303		Lab ID: 40168058003	Collected: 04/24/18 08:50	Received: 04/26/18 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	<b>0.0558 ± 0.289 (0.600)</b> C:NA T:99%	pCi/L	05/16/18 21:10	13982-63-3	
Radium-228	EPA 904.0	<b>0.444 ± 0.381 (0.774)</b> C:78% T:90%	pCi/L	05/16/18 12:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.500 ± 0.670 (1.37)</b>	pCi/L	05/17/18 14:47	7440-14-4	

Sample: FIELD BLANK		Lab ID: 40168058004	Collected: 04/24/18 09:45	Received: 04/26/18 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	<b>0.300 ± 0.313 (0.442)</b> C:NA T:92%	pCi/L	05/16/18 21:10	13982-63-3	
Radium-228	EPA 904.0	<b>-0.323 ± 0.467 (1.11)</b> C:80% T:85%	pCi/L	05/16/18 12:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.300 ± 0.780 (1.55)</b>	pCi/L	05/17/18 14:47	7440-14-4	

Sample: MW 304		Lab ID: 40168058005	Collected: 04/24/18 10:05	Received: 04/26/18 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	<b>0.136 ± 0.311 (0.184)</b> C:NA T:85%	pCi/L	05/16/18 21:10	13982-63-3	
Radium-228	EPA 904.0	<b>0.804 ± 0.488 (0.930)</b> C:75% T:86%	pCi/L	05/16/18 12:45	15262-20-1	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW 304</b> <b>Lab ID: 40168058005</b> Collected: 04/24/18 10:05      Received: 04/26/18 09:20      Matrix: Water PWS:      Site ID:      Sample Type:						
Total Radium	Total Radium Calculation	<b>0.940 ± 0.799 (1.11)</b>	pCi/L	05/17/18 14:47	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW 308</b> <b>Lab ID: 40168058006</b> Collected: 04/24/18 11:20      Received: 04/26/18 09:20      Matrix: Water PWS:      Site ID:      Sample Type:						
Radium-226	EPA 903.1	<b>0.411 ± 0.332 (0.186)</b> C:NA T:92%	pCi/L	05/16/18 21:10	13982-63-3	
Radium-228	EPA 904.0	<b>0.170 ± 0.474 (1.05)</b> C:79% T:82%	pCi/L	05/16/18 12:45	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.581 ± 0.806 (1.24)</b>	pCi/L	05/17/18 14:47	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW 84A</b> <b>Lab ID: 40168058010</b> Collected: 04/25/18 08:55      Received: 04/26/18 09:20      Matrix: Water PWS:      Site ID:      Sample Type:						
Radium-226	EPA 903.1	<b>0.155 ± 0.237 (0.140)</b> C:NA T:103%	pCi/L	05/16/18 21:10	13982-63-3	
Radium-228	EPA 904.0	<b>0.371 ± 0.377 (0.783)</b> C:79% T:87%	pCi/L	05/16/18 12:43	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.526 ± 0.614 (0.923)</b>	pCi/L	05/17/18 14:47	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW 301</b> <b>Lab ID: 40168058011</b> Collected: 04/25/18 09:45      Received: 04/26/18 09:20      Matrix: Water PWS:      Site ID:      Sample Type:						
Radium-226	EPA 903.1	<b>0.122 ± 0.293 (0.566)</b> C:NA T:96%	pCi/L	05/16/18 21:23	13982-63-3	
Radium-228	EPA 904.0	<b>0.760 ± 0.393 (0.692)</b> C:82% T:84%	pCi/L	05/16/18 12:43	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.882 ± 0.686 (1.26)</b>	pCi/L	05/17/18 14:47	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

---

QC Batch:	296646	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
Associated Lab Samples:	40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006, 40168058010, 40168058011		

---

METHOD BLANK:	1452078	Matrix:	Water
Associated Lab Samples:	40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006, 40168058010, 40168058011		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0646 ± 0.295 (0.600) C:NA T:87%	pCi/L	05/16/18 20:42	

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: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

---

QC Batch:	296672	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006, 40168058010, 40168058011		

---

METHOD BLANK:	1452114	Matrix:	Water
Associated Lab Samples:	40168058001, 40168058002, 40168058003, 40168058004, 40168058005, 40168058006, 40168058010, 40168058011		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.409 ± 0.281 (0.532) C:81% T:97%	pCi/L	05/16/18 12:43	

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: 25216067.18 WPL COLUMBIA CCR  
Pace Project No.: 40168058

---

### DEFINITIONS

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 (%)

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

1q Analyte was measured in the associated method blank at -0.13 ug/L.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.18 WPL COLUMBIA CCR

Pace Project No.: 40168058

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40168058001	M-4R	EPA 3010	287177	EPA 6020	287295
40168058002	MW 305	EPA 3010	287177	EPA 6020	287295
40168058003	MW 303	EPA 3010	287177	EPA 6020	287295
40168058004	FIELD BLANK	EPA 3010	287177	EPA 6020	287295
40168058005	MW 304	EPA 3010	287177	EPA 6020	287295
40168058006	MW 308	EPA 3010	287177	EPA 6020	287295
40168058007	MW 34A	EPA 3010	287177	EPA 6020	287295
40168058008	MW 33AR	EPA 3010	287177	EPA 6020	287295
40168058009	MW 302	EPA 3010	287177	EPA 6020	287295
40168058010	MW 84A	EPA 3010	287177	EPA 6020	287295
40168058011	MW 301	EPA 3010	287177	EPA 6020	287295
40168058001	M-4R	EPA 7470	287510	EPA 7470	287604
40168058002	MW 305	EPA 7470	287510	EPA 7470	287604
40168058003	MW 303	EPA 7470	287510	EPA 7470	287604
40168058004	FIELD BLANK	EPA 7470	287510	EPA 7470	287604
40168058005	MW 304	EPA 7470	287510	EPA 7470	287604
40168058006	MW 308	EPA 7470	287510	EPA 7470	287604
40168058010	MW 84A	EPA 7470	287510	EPA 7470	287604
40168058011	MW 301	EPA 7470	287510	EPA 7470	287604
40168058001	M-4R	EPA 903.1	296646		
40168058002	MW 305	EPA 903.1	296646		
40168058003	MW 303	EPA 903.1	296646		
40168058004	FIELD BLANK	EPA 903.1	296646		
40168058005	MW 304	EPA 903.1	296646		
40168058006	MW 308	EPA 903.1	296646		
40168058010	MW 84A	EPA 903.1	296646		
40168058011	MW 301	EPA 903.1	296646		
40168058001	M-4R	EPA 904.0	296672		
40168058002	MW 305	EPA 904.0	296672		
40168058003	MW 303	EPA 904.0	296672		
40168058004	FIELD BLANK	EPA 904.0	296672		
40168058005	MW 304	EPA 904.0	296672		
40168058006	MW 308	EPA 904.0	296672		
40168058010	MW 84A	EPA 904.0	296672		
40168058011	MW 301	EPA 904.0	296672		
40168058001	M-4R	Total Radium Calculation	298891		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.18 WPL COLUMBIA CCR  
Pace Project No.: 40168058

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40168058002	MW 305	Total Radium Calculation	298891		
40168058003	MW 303	Total Radium Calculation	298891		
40168058004	FIELD BLANK	Total Radium Calculation	298891		
40168058005	MW 304	Total Radium Calculation	298891		
40168058006	MW 308	Total Radium Calculation	298891		
40168058010	MW 84A	Total Radium Calculation	298891		
40168058011	MW 301	Total Radium Calculation	298891		
40168058001	M-4R	SM 2540C	287436		
40168058002	MW 305	SM 2540C	287436		
40168058003	MW 303	SM 2540C	287436		
40168058004	FIELD BLANK	SM 2540C	287436		
40168058005	MW 304	SM 2540C	287436		
40168058006	MW 308	SM 2540C	287436		
40168058007	MW 34A	SM 2540C	287436		
40168058008	MW 33AR	SM 2540C	287436		
40168058009	MW 302	SM 2540C	287436		
40168058010	MW 84A	SM 2540C	287436		
40168058011	MW 301	SM 2540C	287436		
40168058001	M-4R	EPA 9040	287352		
40168058002	MW 305	EPA 9040	287352		
40168058003	MW 303	EPA 9040	287352		
40168058004	FIELD BLANK	EPA 9040	287352		
40168058005	MW 304	EPA 9040	287352		
40168058006	MW 308	EPA 9040	287352		
40168058007	MW 34A	EPA 9040	287493		
40168058008	MW 33AR	EPA 9040	287493		
40168058009	MW 302	EPA 9040	287493		
40168058010	MW 84A	EPA 9040	287493		
40168058011	MW 301	EPA 9040	287493		
40168058001	M-4R	EPA 300.0	287429		
40168058002	MW 305	EPA 300.0	287429		
40168058003	MW 303	EPA 300.0	287429		
40168058004	FIELD BLANK	EPA 300.0	287429		
40168058005	MW 304	EPA 300.0	287429		
40168058006	MW 308	EPA 300.0	287429		
40168058007	MW 34A	EPA 300.0	287522		
40168058008	MW 33AR	EPA 300.0	287522		
40168058009	MW 302	EPA 300.0	287522		
40168058010	MW 84A	EPA 300.0	287522		
40168058011	MW 301	EPA 300.0	287522		

### REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: SCS Engineers  
 Branch/Location: Madison WI  
 Project Contact: Meg Blodgett  
 Phone: 608 224 2830  
 Project Number: 25210007-18  
 Project Name: WPI Columbia  
 Project State: WI  
 Sampled By (Print): Jackie Derringer  
 Sampled By (Sign): [Signature]  
 PO #: [Signature]  
 Regulatory Program: [Signature]



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UPPER MIDWEST REGION  
 MN: 612-607-1700 WI: 920-469-2436

Data Package Options (billable)  
 EPA Level III  
 EPA Level IV  
 On your sample (billable)  
 NOT needed on your sample

Matrix Codes  
 A = Air B = Bids C = Charcoal O = Oil S = Soil SI = Sludge  
 W = Water DW = Drinking Water GW = Ground Water SW = Surface Water WW = Waste Water WP = Wipes

PAGE LAB #	CLIENT FIELD ID	DATE	COLLECTION TIME	MATRIX	Analyses Requested	V/N	Pick Letter
001	M-4R	4-23	1430	GW	metals	N	D
002	MW 305	4-23	1530	GW	pH	N	A
003	MW 303	4-24	850	GW	TDS, Cl, F, SO4	N	A
004	Field Blank	4-24	945	DS	Radium 226	N	D
005	MW 304	4-24	1005	GW	Radium 228	N	D
006	MW 305	4-24	1120	GW			
007	<del>MW 304</del> MW 344	4-24	1315	GW			
008	MW 33AR	4-24	1430	GW			
009	MW 302	4-24	1555	GW			
010	MW 34A	4-25	855	GW			
011	MW 301	4-25	945	GW			

Quote #: [Blank]  
 Mail To Contact: Meg Blodgett  
 Mail To Company: SCS Engineers  
 Mail To Address: 2830 W 19th Dr, Madison WI 53718  
 Invoice To Contact: [Blank]  
 Invoice To Company: [Blank]  
 Invoice To Address: [Blank]  
 Invoice To Phone: [Blank]

CLIENT COMMENTS: @mw304  
 LAB COMMENTS (Lab Use Only): [Blank]  
 Profile #: [Blank]

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge)  
 Date Needed: [Blank]  
 Relinquished By: [Signature] Date/Time: 1330 4-25-18  
 Relinquished By: Ped Bx Date/Time: 4/26/18 09:20  
 Relinquished By: [Signature] Date/Time: 4/26/18 09:20  
 Relinquished By: [Signature] Date/Time: 4/26/18 09:20  
 Relinquished By: [Signature] Date/Time: 4/26/18 09:20

Received By: [Signature] Date/Time: 4/26/18 09:20  
 Received By: [Signature] Date/Time: 4/26/18 09:20  
 Received By: [Signature] Date/Time: 4/26/18 09:20  
 Received By: [Signature] Date/Time: 4/26/18 09:20  
 PACE Project No. 40168058  
 Receipt Temp = [Blank] °C  
 Sample Receipt pH [Blank]  
 Cooler Custody Seal Present / Not Present [Blank]  
 Intact / Not Intact [Blank]



**Sample Condition Upon Receipt Form (SCUR)**

Client Name: SCS Engineers

Project #: \_\_\_\_\_

**WO#: 40168058**



Courier:  CS Logistics  Fed Ex  Speedee  UPS  Walto  
 Client  Pace Other: \_\_\_\_\_

Tracking #: 7806 9327 3755, 7806 9318 2530

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

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

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

Cooler Temperature Uncorr: 20.2 / ICorr: \_\_\_\_\_  Samples on ice, cooling process has begun

Temp Blank Present:  yes  no

Biological Tissue is Frozen:  yes  no

Person examining contents:  
Date: 4/26/18  
Initials: SSM

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°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 Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:	For Analysis: <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8. <u>No volume for analysis on 007-009</u> <u>SSM 4/26/18</u>
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

**Client Notification/ Resolution:**

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ If checked, see attached form for additional comments

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: RMR for DM

Date: 4/26/18

June 19, 2018

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40169796

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on May 25, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS  
Nicole Kron, SCS ENGINEERS  
Jeff Maxted, ALLIANT ENERGY  
Marc Morandi, ALLIANT ENERGY



## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182



## CERTIFICATIONS

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40169796

---

### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601  
ANAB DOD-ELAP Rad Accreditation #: L2417  
Alabama Certification #: 41590  
Arizona Certification #: AZ0734  
Arkansas Certification  
California Certification #: 04222CA  
Colorado Certification #: PA01547  
Connecticut Certification #: PH-0694  
Delaware Certification  
EPA Region 4 DW Rad  
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 #: KY90133  
KY WW Permit #: KY0098221  
KY WW Permit #: KY0000221  
Louisiana DHH/TNI Certification #: LA180012  
Louisiana DEQ/TNI Certification #: 4086  
Maine Certification #: 2017020  
Maryland Certification #: 308  
Massachusetts Certification #: M-PA1457  
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235  
Montana Certification #: Cert0082  
Nebraska Certification #: NE-OS-29-14  
Nevada Certification #: PA014572018-1  
New Hampshire/TNI Certification #: 297617  
New Jersey/TNI Certification #: PA051  
New Mexico Certification #: PA01457  
New York/TNI Certification #: 10888  
North Carolina Certification #: 42706  
North Dakota Certification #: R-190  
Ohio EPA Rad Approval: #41249  
Oregon/TNI Certification #: PA200002-010  
Pennsylvania/TNI Certification #: 65-00282  
Puerto Rico Certification #: PA01457  
Rhode Island Certification #: 65-00282  
South Dakota Certification  
Tennessee Certification #: 02867  
Texas/TNI Certification #: T104704188-17-3  
Utah/TNI Certification #: PA014572017-9  
USDA Soil Permit #: P330-17-00091  
Vermont Dept. of Health: ID# VT-0282  
Virgin Island/PADEP Certification  
Virginia/VELAP Certification #: 9526  
Washington Certification #: C868  
West Virginia DEP Certification #: 143  
West Virginia DHHR Certification #: 9964C  
Wisconsin Approve List for Rad  
Wyoming Certification #: 8TMS-L

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### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182

## SAMPLE SUMMARY

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40169796

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40169796001	MW 306	Water	05/24/18 11:10	05/25/18 09:45
40169796002	MW 307	Water	05/24/18 12:15	05/25/18 09:45

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40169796

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40169796001	MW 306	EPA 6020	DS1	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			RMW	7	PASI-G
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40169796002	MW 307	EPA 6020	DS1
EPA 7470	AJT			1	PASI-G
	RMW			7	PASI-G
EPA 903.1	KAC			1	PASI-PA
EPA 904.0	JLW			1	PASI-PA
Total Radium Calculation	CMC			1	PASI-PA
SM 2540C	TMK			1	PASI-G
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40169796

**Sample: MW 306**      **Lab ID: 40169796001**      Collected: 05/24/18 11:10      Received: 05/25/18 09:45      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	05/31/18 07:24	06/07/18 02:35	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	05/31/18 07:24	06/07/18 02:35	7440-38-2	
Barium	11.3	ug/L	1.1	0.34	1	05/31/18 07:24	06/07/18 02:35	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	05/31/18 07:24	06/07/18 02:35	7440-41-7	
Boron	92.0	ug/L	11.0	3.3	1	05/31/18 07:24	06/07/18 02:35	7440-42-8	
Cadmium	<0.081	ug/L	1.0	0.081	1	05/31/18 07:24	06/07/18 02:35	7440-43-9	
Calcium	78400	ug/L	2500	698	10	05/31/18 07:24	06/07/18 14:32	7440-70-2	P6
Chromium	2.2J	ug/L	3.4	1.0	1	05/31/18 07:24	06/07/18 02:35	7440-47-3	
Cobalt	<0.085	ug/L	1.0	0.085	1	05/31/18 07:24	06/07/18 02:35	7440-48-4	
Lead	<0.20	ug/L	1.0	0.20	1	05/31/18 07:24	06/07/18 02:35	7439-92-1	
Lithium	3.8	ug/L	1.0	0.14	1	05/31/18 07:24	06/07/18 02:35	7439-93-2	
Molybdenum	7.2	ug/L	1.5	0.44	1	05/31/18 07:24	06/07/18 02:35	7439-98-7	
Selenium	0.58J	ug/L	1.1	0.32	1	05/31/18 07:24	06/07/18 02:35	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	05/31/18 07:24	06/07/18 02:35	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.13	ug/L	0.42	0.13	1	06/01/18 08:55	06/04/18 09:27	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.25	Std. Units			1		05/24/18 11:10		
Field Specific Conductance	583	umhos/cm			1		05/24/18 11:10		
Oxygen, Dissolved	8.91	mg/L			1		05/24/18 11:10	7782-44-7	
REDOX	92.8	mV			1		05/24/18 11:10		
Turbidity	3.96	NTU			1		05/24/18 11:10		
Static Water Level	785.79	feet			1		05/24/18 11:10		
Temperature, Water (C)	9.6	deg C			1		05/24/18 11:10		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	314	mg/L	20.0	8.7	1		05/30/18 14:31		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	7.4	Std. Units	0.10	0.010	1		05/29/18 10:59		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	1.8J	mg/L	2.0	0.50	1		06/07/18 17:01	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		06/07/18 17:01	16984-48-8	
Sulfate	6.3	mg/L	3.0	1.0	1		06/07/18 17:01	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40169796

**Sample: MW 307**      **Lab ID: 40169796002**      Collected: 05/24/18 12:15      Received: 05/25/18 09:45      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.39J</b>	ug/L	1.0	0.15	1	05/31/18 07:24	06/07/18 03:16	7440-36-0	
Arsenic	<b>0.70J</b>	ug/L	1.0	0.28	1	05/31/18 07:24	06/07/18 03:16	7440-38-2	
Barium	<b>13.6</b>	ug/L	1.1	0.34	1	05/31/18 07:24	06/07/18 03:16	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	05/31/18 07:24	06/07/18 03:16	7440-41-7	
Boron	<b>313</b>	ug/L	11.0	3.3	1	05/31/18 07:24	06/07/18 03:16	7440-42-8	
Cadmium	<b>&lt;0.081</b>	ug/L	1.0	0.081	1	05/31/18 07:24	06/07/18 03:16	7440-43-9	
Calcium	<b>107000</b>	ug/L	250	69.8	1	05/31/18 07:24	06/07/18 14:57	7440-70-2	
Chromium	<b>&lt;1.0</b>	ug/L	3.4	1.0	1	05/31/18 07:24	06/07/18 03:16	7440-47-3	
Cobalt	<b>2.7</b>	ug/L	1.0	0.085	1	05/31/18 07:24	06/07/18 03:16	7440-48-4	
Lead	<b>&lt;0.20</b>	ug/L	1.0	0.20	1	05/31/18 07:24	06/07/18 03:16	7439-92-1	
Lithium	<b>0.20J</b>	ug/L	1.0	0.14	1	05/31/18 07:24	06/07/18 03:16	7439-93-2	
Molybdenum	<b>0.94J</b>	ug/L	1.5	0.44	1	05/31/18 07:24	06/07/18 03:16	7439-98-7	
Selenium	<b>&lt;0.32</b>	ug/L	1.1	0.32	1	05/31/18 07:24	06/07/18 03:16	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	05/31/18 07:24	06/07/18 03:16	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.13</b>	ug/L	0.42	0.13	1	06/01/18 08:55	06/04/18 09:34	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>6.83</b>	Std. Units			1		05/24/18 12:15		
Field Specific Conductance	<b>915</b>	umhos/cm			1		05/24/18 12:15		
Oxygen, Dissolved	<b>0.20</b>	mg/L			1		05/24/18 12:15	7782-44-7	
REDOX	<b>-34.0</b>	mV			1		05/24/18 12:15		
Turbidity	<b>6.64</b>	NTU			1		05/24/18 12:15		
Static Water Level	<b>785.09</b>	feet			1		05/24/18 12:15		
Temperature, Water (C)	<b>9.5</b>	deg C			1		05/24/18 12:15		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>576</b>	mg/L	20.0	8.7	1		05/30/18 14:31		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	<b>7.0</b>	Std. Units	0.10	0.010	1		05/29/18 11:00		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>52.8</b>	mg/L	2.0	0.50	1		06/07/18 17:12	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		06/07/18 17:12	16984-48-8	
Sulfate	<b>115</b>	mg/L	15.0	5.0	5		06/08/18 10:44	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40169796

QC Batch: 290652 Analysis Method: EPA 7470  
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury  
Associated Lab Samples: 40169796001, 40169796002

METHOD BLANK: 1700161 Matrix: Water  
Associated Lab Samples: 40169796001, 40169796002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	06/04/18 09:22	

LABORATORY CONTROL SAMPLE: 1700162

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1700163 1700164

Parameter	Units	1700163		1700164		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40169796001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	ug/L	<0.13	5	5	4.7	4.6	94	92	85-115	2	20

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40169796

QC Batch: 290500 Analysis Method: EPA 6020  
QC Batch Method: EPA 3010 Analysis Description: 6020 MET  
Associated Lab Samples: 40169796001, 40169796002

METHOD BLANK: 1699477 Matrix: Water  
Associated Lab Samples: 40169796001, 40169796002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	06/07/18 01:39	
Arsenic	ug/L	<0.28	1.0	06/07/18 01:39	
Barium	ug/L	<0.34	1.1	06/07/18 01:39	
Beryllium	ug/L	<0.18	1.0	06/07/18 01:39	
Boron	ug/L	<3.3	11.0	06/07/18 01:39	
Cadmium	ug/L	<0.081	1.0	06/07/18 01:39	
Calcium	ug/L	<69.8	250	06/07/18 14:19	
Chromium	ug/L	<1.0	3.4	06/07/18 01:39	
Cobalt	ug/L	<0.085	1.0	06/07/18 01:39	
Lead	ug/L	<0.20	1.0	06/07/18 01:39	
Lithium	ug/L	<0.14	1.0	06/07/18 01:39	
Molybdenum	ug/L	<0.44	1.5	06/07/18 01:39	
Selenium	ug/L	<0.32	1.1	06/07/18 01:39	
Thallium	ug/L	<0.14	1.0	06/07/18 01:39	

LABORATORY CONTROL SAMPLE: 1699478

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	505	101	80-120	
Arsenic	ug/L	500	496	99	80-120	
Barium	ug/L	500	485	97	80-120	
Beryllium	ug/L	500	497	99	80-120	
Boron	ug/L	500	466	93	80-120	
Cadmium	ug/L	500	502	100	80-120	
Calcium	ug/L	5000	4760	95	80-120	
Chromium	ug/L	500	485	97	80-120	
Cobalt	ug/L	500	477	95	80-120	
Lead	ug/L	500	463	93	80-120	
Lithium	ug/L	500	476	95	80-120	
Molybdenum	ug/L	500	488	98	80-120	
Selenium	ug/L	500	536	107	80-120	
Thallium	ug/L	500	461	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1699479 1699480

Parameter	Units	40169796001 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	<0.15	500	500	498	511	100	102	75-125	2	20	

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40169796

Parameter	Units	1699479		1699480		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40169796001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Arsenic	ug/L	<0.28	500	500	488	500	98	100	75-125	2	20		
Barium	ug/L	11.3	500	500	496	507	97	99	75-125	2	20		
Beryllium	ug/L	<0.18	500	500	487	536	97	107	75-125	10	20		
Boron	ug/L	92.0	500	500	563	653	94	112	75-125	15	20		
Cadmium	ug/L	<0.081	500	500	489	501	98	100	75-125	2	20		
Calcium	ug/L	78400	5000	5000	85900	80800	149	46	75-125	6	20	P6	
Chromium	ug/L	2.2J	500	500	478	493	95	98	75-125	3	20		
Cobalt	ug/L	<0.085	500	500	463	477	93	95	75-125	3	20		
Lead	ug/L	<0.20	500	500	466	477	93	95	75-125	2	20		
Lithium	ug/L	3.8	500	500	472	524	94	104	75-125	11	20		
Molybdenum	ug/L	7.2	500	500	498	513	98	101	75-125	3	20		
Selenium	ug/L	0.58J	500	500	529	540	106	108	75-125	2	20		
Thallium	ug/L	<0.14	500	500	466	480	93	96	75-125	3	20		

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40169796

QC Batch: 290444 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 40169796001, 40169796002

METHOD BLANK: 1699202 Matrix: Water  
Associated Lab Samples: 40169796001, 40169796002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	05/30/18 14:28	

LABORATORY CONTROL SAMPLE: 1699203

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	615	590	96	80-120	

SAMPLE DUPLICATE: 1699204

Parameter	Units	40169693003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	414	398	4	5	

SAMPLE DUPLICATE: 1699205

Parameter	Units	40169865001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	250	248	1	5	

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40169796

QC Batch: 290200 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40169796001, 40169796002

SAMPLE DUPLICATE: 1698516

Parameter	Units	40169613002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.5	0	20	H6

SAMPLE DUPLICATE: 1698517

Parameter	Units	40169697001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.2	8.1	0	20	H6

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40169796

QC Batch: 290551 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40169796001, 40169796002

METHOD BLANK: 1699663 Matrix: Water  
Associated Lab Samples: 40169796001, 40169796002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	06/07/18 14:23	
Fluoride	mg/L	<0.10	0.30	06/07/18 14:23	
Sulfate	mg/L	<1.0	3.0	06/07/18 14:23	

LABORATORY CONTROL SAMPLE: 1699664

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.5	102	90-110	
Fluoride	mg/L	2	2.1	103	90-110	
Sulfate	mg/L	20	20.5	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1699665 1699666

Parameter	Units	40169781002 Result	MS Spike Conc.	MSD Spike Conc.	1699665		1699666		% Rec Limits	RPD	Max RPD	Qual
					MS Result	MSD Result	MS % Rec	MSD % Rec				
Chloride	mg/L	173	400	400	598	596	106	106	90-110	0	15	
Fluoride	mg/L	<2.0	40	40	42.2	42.1	106	105	90-110	0	15	
Sulfate	mg/L	47.5J	400	400	460	464	103	104	90-110	1	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1699667 1699668

Parameter	Units	40169797003 Result	MS Spike Conc.	MSD Spike Conc.	1699667		1699668		% Rec Limits	RPD	Max RPD	Qual
					MS Result	MSD Result	MS % Rec	MSD % Rec				
Chloride	mg/L	44.3	200	200	256	256	106	106	90-110	0	15	
Fluoride	mg/L	<0.10	2	2	2.4	2.4	118	118	90-110	0	15 M0	
Sulfate	mg/L	221	200	200	430	427	104	103	90-110	1	15	

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### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40169796

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.310 ± 0.503 (0.875)</b> C:NA T:81%	pCi/L	06/18/18 19:19	13982-63-3	
Radium-228		EPA 904.0	<b>0.190 ± 0.402 (0.889)</b> C:77% T:76%	pCi/L	06/15/18 15:56	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.500 ± 0.905 (1.76)</b>	pCi/L	06/19/18 12:56	7440-14-4	

Parameters		Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226		EPA 903.1	<b>0.309 ± 0.438 (0.742)</b> C:NA T:82%	pCi/L	06/18/18 19:19	13982-63-3	
Radium-228		EPA 904.0	<b>0.196 ± 0.415 (0.918)</b> C:75% T:71%	pCi/L	06/15/18 15:56	15262-20-1	
Total Radium		Total Radium Calculation	<b>0.505 ± 0.853 (1.66)</b>	pCi/L	06/19/18 12:56	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40169796

QC Batch: 300533

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Associated Lab Samples: 40169796001, 40169796002

METHOD BLANK: 1470785

Matrix: Water

Associated Lab Samples: 40169796001, 40169796002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.267 (0.431) C:NA T:88%	pCi/L	06/18/18 19:19	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40169796

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QC Batch:	300868	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	40169796001, 40169796002		

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METHOD BLANK:	1472493	Matrix:	Water
Associated Lab Samples:	40169796001, 40169796002		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.780 ± 0.478 (0.873) C:57% T:79%	pCi/L	06/15/18 12:48	

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## QUALIFIERS

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40169796

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### DEFINITIONS

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 (%)

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

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

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40169796

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40169796001	MW 306	EPA 3010	290500	EPA 6020	290624
40169796002	MW 307	EPA 3010	290500	EPA 6020	290624
40169796001	MW 306	EPA 7470	290652	EPA 7470	290751
40169796002	MW 307	EPA 7470	290652	EPA 7470	290751
40169796001	MW 306				
40169796002	MW 307				
40169796001	MW 306	EPA 903.1	300533		
40169796002	MW 307	EPA 903.1	300533		
40169796001	MW 306	EPA 904.0	300868		
40169796002	MW 307	EPA 904.0	300868		
40169796001	MW 306	Total Radium Calculation	302718		
40169796002	MW 307	Total Radium Calculation	302718		
40169796001	MW 306	SM 2540C	290444		
40169796002	MW 307	SM 2540C	290444		
40169796001	MW 306	EPA 9040	290200		
40169796002	MW 307	EPA 9040	290200		
40169796001	MW 306	EPA 300.0	290551		
40169796002	MW 307	EPA 300.0	290551		

### REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)



www.faceabts.com

# CHAIN OF CUSTODY

SSK

40169796

UPPER MIDWEST REGION  
MN: 612-607-1700 WI: 920-469-2436

Company Name: SCS  
 Branch/Location: Madison  
 Project Contact: Meg Blodgett  
 Phone: 608 216-9362  
 Project Number: 25217156.01  
 Project Name: Columbia  
 Project State: WI  
 Sampled By (Print): Paul A. Grover  
 Sampled By (Sign):  
 PO #:  
 Regulatory Program:  
 Data Package Options (billable):  
 EPA Level III  
 EPA Level IV  
 MS/MSD (billable):  
 On your sample  
 NOT needed on your sample  
 Matrix Codes:  
 A = Air, B = Biot, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water

PAGE LAB #	CLIENT FIELD ID	DATE	TIME	MATRIX	Analyses Requested			
					V/N	Pick Letter		
D01	MW 306	5/24/18	11:10	GW	X	A	Ph, Cl, TDS, F, SO4	
D02	MW 307	12:15			X	D	Metals	
D03	MW 309	13:20			X	D	Radium 226 + 228 (See Attached Lists)	
D04	MW 310	14:30						
D05	MW 311	15:15						
D06	Field Blank	11:40		DI				

Filtered? (YES/NO)  
 Preservation (CODE):  
 A=None, B=HCl, C=H2SO4, D=HNO3, E=DI Water, F=Methanol, G=NaOH, H=Sodium Bisulfate Solution, I=Sodium Thiosulfate, J=Other

Quote #:  
 Mail To Contact:  
 Mail To Company:  
 Mail To Address:  
 Invoice To Contact:  
 Invoice To Company:  
 Invoice To Address:  
 Invoice To Phone:  
 CLIENT COMMENTS  
 LAB COMMENTS (Lab Use Only)  
 Profile #

Relinquished By: Paul A. Grover  
 Date/Time: 5/24/18 16:30  
 Received By: [Signature]  
 Date/Time: 5/25/18 09:45

Relinquished By: [Signature]  
 Date/Time: 5/25/18 09:45  
 Received By: [Signature]  
 Date/Time: 5/25/18 09:45

FACE Project No. 40169796  
 Receipt Temp = PD1 °C  
 Sample Receipt pH OK / Adjusted  
 Coates Custody Seal Present / Not Present Intact / Not Intact

40169796

Sampling Points and Parameters - CCR Rule Sampling Program, May 2018 Secondary Pond Resampling Event  
 Groundwater Monitoring - Columbia Dry Ash and Ash Ponds Disposal Facilities / SCS Engineers Project #25216067

	Parameter	MW-301	MW-302	MW-303	MW-304	MW-305	M-4R	MW-33AR	MW-34A	MW-84A	MW-306	MW-307	MW-308	Field Blank	TOTAL
Appendix III Parameters	Boron										x	x		x	3
	Calcium										x	x		x	3
	Chloride										x	x		x	3
	Fluoride										x	x		x	3
	pH										x	x		x	3
	Sulfate										x	x		x	3
	TDS										x	x		x	3
Appendix IV Parameters	Antimony										x	x		x	3
	Arsenic										x	x		x	3
	Barium										x	x		x	3
	Beryllium										x	x		x	3
	Cadmium										x	x		x	3
	Chromium										x	x		x	3
	Cobalt										x	x		x	3
	Fluoride										x	x		x	3
	Lead										x	x		x	3
	Lithium										x	x		x	3
	Mercury										x	x		x	3
	Molybdenum										x	x		x	3
	Selenium										x	x		x	3
	Thallium										x	x		x	3
Radium										x	x		x	3	
Field Parameters	Groundwater Elevation										x	x			2
	Well Depth										x	x			2
	pH (field)										x	x			2
	Specific Conductance										x	x			2
	Dissolved Oxygen										x	x			2
	ORP										x	x			2
	Temperature										x	x			2
	Turbidity										x	x			2
	Color										x	x			2
	Odor										x	x			2

Notes:

I:\25216067.00\Data and Calculations\Field Work Requests\WPL\_COL\_CCR\_Rule\_Sampling\_Secondary Pond\_1805.xls]Sheet1

40169796

Table 2. Sampling Points and Parameters - CCR Rule Sampling Program  
 Groundwater Monitoring - Columbia Dry Ash and Ash Ponds Disposal Facilities / SCS Engineers Project  
 #25216067

	Parameter	MW- 307	MW- 309	MW- 310	MW- 311	MW- 312	Field Blank	TOTAL
Appendix III Parameters	Boron	x	x	x	x	x	x	6
	Calcium	x	x	x	x	x	x	6
	Chloride	x	x	x	x	x	x	6
	Fluoride	x	x	x	x	x	x	6
	pH	x	x	x	x	x	x	6
	Sulfate	x	x	x	x	x	x	6
	TDS	x	x	x	x	x	x	6
Appendix IV Parameters	Antimony	x	x	x	x	x	x	6
	Arsenic	x	x	x	x	x	x	6
	Barium	x	x	x	x	x	x	6
	Beryllium	x	x	x	x	x	x	6
	Cadmium	x	x	x	x	x	x	6
	Chromium	x	x	x	x	x	x	6
	Cobalt	x	x	x	x	x	x	6
	Fluoride	x	x	x	x	x	x	6
	Lead	x	x	x	x	x	x	6
	Lithium	x	x	x	x	x	x	6
	Mercury	x	x	x	x	x	x	6
	Molybdenum	x	x	x	x	x	x	6
	Selenium	x	x	x	x	x	x	6
	Thallium	x	x	x	x	x	x	6
	Radium	x	x	x	x	x	x	6
Field Parameters	Groundwater Elevation	x	x	x	x	x		5
	Well Depth	x	x	x	x	x		5
	pH (field)	x	x	x	x	x		5
	Specific Conductance	x	x	x	x	x		5
	Dissolved Oxygen	x	x	x	x	x		5
	ORP	x	x	x	x	x		5
	Temperature	x	x	x	x	x		5
	Turbidity	x	x	x	x	x		5
	Color	x	x	x	x	x		5
	Odor	x	x	x	x	x		5

Notes:

C:\Users\3510med\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\1WB99N1

Client Name: SCS

Sample Preservation Receipt Form

Project # 40169796

All containers needing preservation have been checked and noted below:  Yes  No  N/A

Lab Lot# of pH paper: 105771 Lab Std #/ID of preservation (if pH adjusted):

Initial when completed: [Signature] Date/Time:

Pace Analytical Services, LLC  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302


Pace Lab #	Glass	Plastic	Vials	Jars	General		VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
					SP5T	ZPLC							
001	AG1U	BP1U	DG9A	JGFU	SP5T								2.5 / 5 / 10
002	AG1H	BP2N	DG9T	WGFU	ZPLC								2.5 / 5 / 10
003	AG4S	BP2Z	VG9U	WPFU	GN								2.5 / 5 / 10
004	AG4U	BP3U	VG9H										2.5 / 5 / 10
005	AG5U	BP3C	VG9M										2.5 / 5 / 10
006	AG2S	BP3N	VG9D										2.5 / 5 / 10
007	BG3U	BP3S											2.5 / 5 / 10
008													2.5 / 5 / 10
009													2.5 / 5 / 10
010													2.5 / 5 / 10
011													2.5 / 5 / 10
012													2.5 / 5 / 10
013													2.5 / 5 / 10
014													2.5 / 5 / 10
015													2.5 / 5 / 10
016													2.5 / 5 / 10
017													2.5 / 5 / 10
018													2.5 / 5 / 10
019													2.5 / 5 / 10
020													2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: \_\_\_\_\_  
 Headspace in VOA Vials (<6mm) :  Yes  No  N/A \*If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 ml amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCl	BP2N	500 ml plastic HNO3	DG9T	40 ml amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 ml amber glass H2SO4	BP2Z	500 ml plastic NaOH, Znact	VG9U	40 ml clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 ml amber glass unpres	BP3U	250 ml plastic unpres	VG9H	40 ml clear vial HCL		
AG5U	100 ml amber glass unpres	BP3C	250 ml plastic NaOH	VG9M	40 ml clear vial MeOH		
AG2S	500 ml amber glass H2SO4	BP3N	250 ml plastic HNO3	VG9D	40 ml clear vial DI		
BG3U	250 ml clear glass unpres	BP3S	250 ml plastic H2SO4			SP5T	120 ml plastic Na Thiosulfate ziploc bag
						ZPLC	ziploc bag
						GN:	11 poly HNO3

**Sample Condition Upon Receipt Form (SCUR)**

**Client Name:** SCS  
**Courier:**  CS Logistics  Fed Ex  Speedee  UPS  Walto  
 Client  Pace Other: \_\_\_\_\_

Project #: **WO# : 40169796**  
  
 40169796

**Tracking #:** \_\_\_\_\_  
**Custody Seal on Cooler/Box Present:**  yes  no **Seals intact:**  yes  no  
**Custody Seal on Samples Present:**  yes  no **Seals intact:**  yes  no  
**Packing Material:**  Bubble Wrap  Bubble Bags  None  Other  
**Thermometer Used** SR - NA **Type of Ice:**  Wet  Blue  Dry  None  Samples on ice, cooling process has begun  
**Cooler Temperature** Uncorr: \_\_\_\_\_ / Corr: 20

**Temp Blank Present:**  yes  no **Biological Tissue is Frozen:**  yes  no

**Person examining contents:**  
 Date: 5/25/18  
 Initials: CM

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 Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
<b>Short Hold Time Analysis (&lt;72hr):</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
<b>Rush Turn Around Time Requested:</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <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	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR 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	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

**Client Notification/ Resolution:** \_\_\_\_\_ If checked, see attached form for additional comments   
 Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments/ Resolution: \_\_\_\_\_

**Project Manager Review:** RMR for DM **Date:** 5/25/18

## A7 Round 7 Background Sampling, Analytical Laboratory Reports

November 14, 2018

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 26, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS  
Nicole Kron, SCS ENGINEERS  
Jeff Maxted, ALLIANT ENERGY  
Marc Morandi, ALLIANT ENERGY



## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182

## CERTIFICATIONS

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

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### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601  
ANAB DOD-ELAP Rad Accreditation #: L2417  
Alabama Certification #: 41590  
Arizona Certification #: AZ0734  
Arkansas Certification  
California Certification #: 04222CA  
Colorado Certification #: PA01547  
Connecticut Certification #: PH-0694  
Delaware Certification  
EPA Region 4 DW Rad  
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 #: KY90133  
KY WW Permit #: KY0098221  
KY WW Permit #: KY0000221  
Louisiana DHH/TNI Certification #: LA180012  
Louisiana DEQ/TNI Certification #: 4086  
Maine Certification #: 2017020  
Maryland Certification #: 308  
Massachusetts Certification #: M-PA1457  
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235  
Montana Certification #: Cert0082  
Nebraska Certification #: NE-OS-29-14  
Nevada Certification #: PA014572018-1  
New Hampshire/TNI Certification #: 297617  
New Jersey/TNI Certification #: PA051  
New Mexico Certification #: PA01457  
New York/TNI Certification #: 10888  
North Carolina Certification #: 42706  
North Dakota Certification #: R-190  
Ohio EPA Rad Approval: #41249  
Oregon/TNI Certification #: PA200002-010  
Pennsylvania/TNI Certification #: 65-00282  
Puerto Rico Certification #: PA01457  
Rhode Island Certification #: 65-00282  
South Dakota Certification  
Tennessee Certification #: 02867  
Texas/TNI Certification #: T104704188-17-3  
Utah/TNI Certification #: PA014572017-9  
USDA Soil Permit #: P330-17-00091  
Vermont Dept. of Health: ID# VT-0282  
Virgin Island/PADEP Certification  
Virginia/VELAP Certification #: 9526  
Washington Certification #: C868  
West Virginia DEP Certification #: 143  
West Virginia DHHR Certification #: 9964C  
Wisconsin Approve List for Rad  
Wyoming Certification #: 8TMS-L

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40178431001	MW-301	Water	10/24/18 18:30	10/26/18 09:20
40178431002	MW-84A	Water	10/24/18 17:25	10/26/18 09:20
40178431003	MW-303	Water	10/24/18 12:00	10/26/18 09:20
40178431004	MW-304	Water	10/24/18 11:05	10/26/18 09:20
40178431005	MW-305	Water	10/24/18 09:40	10/26/18 09:20
40178431006	M-4R	Water	10/24/18 08:43	10/26/18 09:20
40178431007	FIELD BLANK	Water	10/24/18 17:40	10/26/18 09:20

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40178431001	MW-301	EPA 6020	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40178431002	MW-84A	EPA 6020	KXS
EPA 7470	AJT			1	PASI-G
	AXL			7	PASI-G
EPA 903.1	MK1			1	PASI-PA
EPA 904.0	JLW			1	PASI-PA
Total Radium Calculation	CMC			1	PASI-PA
SM 2540C	TMK			1	PASI-G
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G
40178431003	MW-303			EPA 6020	KXS
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40178431004	MW-304	EPA 6020	KXS
EPA 7470	AJT			1	PASI-G
	AXL			7	PASI-G
EPA 903.1	MK1			1	PASI-PA
EPA 904.0	JLW			1	PASI-PA
Total Radium Calculation	CMC			1	PASI-PA
SM 2540C	TMK			1	PASI-G
EPA 9040	ALY			1	PASI-G
EPA 300.0	HMB			3	PASI-G
40178431005	MW-305			EPA 6020	KXS

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### SAMPLE ANALYTE COUNT

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40178431006	M-4R	EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
40178431007	FIELD BLANK	SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
EPA 300.0	HMB	3	PASI-G		

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

**Sample: MW-301**      **Lab ID: 40178431001**      Collected: 10/24/18 18:30      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:24	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	11/01/18 08:57	11/10/18 06:24	7440-38-2	
Barium	11.5	ug/L	4.9	1.5	1	11/01/18 08:57	11/10/18 06:24	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	11/01/18 08:57	11/10/18 06:24	7440-41-7	
Boron	27.8	ug/L	11.0	3.3	1	11/01/18 08:57	11/10/18 06:24	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:24	7440-43-9	
Calcium	101000	ug/L	250	69.8	1	11/01/18 08:57	11/10/18 06:24	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	11/01/18 08:57	11/10/18 06:24	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	11/01/18 08:57	11/10/18 06:24	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	11/01/18 08:57	11/10/18 06:24	7439-92-1	
Lithium	0.52J	ug/L	1.0	0.19	1	11/01/18 08:57	11/10/18 06:24	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	11/01/18 08:57	11/10/18 06:24	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	11/01/18 08:57	11/10/18 06:24	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/01/18 08:57	11/10/18 06:24	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.084	ug/L	0.28	0.084	1	10/29/18 10:50	10/30/18 08:13	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	6.79	Std. Units			1		10/24/18 18:30		
Field Specific Conductance	767.0	umhos/cm			1		10/24/18 18:30		
Oxygen, Dissolved	2.49	mg/L			1		10/24/18 18:30	7782-44-7	
REDOX	77.9	mV			1		10/24/18 18:30		
Turbidity	3.30	NTU			1		10/24/18 18:30		
Static Water Level	788.98	feet			1		10/24/18 18:30		
Temperature, Water (C)	11.1	deg C			1		10/24/18 18:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	424	mg/L	20.0	8.7	1		10/30/18 16:23		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	7.1	Std. Units	0.10	0.010	1		11/09/18 08:33		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	3.2	mg/L	2.0	0.50	1		11/01/18 21:26	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		11/01/18 21:26	16984-48-8	
Sulfate	19.2	mg/L	3.0	1.0	1		11/01/18 21:26	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

**Sample: MW-84A**      **Lab ID: 40178431002**      Collected: 10/24/18 17:25      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:30	7440-36-0	
Arsenic	0.33J	ug/L	1.0	0.28	1	11/01/18 08:57	11/10/18 06:30	7440-38-2	
Barium	14.5	ug/L	4.9	1.5	1	11/01/18 08:57	11/10/18 06:30	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	11/01/18 08:57	11/10/18 06:30	7440-41-7	
Boron	10.1J	ug/L	11.0	3.3	1	11/01/18 08:57	11/10/18 06:30	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:30	7440-43-9	
Calcium	74000	ug/L	250	69.8	1	11/01/18 08:57	11/10/18 06:30	7440-70-2	
Chromium	1.6J	ug/L	3.4	1.0	1	11/01/18 08:57	11/10/18 06:30	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	11/01/18 08:57	11/10/18 06:30	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	11/01/18 08:57	11/10/18 06:30	7439-92-1	
Lithium	0.49J	ug/L	1.0	0.19	1	11/01/18 08:57	11/10/18 06:30	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	11/01/18 08:57	11/10/18 06:30	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	11/01/18 08:57	11/10/18 06:30	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/01/18 08:57	11/10/18 06:30	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.084	ug/L	0.28	0.084	1	10/29/18 10:50	10/30/18 08:15	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.24	Std. Units			1		10/24/18 17:25		
Field Specific Conductance	609	umhos/cm			1		10/24/18 17:25		
Oxygen, Dissolved	10.01	mg/L			1		10/24/18 17:25	7782-44-7	
REDOX	71.5	mV			1		10/24/18 17:25		
Turbidity	3.79	NTU			1		10/24/18 17:25		
Static Water Level	788.32	feet			1		10/24/18 17:25		
Temperature, Water (C)	11.6	deg C			1		10/24/18 17:25		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	330	mg/L	20.0	8.7	1		10/30/18 16:24		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	7.5	Std. Units	0.10	0.010	1		11/09/18 08:35		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	4.2	mg/L	2.0	0.50	1		11/01/18 21:38	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		11/01/18 21:38	16984-48-8	
Sulfate	1.6J	mg/L	3.0	1.0	1		11/01/18 21:38	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

**Sample: MW-303**      **Lab ID: 40178431003**      Collected: 10/24/18 12:00      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:37	7440-36-0	
Arsenic	7.8	ug/L	1.0	0.28	1	11/01/18 08:57	11/10/18 06:37	7440-38-2	
Barium	16.6	ug/L	4.9	1.5	1	11/01/18 08:57	11/10/18 06:37	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	11/01/18 08:57	11/10/18 06:37	7440-41-7	
Boron	2360	ug/L	11.0	3.3	1	11/01/18 08:57	11/10/18 06:37	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:37	7440-43-9	
Calcium	28200	ug/L	250	69.8	1	11/01/18 08:57	11/10/18 06:37	7440-70-2	
Chromium	49.1	ug/L	3.4	1.0	1	11/01/18 08:57	11/10/18 06:37	7440-47-3	
Cobalt	0.40J	ug/L	1.0	0.12	1	11/01/18 08:57	11/10/18 06:37	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	11/01/18 08:57	11/10/18 06:37	7439-92-1	
Lithium	1.3	ug/L	1.0	0.19	1	11/01/18 08:57	11/10/18 06:37	7439-93-2	
Molybdenum	85.5	ug/L	1.5	0.44	1	11/01/18 08:57	11/10/18 06:37	7439-98-7	
Selenium	15.1	ug/L	1.1	0.32	1	11/01/18 08:57	11/10/18 06:37	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/01/18 08:57	11/10/18 06:37	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.084	ug/L	0.28	0.084	1	10/29/18 10:50	10/30/18 08:17	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	8.89	Std. Units			1		10/24/18 12:00		
Field Specific Conductance	823	umhos/cm			1		10/24/18 12:00		
Oxygen, Dissolved	8.93	mg/L			1		10/24/18 12:00	7782-44-7	
REDOX	70.1	mV			1		10/24/18 12:00		
Turbidity	4.71	NTU			1		10/24/18 12:00		
Static Water Level	787.51	feet			1		10/24/18 12:00		
Temperature, Water (C)	12.5	deg C			1		10/24/18 12:00		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	516	mg/L	20.0	8.7	1		10/31/18 16:27		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	8.6	Std. Units	0.10	0.010	1		11/09/18 08:37		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	2.6	mg/L	2.0	0.50	1		11/01/18 21:50	16887-00-6	
Fluoride	0.16J	mg/L	0.30	0.10	1		11/01/18 21:50	16984-48-8	
Sulfate	327	mg/L	30.0	10.0	10		11/02/18 13:10	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

**Sample: MW-304**      **Lab ID: 40178431004**      Collected: 10/24/18 11:05      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:44	7440-36-0	
Arsenic	1.6	ug/L	1.0	0.28	1	11/01/18 08:57	11/10/18 06:44	7440-38-2	
Barium	33.6	ug/L	4.9	1.5	1	11/01/18 08:57	11/10/18 06:44	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	11/01/18 08:57	11/10/18 06:44	7440-41-7	
Boron	892	ug/L	11.0	3.3	1	11/01/18 08:57	11/10/18 06:44	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:44	7440-43-9	
Calcium	72400	ug/L	250	69.8	1	11/01/18 08:57	11/10/18 06:44	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	11/01/18 08:57	11/10/18 06:44	7440-47-3	
Cobalt	0.88J	ug/L	1.0	0.12	1	11/01/18 08:57	11/10/18 06:44	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	11/01/18 08:57	11/10/18 06:44	7439-92-1	
Lithium	<0.19	ug/L	1.0	0.19	1	11/01/18 08:57	11/10/18 06:44	7439-93-2	
Molybdenum	10.2	ug/L	1.5	0.44	1	11/01/18 08:57	11/10/18 06:44	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	11/01/18 08:57	11/10/18 06:44	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/01/18 08:57	11/10/18 06:44	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.084	ug/L	0.28	0.084	1	10/29/18 10:50	10/30/18 08:20	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.11	Std. Units			1		10/24/18 11:05		
Field Specific Conductance	707	umhos/cm			1		10/24/18 11:05		
Oxygen, Dissolved	1.08	mg/L			1		10/24/18 11:05	7782-44-7	
REDOX	-43.0	mV			1		10/24/18 11:05		
Turbidity	5.89	NTU			1		10/24/18 11:05		
Static Water Level	789.05	feet			1		10/24/18 11:05		
Temperature, Water (C)	16.7	deg C			1		10/24/18 11:05		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	384	mg/L	20.0	8.7	1		10/31/18 16:28		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	7.5	Std. Units	0.10	0.010	1		11/09/18 08:39		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	36.9	mg/L	2.0	0.50	1		11/01/18 22:02	16887-00-6	
Fluoride	0.14J	mg/L	0.30	0.10	1		11/01/18 22:02	16984-48-8	
Sulfate	34.1	mg/L	3.0	1.0	1		11/01/18 22:02	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

**Sample: MW-305**      **Lab ID: 40178431005**      Collected: 10/24/18 09:40      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>0.58J</b>	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:51	7440-36-0	
Arsenic	<b>0.40J</b>	ug/L	1.0	0.28	1	11/01/18 08:57	11/10/18 06:51	7440-38-2	
Barium	<b>11.0</b>	ug/L	4.9	1.5	1	11/01/18 08:57	11/10/18 06:51	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	11/01/18 08:57	11/10/18 06:51	7440-41-7	
Boron	<b>1600</b>	ug/L	11.0	3.3	1	11/01/18 08:57	11/10/18 06:51	7440-42-8	
Cadmium	<b>&lt;0.15</b>	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:51	7440-43-9	
Calcium	<b>60200</b>	ug/L	250	69.8	1	11/01/18 08:57	11/10/18 06:51	7440-70-2	
Chromium	<b>1.1J</b>	ug/L	3.4	1.0	1	11/01/18 08:57	11/10/18 06:51	7440-47-3	
Cobalt	<b>0.13J</b>	ug/L	1.0	0.12	1	11/01/18 08:57	11/10/18 06:51	7440-48-4	
Lead	<b>&lt;0.24</b>	ug/L	1.0	0.24	1	11/01/18 08:57	11/10/18 06:51	7439-92-1	
Lithium	<b>0.24J</b>	ug/L	1.0	0.19	1	11/01/18 08:57	11/10/18 06:51	7439-93-2	
Molybdenum	<b>45.6</b>	ug/L	1.5	0.44	1	11/01/18 08:57	11/10/18 06:51	7439-98-7	
Selenium	<b>5.4</b>	ug/L	1.1	0.32	1	11/01/18 08:57	11/10/18 06:51	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	11/01/18 08:57	11/10/18 06:51	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.084</b>	ug/L	0.28	0.084	1	10/29/18 10:50	10/30/18 08:22	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.70</b>	Std. Units			1		10/24/18 09:40		
Field Specific Conductance	<b>565</b>	umhos/cm			1		10/24/18 09:40		
Oxygen, Dissolved	<b>2.78</b>	mg/L			1		10/24/18 09:40	7782-44-7	
REDOX	<b>102.6</b>	mV			1		10/24/18 09:40		
Turbidity	<b>3.52</b>	NTU			1		10/24/18 09:40		
Static Water Level	<b>790.04</b>	feet			1		10/24/18 09:40		
Temperature, Water (C)	<b>25.7</b>	deg C			1		10/24/18 09:40		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>312</b>	mg/L	20.0	8.7	1		10/31/18 16:28		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	<b>7.8</b>	Std. Units	0.10	0.010	1		11/09/18 08:40		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>26.2</b>	mg/L	2.0	0.50	1		11/01/18 22:15	16887-00-6	
Fluoride	<b>0.36</b>	mg/L	0.30	0.10	1		11/01/18 22:15	16984-48-8	
Sulfate	<b>123</b>	mg/L	30.0	10.0	10		11/01/18 22:51	14808-79-8	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

**Sample: M-4R**      **Lab ID: 40178431006**      Collected: 10/24/18 08:43      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 07:11	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	11/01/18 08:57	11/10/18 07:11	7440-38-2	
Barium	23.7	ug/L	4.9	1.5	1	11/01/18 08:57	11/10/18 07:11	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	11/01/18 08:57	11/10/18 07:11	7440-41-7	
Boron	1140	ug/L	11.0	3.3	1	11/01/18 08:57	11/10/18 07:11	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 07:11	7440-43-9	
Calcium	84100	ug/L	250	69.8	1	11/01/18 08:57	11/10/18 07:11	7440-70-2	
Chromium	1.3J	ug/L	3.4	1.0	1	11/01/18 08:57	11/10/18 07:11	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	11/01/18 08:57	11/10/18 07:11	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	11/01/18 08:57	11/10/18 07:11	7439-92-1	
Lithium	1.1	ug/L	1.0	0.19	1	11/01/18 08:57	11/10/18 07:11	7439-93-2	
Molybdenum	15.4	ug/L	1.5	0.44	1	11/01/18 08:57	11/10/18 07:11	7439-98-7	
Selenium	4.1	ug/L	1.1	0.32	1	11/01/18 08:57	11/10/18 07:11	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/01/18 08:57	11/10/18 07:11	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.084	ug/L	0.28	0.084	1	10/29/18 10:50	10/30/18 08:29	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	7.13	Std. Units			1		10/24/18 08:43		
Field Specific Conductance	819	umhos/cm			1		10/24/18 08:43		
Oxygen, Dissolved	1.12	mg/L			1		10/24/18 08:43	7782-44-7	
REDOX	137.3	mV			1		10/24/18 08:43		
Turbidity	3.54	NTU			1		10/24/18 08:43		
Static Water Level	788.47	feet			1		10/24/18 08:43		
Temperature, Water (C)	16.4	deg C			1		10/24/18 08:43		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	424	mg/L	20.0	8.7	1		10/31/18 16:28		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	7.4	Std. Units	0.10	0.010	1		11/09/18 08:41		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	26.3	mg/L	2.0	0.50	1		11/02/18 18:08	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		11/02/18 18:08	16984-48-8	
Sulfate	89.2	mg/L	15.0	5.0	5		11/02/18 20:34	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

**Sample: FIELD BLANK**      **Lab ID: 40178431007**      Collected: 10/24/18 17:40      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/08/18 11:05	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	11/01/18 08:57	11/08/18 11:05	7440-38-2	
Barium	<1.5	ug/L	4.9	1.5	1	11/01/18 08:57	11/08/18 11:05	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	11/01/18 08:57	11/08/18 11:05	7440-41-7	
Boron	<3.3	ug/L	11.0	3.3	1	11/01/18 08:57	11/10/18 05:02	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/08/18 11:05	7440-43-9	
Calcium	<69.8	ug/L	250	69.8	1	11/01/18 08:57	11/08/18 11:05	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	11/01/18 08:57	11/08/18 11:05	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	11/01/18 08:57	11/08/18 11:05	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	11/01/18 08:57	11/08/18 11:05	7439-92-1	
Lithium	<0.19	ug/L	1.0	0.19	1	11/01/18 08:57	11/08/18 11:05	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	11/01/18 08:57	11/08/18 11:05	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	11/01/18 08:57	11/08/18 11:05	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/01/18 08:57	11/08/18 11:05	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.084	ug/L	0.28	0.084	1	10/29/18 10:50	10/30/18 08:31	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		10/31/18 16:28		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	5.7	Std. Units	0.10	0.010	1		11/09/18 08:43		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<0.50	mg/L	2.0	0.50	1		11/02/18 18:20	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		11/02/18 18:20	16984-48-8	
Sulfate	<1.0	mg/L	3.0	1.0	1		11/02/18 18:20	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

QC Batch: 304586 Analysis Method: EPA 7470  
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury  
Associated Lab Samples: 40178431001, 40178431002, 40178431003, 40178431004, 40178431005, 40178431006, 40178431007

METHOD BLANK: 1780537 Matrix: Water  
Associated Lab Samples: 40178431001, 40178431002, 40178431003, 40178431004, 40178431005, 40178431006, 40178431007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.084	0.28	10/30/18 07:29	

LABORATORY CONTROL SAMPLE: 1780538

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1780539 1780540

Parameter	Units	40178327008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.000084 mg/L	5	5	4.8	4.6	96	93	85-115	3	20	

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

QC Batch: 305100 Analysis Method: EPA 6020  
QC Batch Method: EPA 3010 Analysis Description: 6020 MET  
Associated Lab Samples: 40178431001, 40178431002, 40178431003, 40178431004, 40178431005, 40178431006, 40178431007

METHOD BLANK: 1782425 Matrix: Water  
Associated Lab Samples: 40178431001, 40178431002, 40178431003, 40178431004, 40178431005, 40178431006, 40178431007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	11/08/18 10:51	
Arsenic	ug/L	<0.28	1.0	11/08/18 10:51	
Barium	ug/L	<1.5	4.9	11/08/18 10:51	
Beryllium	ug/L	<0.18	1.0	11/08/18 10:51	
Boron	ug/L	<3.3	11.0	11/10/18 04:48	
Cadmium	ug/L	<0.15	1.0	11/08/18 10:51	
Calcium	ug/L	<69.8	250	11/08/18 10:51	
Chromium	ug/L	<1.0	3.4	11/08/18 10:51	
Cobalt	ug/L	<0.12	1.0	11/08/18 10:51	
Lead	ug/L	<0.24	1.0	11/08/18 10:51	
Lithium	ug/L	<0.19	1.0	11/08/18 10:51	
Molybdenum	ug/L	<0.44	1.5	11/08/18 10:51	
Selenium	ug/L	<0.32	1.1	11/08/18 10:51	
Thallium	ug/L	<0.14	1.0	11/08/18 10:51	

LABORATORY CONTROL SAMPLE: 1782426

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	511	102	80-120	
Arsenic	ug/L	500	492	98	80-120	
Barium	ug/L	500	482	96	80-120	
Beryllium	ug/L	500	447	89	80-120	
Boron	ug/L	500	488	98	80-120	
Cadmium	ug/L	500	500	100	80-120	
Calcium	ug/L	5000	4650	93	80-120	
Chromium	ug/L	500	470	94	80-120	
Cobalt	ug/L	500	467	93	80-120	
Lead	ug/L	500	482	96	80-120	
Lithium	ug/L	500	413	83	80-120	
Molybdenum	ug/L	500	496	99	80-120	
Selenium	ug/L	500	515	103	80-120	
Thallium	ug/L	500	493	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1782427 1782428

Parameter	Units	40178429002 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	<0.15	500	500	520	526	104	105	75-125	1	20	

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

Parameter	Units	40178429002		MS		MSD		MS		MSD		% Rec	Limits	RPD	Max	RPD	Qual
		Result	Conc.	Spike	Conc.	Result	Result	% Rec	% Rec								
Arsenic	ug/L	<0.28	500	500	500	511	101	102	75-125	2	20						
Barium	ug/L	8.5	500	500	496	503	97	99	75-125	1	20						
Beryllium	ug/L	<0.18	500	500	558	558	112	112	75-125	0	20						
Boron	ug/L	166	500	500	740	737	115	114	75-125	0	20						
Cadmium	ug/L	<0.15	500	500	514	519	103	104	75-125	1	20						
Calcium	ug/L	86700	5000	5000	93600	96000	137	186	75-125	3	20	P6					
Chromium	ug/L	1.7J	500	500	501	510	100	102	75-125	2	20						
Cobalt	ug/L	<0.12	500	500	476	486	95	97	75-125	2	20						
Lead	ug/L	0.26J	500	500	448	453	89	91	75-125	1	20						
Lithium	ug/L	0.51J	500	500	536	537	107	107	75-125	0	20						
Molybdenum	ug/L	4.0	500	500	534	539	106	107	75-125	1	20						
Selenium	ug/L	0.59J	500	500	518	527	103	105	75-125	2	20						
Thallium	ug/L	<0.14	500	500	459	466	92	93	75-125	1	20						

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

QC Batch: 304816 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 40178431001, 40178431002

METHOD BLANK: 1781285 Matrix: Water  
Associated Lab Samples: 40178431001, 40178431002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/30/18 16:19	

LABORATORY CONTROL SAMPLE: 1781286

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	615	594	97	80-120	

SAMPLE DUPLICATE: 1781287

Parameter	Units	40178429004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	566	558	1	5	

SAMPLE DUPLICATE: 1781288

Parameter	Units	40178431001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	424	434	2	5	

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

QC Batch: 304976 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 40178431003, 40178431004, 40178431005, 40178431006, 40178431007

METHOD BLANK: 1781983 Matrix: Water  
Associated Lab Samples: 40178431003, 40178431004, 40178431005, 40178431006, 40178431007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/31/18 16:27	

LABORATORY CONTROL SAMPLE: 1781984

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	615	580	94	80-120	

SAMPLE DUPLICATE: 1781985

Parameter	Units	40178524006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	386	390	1	5	

SAMPLE DUPLICATE: 1781987

Parameter	Units	40178449001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	130	140	7	5	R1

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

QC Batch: 306003 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40178431001, 40178431002, 40178431003, 40178431004, 40178431005, 40178431006, 40178431007

SAMPLE DUPLICATE: 1788832

Parameter	Units	40178431002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.5	0	20	H6

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

QC Batch: 305098 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40178431001, 40178431002, 40178431003, 40178431004, 40178431005

METHOD BLANK: 1782420 Matrix: Water  
Associated Lab Samples: 40178431001, 40178431002, 40178431003, 40178431004, 40178431005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	11/01/18 19:24	
Fluoride	mg/L	<0.10	0.30	11/01/18 19:24	
Sulfate	mg/L	<1.0	3.0	11/01/18 19:24	

LABORATORY CONTROL SAMPLE: 1782421

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.6	98	90-110	
Fluoride	mg/L	2	2.1	105	90-110	
Sulfate	mg/L	20	19.3	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1782422 1782423

Parameter	Units	40178431005		1782422		1782423		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Chloride	mg/L	26.2	20	20	45.7	46.0	98	99	90-110	1	15		
Fluoride	mg/L	0.36	2	2	2.5	2.5	106	108	90-110	2	15		
Sulfate	mg/L	123	200	200	315	316	96	96	90-110	0	15		

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

QC Batch: 305127 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40178431006, 40178431007

METHOD BLANK: 1782521 Matrix: Water  
Associated Lab Samples: 40178431006, 40178431007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	11/02/18 11:57	
Fluoride	mg/L	<0.10	0.30	11/02/18 11:57	
Sulfate	mg/L	<1.0	3.0	11/02/18 11:57	

LABORATORY CONTROL SAMPLE: 1782522

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.0	105	90-110	
Fluoride	mg/L	2	2.2	109	90-110	
Sulfate	mg/L	20	20.7	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1782523 1782524

Parameter	Units	40178652001		MSD		MSD		% Rec		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	247	200	200	433	428	93	91	90-110	1	15		
Fluoride	mg/L	<0.10	2	2	2.0	2.1	101	103	90-110	2	15		
Sulfate	mg/L	76.7	200	200	272	270	98	96	90-110	1	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1782525 1782526

Parameter	Units	40178405004		MSD		MSD		% Rec		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	1.8J	20	20	22.4	22.8	103	105	90-110	2	15		
Fluoride	mg/L	<0.10	2	2	2.1	2.2	107	109	90-110	2	15		
Sulfate	mg/L	26.9	20	20	47.2	47.6	101	104	90-110	1	15		

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

Sample: MW-301		Lab ID: 40178431001	Collected: 10/24/18 18:30	Received: 10/26/18 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	<b>0.247 ± 0.484 (0.870)</b> C:NA T:88%	pCi/L	11/12/18 20:22	13982-63-3	
Radium-228	EPA 904.0	<b>0.405 ± 0.423 (0.885)</b> C:74% T:89%	pCi/L	11/08/18 11:04	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.652 ± 0.907 (1.76)</b>	pCi/L	11/13/18 16:15	7440-14-4	

Sample: MW-84A		Lab ID: 40178431002	Collected: 10/24/18 17:25	Received: 10/26/18 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	<b>0.313 ± 0.409 (0.674)</b> C:NA T:90%	pCi/L	11/12/18 20:22	13982-63-3	
Radium-228	EPA 904.0	<b>0.307 ± 0.336 (0.698)</b> C:72% T:85%	pCi/L	11/08/18 11:04	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.620 ± 0.745 (1.37)</b>	pCi/L	11/13/18 16:15	7440-14-4	

Sample: MW-303		Lab ID: 40178431003	Collected: 10/24/18 12:00	Received: 10/26/18 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	<b>0.328 ± 0.465 (0.788)</b> C:NA T:85%	pCi/L	11/12/18 20:36	13982-63-3	
Radium-228	EPA 904.0	<b>0.416 ± 0.392 (0.805)</b> C:76% T:84%	pCi/L	11/08/18 11:04	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.744 ± 0.857 (1.59)</b>	pCi/L	11/13/18 16:15	7440-14-4	

Sample: MW-304		Lab ID: 40178431004	Collected: 10/24/18 11:05	Received: 10/26/18 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	<b>0.244 ± 0.415 (0.733)</b> C:NA T:88%	pCi/L	11/12/18 20:36	13982-63-3	
Radium-228	EPA 904.0	<b>0.434 ± 0.344 (0.680)</b> C:71% T:90%	pCi/L	11/08/18 11:09	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.678 ± 0.759 (1.41)</b>	pCi/L	11/13/18 16:15	7440-14-4	

Sample: MW-305		Lab ID: 40178431005	Collected: 10/24/18 09:40	Received: 10/26/18 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	<b>0.578 ± 0.523 (0.771)</b> C:NA T:88%	pCi/L	11/12/18 20:36	13982-63-3	
Radium-228	EPA 904.0	<b>0.346 ± 0.417 (0.879)</b> C:64% T:80%	pCi/L	11/08/18 11:05	15262-20-1	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	<b>0.924 ± 0.940 (1.65)</b>	pCi/L	11/13/18 16:15	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.139 ± 0.432 (0.836)</b> C:NA T:84%	pCi/L	11/12/18 20:36	13982-63-3	
Radium-228	EPA 904.0	<b>0.191 ± 0.344 (0.754)</b> C:76% T:79%	pCi/L	11/08/18 11:05	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.330 ± 0.776 (1.59)</b>	pCi/L	11/13/18 16:15	7440-14-4	

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.175 ± 0.345 (0.630)</b> C:NA T:91%	pCi/L	11/12/18 20:36	13982-63-3	
Radium-228	EPA 904.0	<b>0.0478 ± 0.325 (0.748)</b> C:72% T:81%	pCi/L	11/08/18 11:05	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.223 ± 0.670 (1.38)</b>	pCi/L	11/13/18 16:26	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

QC Batch: 318792

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Associated Lab Samples: 40178431001, 40178431002, 40178431003, 40178431004, 40178431005, 40178431006, 40178431007

METHOD BLANK: 1554902

Matrix: Water

Associated Lab Samples: 40178431001, 40178431002, 40178431003, 40178431004, 40178431005, 40178431006, 40178431007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.365 ± 0.379 (0.565) C:NA T:94%	pCi/L	11/12/18 20:08	

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: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

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QC Batch:	318802	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
Associated Lab Samples:	40178431001, 40178431002, 40178431003, 40178431004, 40178431005, 40178431006, 40178431007		

---

METHOD BLANK:	1554917	Matrix:	Water
Associated Lab Samples:	40178431001, 40178431002, 40178431003, 40178431004, 40178431005, 40178431006, 40178431007		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.141 ± 0.346 (0.770) C:74% T:81%	pCi/L	11/08/18 11:04	

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: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178431

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### DEFINITIONS

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 (%)

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

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

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40178431001	MW-301	EPA 3010	305100	EPA 6020	305289
40178431002	MW-84A	EPA 3010	305100	EPA 6020	305289
40178431003	MW-303	EPA 3010	305100	EPA 6020	305289
40178431004	MW-304	EPA 3010	305100	EPA 6020	305289
40178431005	MW-305	EPA 3010	305100	EPA 6020	305289
40178431006	M-4R	EPA 3010	305100	EPA 6020	305289
40178431007	FIELD BLANK	EPA 3010	305100	EPA 6020	305289
40178431001	MW-301	EPA 7470	304586	EPA 7470	304719
40178431002	MW-84A	EPA 7470	304586	EPA 7470	304719
40178431003	MW-303	EPA 7470	304586	EPA 7470	304719
40178431004	MW-304	EPA 7470	304586	EPA 7470	304719
40178431005	MW-305	EPA 7470	304586	EPA 7470	304719
40178431006	M-4R	EPA 7470	304586	EPA 7470	304719
40178431007	FIELD BLANK	EPA 7470	304586	EPA 7470	304719
40178431001	MW-301				
40178431002	MW-84A				
40178431003	MW-303				
40178431004	MW-304				
40178431005	MW-305				
40178431006	M-4R				
40178431001	MW-301	EPA 903.1	318792		
40178431002	MW-84A	EPA 903.1	318792		
40178431003	MW-303	EPA 903.1	318792		
40178431004	MW-304	EPA 903.1	318792		
40178431005	MW-305	EPA 903.1	318792		
40178431006	M-4R	EPA 903.1	318792		
40178431007	FIELD BLANK	EPA 903.1	318792		
40178431001	MW-301	EPA 904.0	318802		
40178431002	MW-84A	EPA 904.0	318802		
40178431003	MW-303	EPA 904.0	318802		
40178431004	MW-304	EPA 904.0	318802		
40178431005	MW-305	EPA 904.0	318802		
40178431006	M-4R	EPA 904.0	318802		
40178431007	FIELD BLANK	EPA 904.0	318802		
40178431001	MW-301	Total Radium Calculation	320409		
40178431002	MW-84A	Total Radium Calculation	320409		
40178431003	MW-303	Total Radium Calculation	320409		
40178431004	MW-304	Total Radium Calculation	320409		
40178431005	MW-305	Total Radium Calculation	320409		
40178431006	M-4R	Total Radium Calculation	320409		
40178431007	FIELD BLANK	Total Radium Calculation	320415		
40178431001	MW-301	SM 2540C	304816		
40178431002	MW-84A	SM 2540C	304816		
40178431003	MW-303	SM 2540C	304976		
40178431004	MW-304	SM 2540C	304976		

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178431

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40178431005	MW-305	SM 2540C	304976		
40178431006	M-4R	SM 2540C	304976		
40178431007	FIELD BLANK	SM 2540C	304976		
40178431001	MW-301	EPA 9040	306003		
40178431002	MW-84A	EPA 9040	306003		
40178431003	MW-303	EPA 9040	306003		
40178431004	MW-304	EPA 9040	306003		
40178431005	MW-305	EPA 9040	306003		
40178431006	M-4R	EPA 9040	306003		
40178431007	FIELD BLANK	EPA 9040	306003		
40178431001	MW-301	EPA 300.0	305098		
40178431002	MW-84A	EPA 300.0	305098		
40178431003	MW-303	EPA 300.0	305098		
40178431004	MW-304	EPA 300.0	305098		
40178431005	MW-305	EPA 300.0	305098		
40178431006	M-4R	EPA 300.0	305127		
40178431007	FIELD BLANK	EPA 300.0	305127		

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**Sample Preservation Receipt Form**

Client Name: SCS

Project # W0178951

All containers needing preservation have been checked and noted below: Yes  No  N/A

Lab Lot# of pH paper: 1028578 Lab Std #/ID of preservation (if pH adjusted):

405439

Initial when completed:

Date/Time: 08/30/19 15:52


10/26/18

Pace Analytical Services, LLC  
1241 Bellevue Street, Suite 39  
Green Bay, WI 54302

Pace Lab #	Glass							Plastic							Vials					Jars			General		VOA Vials (>6mm) *				Volume (mL)					
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9		NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted		
001																																		2.5/5/10
002																																		2.5/5/10
003																																		2.5/5/10
004																																		2.5/5/10
005																																		2.5/5/10
006																																		2.5/5/10
007																																		2.5/5/10
008																																		2.5/5/10
009																																		2.5/5/10
010																																		2.5/5/10
011																																		2.5/5/10
012																																		2.5/5/10
013																																		2.5/5/10
014																																		2.5/5/10
015																																		2.5/5/10
016																																		2.5/5/10
017																																		2.5/5/10
018																																		2.5/5/10
019																																		2.5/5/10
020																																		2.5/5/10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: \_\_\_\_\_ Headspace in VOA Vials (>6mm):  Yes  No  N/A \*If yes look in headspace column


AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN
1 liter amber glass	1 liter amber glass HCL	125 ml amber glass H2SO4	120 ml amber glass unpres	100 ml amber glass unpres	500 ml amber glass H2SO4	250 ml clear glass unpres	1 liter plastic unpres	500 ml plastic HNO3	500 ml plastic NaOH, Znact	250 ml plastic unpres	250 ml plastic NaOH	250 ml plastic HNO3	250 ml plastic H2SO4	40 ml amber ascorbic	40 ml amber Na Thio	40 ml clear vial unpres	40 ml clear vial HCL	40 ml clear vial MeOH	40 ml clear vial DI	4 oz amber jar unpres	4 oz clear jar unpres	4 oz plastic jar unpres	120 ml plastic Na Thiosulfate	ziploc bag	

 1241 Bellevue Street, Green Bay, WI 54302	Document Name: <b>Sample Condition Upon Receipt (SCUR)</b>	Document Revised: 25Apr2018
	Document No.: F-GB-C-031-Rev.07	Issuing Authority: Pace Green Bay Quality Office

**Sample Condition Upon Receipt Form (SCUR)**

**Client Name:** SUS Project #: \_\_\_\_\_  
**Courier:**  CS Logistics  Fed Ex  Speedee  UPS  Waitco  
 Client  Pace Other: \_\_\_\_\_

**WO#: 40178431**



40178431

**Tracking #:** 7834 4298 4310 / 4272 / 4283  
**Custody Seal on Cooler/Box Present:**  yes  no    **Seals intact:**  yes  no  
**Custody Seal on Samples Present:**  yes  no    **Seals intact:**  yes  no  
**Packing Material:**  Bubble Wrap  Bubble Bags  None  Other  
**Thermometer Used:** SR - N/A    **Type of Ice:**  Wet  Blue Dry None  Samples on ice, cooling process has begun  
**Cooler Temperature:** Uncorr: 10.0 ICorr: \_\_\_\_\_

**Temp Blank Present:**  yes  no    **Biological Tissue is Frozen:**  yes  no  
 Temp should be above freezing to 6°C.  
 Biota Samples may be received at ≤ 0°C.

**Person examining contents:**  
 Date: 10/26/18  
 Initials: MS

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<u>SM 10/26/18</u> <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>no proj state</u> <span style="float: right;"><u>SM 10/26/18</u></span>
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 Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:	8.	
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis    Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

**Client Notification/ Resolution:** \_\_\_\_\_ If checked, see attached form for additional comments   
 Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments/ Resolution: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Project Manager Review:** RMR for SM **Date:** 10/26/18

November 14, 2018

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178429

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 26, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS  
Nicole Kron, SCS ENGINEERS  
Jeff Maxted, ALLIANT ENERGY  
Marc Morandi, ALLIANT ENERGY



## REPORT OF LABORATORY ANALYSIS

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08/30/2019 - Classification: Internal - ECRM6700182

## CERTIFICATIONS

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178429

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### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601  
ANAB DOD-ELAP Rad Accreditation #: L2417  
Alabama Certification #: 41590  
Arizona Certification #: AZ0734  
Arkansas Certification  
California Certification #: 04222CA  
Colorado Certification #: PA01547  
Connecticut Certification #: PH-0694  
Delaware Certification  
EPA Region 4 DW Rad  
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 #: KY90133  
KY WW Permit #: KY0098221  
KY WW Permit #: KY0000221  
Louisiana DHH/TNI Certification #: LA180012  
Louisiana DEQ/TNI Certification #: 4086  
Maine Certification #: 2017020  
Maryland Certification #: 308  
Massachusetts Certification #: M-PA1457  
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235  
Montana Certification #: Cert0082  
Nebraska Certification #: NE-OS-29-14  
Nevada Certification #: PA014572018-1  
New Hampshire/TNI Certification #: 297617  
New Jersey/TNI Certification #: PA051  
New Mexico Certification #: PA01457  
New York/TNI Certification #: 10888  
North Carolina Certification #: 42706  
North Dakota Certification #: R-190  
Ohio EPA Rad Approval: #41249  
Oregon/TNI Certification #: PA200002-010  
Pennsylvania/TNI Certification #: 65-00282  
Puerto Rico Certification #: PA01457  
Rhode Island Certification #: 65-00282  
South Dakota Certification  
Tennessee Certification #: 02867  
Texas/TNI Certification #: T104704188-17-3  
Utah/TNI Certification #: PA014572017-9  
USDA Soil Permit #: P330-17-00091  
Vermont Dept. of Health: ID# VT-0282  
Virgin Island/PADEP Certification  
Virginia/VELAP Certification #: 9526  
Washington Certification #: C868  
West Virginia DEP Certification #: 143  
West Virginia DHHR Certification #: 9964C  
Wisconsin Approve List for Rad  
Wyoming Certification #: 8TMS-L

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178429

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40178429001	FIELD BLANK	Water	10/24/18 15:15	10/26/18 09:20
40178429002	MW-306	Water	10/24/18 15:40	10/26/18 09:20
40178429003	MW-307	Water	10/24/18 14:40	10/26/18 09:20
40178429004	MW-308	Water	10/24/18 13:30	10/26/18 09:20

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178429

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40178429001	FIELD BLANK	EPA 6020	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
40178429002	MW-306	EPA 6020	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	ALY	1	PASI-G
40178429003	MW-307	EPA 300.0	HMB	3	PASI-G
		EPA 6020	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
40178429004	MW-308	EPA 9040	ALY	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 6020	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			AXL	7	PASI-G
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
SM 2540C	TMK	1	PASI-G		
EPA 9040	ALY	1	PASI-G		
EPA 300.0	HMB	3	PASI-G		

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178429

Sample: **FIELD BLANK** Lab ID: **40178429001** Collected: 10/24/18 15:15 Received: 10/26/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/08/18 10:58	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	11/01/18 08:57	11/08/18 10:58	7440-38-2	
Barium	<1.5	ug/L	4.9	1.5	1	11/01/18 08:57	11/08/18 10:58	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	11/01/18 08:57	11/08/18 10:58	7440-41-7	
Boron	<3.3	ug/L	11.0	3.3	1	11/01/18 08:57	11/10/18 04:55	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/08/18 10:58	7440-43-9	
Calcium	<69.8	ug/L	250	69.8	1	11/01/18 08:57	11/08/18 10:58	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	11/01/18 08:57	11/08/18 10:58	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	11/01/18 08:57	11/08/18 10:58	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	11/01/18 08:57	11/08/18 10:58	7439-92-1	
Lithium	<0.19	ug/L	1.0	0.19	1	11/01/18 08:57	11/08/18 10:58	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	11/01/18 08:57	11/08/18 10:58	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	11/01/18 08:57	11/08/18 10:58	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/01/18 08:57	11/08/18 10:58	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	<0.084	ug/L	0.28	0.084	1	10/29/18 10:50	10/30/18 08:04	7439-97-6	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		10/30/18 16:22		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	5.6	Std. Units	0.10	0.010	1		11/06/18 10:39		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<0.50	mg/L	2.0	0.50	1		11/01/18 20:00	16887-00-6	
Fluoride	<0.10	mg/L	0.30	0.10	1		11/01/18 20:00	16984-48-8	
Sulfate	<1.0	mg/L	3.0	1.0	1		11/01/18 20:00	14808-79-8	

Sample: **MW-306** Lab ID: **40178429002** Collected: 10/24/18 15:40 Received: 10/26/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020 Preparation Method: EPA 3010							
Antimony	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 05:22	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	11/01/18 08:57	11/10/18 05:22	7440-38-2	
Barium	8.5	ug/L	4.9	1.5	1	11/01/18 08:57	11/10/18 05:22	7440-39-3	
Beryllium	<0.18	ug/L	1.0	0.18	1	11/01/18 08:57	11/08/18 12:20	7440-41-7	
Boron	166	ug/L	11.0	3.3	1	11/01/18 08:57	11/08/18 12:20	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 05:22	7440-43-9	
Calcium	86700	ug/L	2500	698	10	11/01/18 08:57	11/08/18 11:25	7440-70-2	P6
Chromium	1.7J	ug/L	3.4	1.0	1	11/01/18 08:57	11/10/18 05:22	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	11/01/18 08:57	11/10/18 05:22	7440-48-4	
Lead	0.26J	ug/L	1.0	0.24	1	11/01/18 08:57	11/10/18 05:22	7439-92-1	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178429

**Sample: MW-306**      **Lab ID: 40178429002**      Collected: 10/24/18 15:40      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Lithium	<b>0.51J</b>	ug/L	1.0	0.19	1	11/01/18 08:57	11/08/18 12:20	7439-93-2	
Molybdenum	<b>4.0</b>	ug/L	1.5	0.44	1	11/01/18 08:57	11/10/18 05:22	7439-98-7	
Selenium	<b>0.59J</b>	ug/L	1.1	0.32	1	11/01/18 08:57	11/10/18 05:22	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	11/01/18 08:57	11/10/18 05:22	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.084</b>	ug/L	0.28	0.084	1	10/29/18 10:50	10/30/18 08:06	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>7.09</b>	Std. Units			1		10/24/18 15:40		
Field Specific Conductance	<b>598</b>	umhos/cm			1		10/24/18 15:40		
Oxygen, Dissolved	<b>8.02</b>	mg/L			1		10/24/18 15:40	7782-44-7	
REDOX	<b>40.3</b>	mV			1		10/24/18 15:40		
Turbidity	<b>4.89</b>	NTU			1		10/24/18 15:40		
Static Water Level	<b>787.66</b>	feet			1		10/24/18 15:40		
Temperature, Water (C)	<b>13.5</b>	deg C			1		10/24/18 15:40		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>322</b>	mg/L	20.0	8.7	1		10/30/18 16:23		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	<b>7.5</b>	Std. Units	0.10	0.010	1		11/06/18 10:43		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>1.3J</b>	mg/L	2.0	0.50	1		11/01/18 20:12	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		11/01/18 20:12	16984-48-8	
Sulfate	<b>14.4</b>	mg/L	3.0	1.0	1		11/01/18 20:12	14808-79-8	

**Sample: MW-307**      **Lab ID: 40178429003**      Collected: 10/24/18 14:40      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>&lt;0.15</b>	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:03	7440-36-0	
Arsenic	<b>&lt;0.28</b>	ug/L	1.0	0.28	1	11/01/18 08:57	11/10/18 06:03	7440-38-2	
Barium	<b>4.8J</b>	ug/L	4.9	1.5	1	11/01/18 08:57	11/10/18 06:03	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	11/01/18 08:57	11/08/18 12:47	7440-41-7	
Boron	<b>338</b>	ug/L	11.0	3.3	1	11/01/18 08:57	11/08/18 12:47	7440-42-8	SD
Cadmium	<b>0.21J</b>	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:03	7440-43-9	
Calcium	<b>17400</b>	ug/L	250	69.8	1	11/01/18 08:57	11/10/18 06:03	7440-70-2	
Chromium	<b>&lt;1.0</b>	ug/L	3.4	1.0	1	11/01/18 08:57	11/10/18 06:03	7440-47-3	
Cobalt	<b>0.45J</b>	ug/L	1.0	0.12	1	11/01/18 08:57	11/10/18 06:03	7440-48-4	
Lead	<b>0.33J</b>	ug/L	1.0	0.24	1	11/01/18 08:57	11/10/18 06:03	7439-92-1	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178429

**Sample: MW-307**      **Lab ID: 40178429003**      Collected: 10/24/18 14:40      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Lithium	<b>0.50J</b>	ug/L	1.0	0.19	1	11/01/18 08:57	11/08/18 12:47	7439-93-2	
Molybdenum	<b>&lt;0.44</b>	ug/L	1.5	0.44	1	11/01/18 08:57	11/10/18 06:03	7439-98-7	
Selenium	<b>&lt;0.32</b>	ug/L	1.1	0.32	1	11/01/18 08:57	11/10/18 06:03	7782-49-2	
Thallium	<b>&lt;0.14</b>	ug/L	1.0	0.14	1	11/01/18 08:57	11/10/18 06:03	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<b>&lt;0.084</b>	ug/L	0.28	0.084	1	10/29/18 10:50	10/30/18 08:08	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	<b>6.94</b>	Std. Units			1		10/24/18 14:40		
Field Specific Conductance	<b>731</b>	umhos/cm			1		10/24/18 14:40		
Oxygen, Dissolved	<b>0.07</b>	mg/L			1		10/24/18 14:40	7782-44-7	
REDOX	<b>-68.2</b>	mV			1		10/24/18 14:40		
Turbidity	<b>6.07</b>	NTU			1		10/24/18 14:40		
Static Water Level	<b>786.57</b>	feet			1		10/24/18 14:40		
Temperature, Water (C)	<b>14.6</b>	deg C			1		10/24/18 14:40		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>398</b>	mg/L	20.0	8.7	1		10/30/18 16:23		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	<b>7.4</b>	Std. Units	0.10	0.010	1		11/06/18 10:46		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>19.3</b>	mg/L	2.0	0.50	1		11/01/18 21:01	16887-00-6	
Fluoride	<b>&lt;0.10</b>	mg/L	0.30	0.10	1		11/01/18 21:01	16984-48-8	
Sulfate	<b>47.7</b>	mg/L	3.0	1.0	1		11/01/18 21:01	14808-79-8	

**Sample: MW-308**      **Lab ID: 40178429004**      Collected: 10/24/18 13:30      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Antimony	<b>&lt;0.15</b>	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:17	7440-36-0	
Arsenic	<b>6.8</b>	ug/L	1.0	0.28	1	11/01/18 08:57	11/10/18 06:17	7440-38-2	
Barium	<b>84.8</b>	ug/L	4.9	1.5	1	11/01/18 08:57	11/10/18 06:17	7440-39-3	
Beryllium	<b>&lt;0.18</b>	ug/L	1.0	0.18	1	11/01/18 08:57	11/10/18 06:17	7440-41-7	
Boron	<b>430</b>	ug/L	11.0	3.3	1	11/01/18 08:57	11/10/18 06:17	7440-42-8	
Cadmium	<b>&lt;0.15</b>	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:17	7440-43-9	
Calcium	<b>144000</b>	ug/L	250	69.8	1	11/01/18 08:57	11/10/18 06:17	7440-70-2	
Chromium	<b>&lt;1.0</b>	ug/L	3.4	1.0	1	11/01/18 08:57	11/10/18 06:17	7440-47-3	
Cobalt	<b>1.0</b>	ug/L	1.0	0.12	1	11/01/18 08:57	11/10/18 06:17	7440-48-4	
Lead	<b>&lt;0.24</b>	ug/L	1.0	0.24	1	11/01/18 08:57	11/10/18 06:17	7439-92-1	

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### ANALYTICAL RESULTS

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178429

**Sample: MW-308**      **Lab ID: 40178429004**      Collected: 10/24/18 13:30      Received: 10/26/18 09:20      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010							
Lithium	<0.19	ug/L	1.0	0.19	1	11/01/18 08:57	11/10/18 06:17	7439-93-2	
Molybdenum	3.2	ug/L	1.5	0.44	1	11/01/18 08:57	11/10/18 06:17	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	11/01/18 08:57	11/10/18 06:17	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/01/18 08:57	11/10/18 06:17	7440-28-0	
<b>7470 Mercury</b>		Analytical Method: EPA 7470    Preparation Method: EPA 7470							
Mercury	<0.084	ug/L	0.28	0.084	1	10/29/18 10:50	10/30/18 08:11	7439-97-6	
<b>Field Data</b>		Analytical Method:							
Field pH	6.78	Std. Units			1		10/24/18 13:30		
Field Specific Conductance	987	umhos/cm			1		10/24/18 13:30		
Oxygen, Dissolved	0.08	mg/L			1		10/24/18 13:30	7782-44-7	
REDOX	-147.8	mV			1		10/24/18 13:30		
Turbidity	9.30	NTU			1		10/24/18 13:30		
Static Water Level	787.81	feet			1		10/24/18 13:30		
Temperature, Water (C)	15.1	deg C			1		10/24/18 13:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	566	mg/L	20.0	8.7	1		10/30/18 16:23		
<b>9040 pH</b>		Analytical Method: EPA 9040							
pH at 25 Degrees C	7.3	Std. Units	0.10	0.010	1		11/09/18 08:29		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<2.5	mg/L	10.0	2.5	5		11/01/18 21:13	16887-00-6	D3
Fluoride	<0.50	mg/L	1.5	0.50	5		11/01/18 21:13	16984-48-8	D3
Sulfate	70.7	mg/L	15.0	5.0	5		11/01/18 21:13	14808-79-8	

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178429

QC Batch: 304586 Analysis Method: EPA 7470  
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury  
Associated Lab Samples: 40178429001, 40178429002, 40178429003, 40178429004

METHOD BLANK: 1780537 Matrix: Water  
Associated Lab Samples: 40178429001, 40178429002, 40178429003, 40178429004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.084	0.28	10/30/18 07:29	

LABORATORY CONTROL SAMPLE: 1780538

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1780539 1780540

Parameter	Units	40178327008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.000084 mg/L	5	5	4.8	4.6	96	93	85-115	3	20	

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178429

QC Batch: 305100 Analysis Method: EPA 6020  
QC Batch Method: EPA 3010 Analysis Description: 6020 MET  
Associated Lab Samples: 40178429001, 40178429002, 40178429003, 40178429004

METHOD BLANK: 1782425 Matrix: Water  
Associated Lab Samples: 40178429001, 40178429002, 40178429003, 40178429004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	11/08/18 10:51	
Arsenic	ug/L	<0.28	1.0	11/08/18 10:51	
Barium	ug/L	<1.5	4.9	11/08/18 10:51	
Beryllium	ug/L	<0.18	1.0	11/08/18 10:51	
Boron	ug/L	<3.3	11.0	11/10/18 04:48	
Cadmium	ug/L	<0.15	1.0	11/08/18 10:51	
Calcium	ug/L	<69.8	250	11/08/18 10:51	
Chromium	ug/L	<1.0	3.4	11/08/18 10:51	
Cobalt	ug/L	<0.12	1.0	11/08/18 10:51	
Lead	ug/L	<0.24	1.0	11/08/18 10:51	
Lithium	ug/L	<0.19	1.0	11/08/18 10:51	
Molybdenum	ug/L	<0.44	1.5	11/08/18 10:51	
Selenium	ug/L	<0.32	1.1	11/08/18 10:51	
Thallium	ug/L	<0.14	1.0	11/08/18 10:51	

LABORATORY CONTROL SAMPLE: 1782426

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	511	102	80-120	
Arsenic	ug/L	500	492	98	80-120	
Barium	ug/L	500	482	96	80-120	
Beryllium	ug/L	500	447	89	80-120	
Boron	ug/L	500	488	98	80-120	
Cadmium	ug/L	500	500	100	80-120	
Calcium	ug/L	5000	4650	93	80-120	
Chromium	ug/L	500	470	94	80-120	
Cobalt	ug/L	500	467	93	80-120	
Lead	ug/L	500	482	96	80-120	
Lithium	ug/L	500	413	83	80-120	
Molybdenum	ug/L	500	496	99	80-120	
Selenium	ug/L	500	515	103	80-120	
Thallium	ug/L	500	493	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1782427 1782428

Parameter	Units	MS Result	MSD Spike Conc.	MS Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max		Qual
										RPD	RPD	
Antimony	ug/L	<0.15	500	500	520	526	104	105	75-125	1	20	

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178429

Parameter	Units	40178429002		1782427		1782428		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Arsenic	ug/L	<0.28	500	500	503	511	101	102	75-125	2	20		
Barium	ug/L	8.5	500	500	496	503	97	99	75-125	1	20		
Beryllium	ug/L	<0.18	500	500	558	558	112	112	75-125	0	20		
Boron	ug/L	166	500	500	740	737	115	114	75-125	0	20		
Cadmium	ug/L	<0.15	500	500	514	519	103	104	75-125	1	20		
Calcium	ug/L	86700	5000	5000	93600	96000	137	186	75-125	3	20	P6	
Chromium	ug/L	1.7J	500	500	501	510	100	102	75-125	2	20		
Cobalt	ug/L	<0.12	500	500	476	486	95	97	75-125	2	20		
Lead	ug/L	0.26J	500	500	448	453	89	91	75-125	1	20		
Lithium	ug/L	0.51J	500	500	536	537	107	107	75-125	0	20		
Molybdenum	ug/L	4.0	500	500	534	539	106	107	75-125	1	20		
Selenium	ug/L	0.59J	500	500	518	527	103	105	75-125	2	20		
Thallium	ug/L	<0.14	500	500	459	466	92	93	75-125	1	20		

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178429

QC Batch: 304816 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 40178429001, 40178429002, 40178429003, 40178429004

METHOD BLANK: 1781285 Matrix: Water  
Associated Lab Samples: 40178429001, 40178429002, 40178429003, 40178429004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/30/18 16:19	

LABORATORY CONTROL SAMPLE: 1781286

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	615	594	97	80-120	

SAMPLE DUPLICATE: 1781287

Parameter	Units	40178429004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	566	558	1	5	

SAMPLE DUPLICATE: 1781288

Parameter	Units	40178431001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	424	434	2	5	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178429

QC Batch: 305568 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40178429001, 40178429002, 40178429003

SAMPLE DUPLICATE: 1785439

Parameter	Units	40178308001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	0	20	H6

SAMPLE DUPLICATE: 1785440

Parameter	Units	40178405002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	7.8	1	20	H6

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178429

QC Batch: 306003 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40178429004

SAMPLE DUPLICATE: 1788832

Parameter	Units	40178431002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.5	0	20	H6

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### QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178429

QC Batch: 305098 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 40178429001, 40178429002, 40178429003, 40178429004

METHOD BLANK: 1782420 Matrix: Water  
Associated Lab Samples: 40178429001, 40178429002, 40178429003, 40178429004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	11/01/18 19:24	
Fluoride	mg/L	<0.10	0.30	11/01/18 19:24	
Sulfate	mg/L	<1.0	3.0	11/01/18 19:24	

LABORATORY CONTROL SAMPLE: 1782421

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.6	98	90-110	
Fluoride	mg/L	2	2.1	105	90-110	
Sulfate	mg/L	20	19.3	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1782422 1782423

Parameter	Units	40178431005		MSD		MSD		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	26.2	20	20	45.7	46.0	98	99	90-110	1	15		
Fluoride	mg/L	0.36	2	2	2.5	2.5	106	108	90-110	2	15		
Sulfate	mg/L	123	200	200	315	316	96	96	90-110	0	15		

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### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178429

Sample: FIELD BLANK		Lab ID: 40178429001	Collected: 10/24/18 15:15	Received: 10/26/18 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	<b>0.129 ± 0.399 (0.773)</b> C:NA T:83%	pCi/L	11/12/18 20:22	13982-63-3	
Radium-228	EPA 904.0	<b>0.0235 ± 0.452 (1.03)</b> C:81% T:87%	pCi/L	11/07/18 13:07	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.153 ± 0.851 (1.80)</b>	pCi/L	11/13/18 16:15	7440-14-4	

Sample: MW-306		Lab ID: 40178429002	Collected: 10/24/18 15:40	Received: 10/26/18 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	<b>0.291 ± 0.495 (0.874)</b> C:NA T:75%	pCi/L	11/12/18 20:22	13982-63-3	
Radium-228	EPA 904.0	<b>-0.378 ± 0.331 (0.833)</b> C:76% T:83%	pCi/L	11/08/18 11:04	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.291 ± 0.826 (1.71)</b>	pCi/L	11/13/18 16:15	7440-14-4	

Sample: MW-307		Lab ID: 40178429003	Collected: 10/24/18 14:40	Received: 10/26/18 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	<b>0.251 ± 0.426 (0.752)</b> C:NA T:91%	pCi/L	11/12/18 20:22	13982-63-3	
Radium-228	EPA 904.0	<b>0.165 ± 0.355 (0.784)</b> C:73% T:91%	pCi/L	11/08/18 11:04	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.416 ± 0.781 (1.54)</b>	pCi/L	11/13/18 16:15	7440-14-4	

Sample: MW-308		Lab ID: 40178429004	Collected: 10/24/18 13:30	Received: 10/26/18 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	<b>0.274 ± 0.537 (0.964)</b> C:NA T:83%	pCi/L	11/12/18 20:22	13982-63-3	
Radium-228	EPA 904.0	<b>-0.0428 ± 0.321 (0.758)</b> C:75% T:84%	pCi/L	11/08/18 11:04	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.274 ± 0.858 (1.72)</b>	pCi/L	11/13/18 16:15	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178429

QC Batch: 318801

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Associated Lab Samples: 40178429001

METHOD BLANK: 1554916

Matrix: Water

Associated Lab Samples: 40178429001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.308 ± 0.282 (0.570) C:82% T:93%	pCi/L	11/07/18 13:12	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178429

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QC Batch:	318792	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
Associated Lab Samples:	40178429001, 40178429002, 40178429003, 40178429004		

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METHOD BLANK:	1554902	Matrix:	Water
Associated Lab Samples:	40178429001, 40178429002, 40178429003, 40178429004		

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.365 ± 0.379 (0.565) C:NA T:94%	pCi/L	11/12/18 20:08	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067 ALLIANT COLUMBIA CCR

Pace Project No.: 40178429

QC Batch: 318802 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 40178429002, 40178429003, 40178429004

METHOD BLANK: 1554917 Matrix: Water

Associated Lab Samples: 40178429002, 40178429003, 40178429004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.141 ± 0.346 (0.770) C:74% T:81%	pCi/L	11/08/18 11:04	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178429

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### DEFINITIONS

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 (%)

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 LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

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 at or above the adjusted LOD.

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-G Pace Analytical Services - Green Bay

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

SD The serial dilution and the original analysis did not agree within  $\pm 10\%$ . The concentration is estimated due to a suspected chemical or physical interference.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067 ALLIANT COLUMBIA CCR  
Pace Project No.: 40178429

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40178429001	FIELD BLANK	EPA 3010	305100	EPA 6020	305289
40178429002	MW-306	EPA 3010	305100	EPA 6020	305289
40178429003	MW-307	EPA 3010	305100	EPA 6020	305289
40178429004	MW-308	EPA 3010	305100	EPA 6020	305289
40178429001	FIELD BLANK	EPA 7470	304586	EPA 7470	304719
40178429002	MW-306	EPA 7470	304586	EPA 7470	304719
40178429003	MW-307	EPA 7470	304586	EPA 7470	304719
40178429004	MW-308	EPA 7470	304586	EPA 7470	304719
40178429002	MW-306				
40178429003	MW-307				
40178429004	MW-308				
40178429001	FIELD BLANK	EPA 903.1	318792		
40178429002	MW-306	EPA 903.1	318792		
40178429003	MW-307	EPA 903.1	318792		
40178429004	MW-308	EPA 903.1	318792		
40178429001	FIELD BLANK	EPA 904.0	318801		
40178429002	MW-306	EPA 904.0	318802		
40178429003	MW-307	EPA 904.0	318802		
40178429004	MW-308	EPA 904.0	318802		
40178429001	FIELD BLANK	Total Radium Calculation	320409		
40178429002	MW-306	Total Radium Calculation	320409		
40178429003	MW-307	Total Radium Calculation	320409		
40178429004	MW-308	Total Radium Calculation	320409		
40178429001	FIELD BLANK	SM 2540C	304816		
40178429002	MW-306	SM 2540C	304816		
40178429003	MW-307	SM 2540C	304816		
40178429004	MW-308	SM 2540C	304816		
40178429001	FIELD BLANK	EPA 9040	305568		
40178429002	MW-306	EPA 9040	305568		
40178429003	MW-307	EPA 9040	305568		
40178429004	MW-308	EPA 9040	306003		
40178429001	FIELD BLANK	EPA 300.0	305098		
40178429002	MW-306	EPA 300.0	305098		
40178429003	MW-307	EPA 300.0	305098		
40178429004	MW-308	EPA 300.0	305098		

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# Sample Preservation Receipt Form

Client Name: SCS

Project # 4017874

All containers needing preservation have been checked and noted below:  Yes  No  N/A

Lab Lot# of pH paper: 1028278

Lab Std #ID of preservation (if pH adjusted):

Initial when completed: [Signature] Date/Time: [Signature]

Pace Analytical Services, LLC  
1241 Bellevue Street, Suite 29  
Green Bay, WI 54302

Page Lab #	Glass	Plastic	Vials	Jars	General	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001	AG1U	BP1U	DG9A	JGFU	SP5T							2.5/5/10
002	AG1H	BP2N	DG9T	WGFU	ZPLC							2.5/5/10
003	AG4S	BP2Z	VG9U	WPFU	GN							2.5/5/10
004	AG4U	BP3U	VG9H									2.5/5/10
005	AG5U	BP3C	VG9M									2.5/5/10
006	AG2S	BP3N	VG9D									2.5/5/10
007	BG3U	BP3S										2.5/5/10
008												2.5/5/10
009												2.5/5/10
010												2.5/5/10
011												2.5/5/10
012												2.5/5/10
013												2.5/5/10
014												2.5/5/10
015												2.5/5/10
016												2.5/5/10
017												2.5/5/10
018												2.5/5/10
019												2.5/5/10
020												2.5/5/10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: \_\_\_\_\_ Headspace in VOA Vials (>6mm):  Yes  No  N/A \*if yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 ml amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 ml plastic HNO3	DG9T	40 ml clear vial Na Thio	WG9U	4 oz clear jar unpres
AG4S	125 ml amber glass H2SO4	BP2Z	500 ml plastic NaOH, Znact	VG9U	40 ml clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 ml amber glass unpres	BP3U	250 ml plastic unpres	VG9H	40 ml clear vial HCL		
AG5U	100 ml amber glass unpres	BP3C	250 ml plastic NaOH	VG9M	40 ml clear vial MeOH	SP5T	120 ml plastic Na Thiosulfate
AG2S	500 ml amber glass H2SO4	BP3N	250 ml plastic HNO3	VG9D	40 ml clear vial DI	ZPLC	ziploc bag
BG3U	250 ml clear glass unpres	BP3S	250 ml plastic H2SO4			GN:	<u>LC Poly bag</u>

**Sample Condition Upon Receipt Form (SCUR)**

**Client Name:** SLS  
**Courier:**  CS Logistics  Fed Ex  Speedee  UPS  Walco  
 Client  Pace Other: \_\_\_\_\_

**Tracking #:** 7834 4298 4310 / 4272 / 4283

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

**Custody Seal on Samples Present:**  yes  no Seals intact:  yes  no


**Packing Material:**  Bubble Wrap  Bubble Bags  None  Other

**Thermometer Used** SR - N/A **Type of Ice:**  Wet  Blue Dry None

**Cooler Temperature** Uncorr: 10.0 ICorr:

**Temp Blank Present:**  yes  no **Biological Tissue is Frozen:**  yes  no

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C.

**Project #:** **WO# : 40178429**  
  
**40178429**

**Person examining contents:**  
**Date:** 10/26/18  
**Initials:** MS

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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>	<u>001 &amp; 003 have damaged labels, placed by packaging MS/MSD</u>	
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

**Client Notification/ Resolution:** \_\_\_\_\_ If checked, see attached form for additional comments   
**Person Contacted:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_  
**Comments/ Resolution:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Project Manager Review:** Mark for DM **Date:** 10/26/18