2018 Annual Groundwater Monitoring and Corrective Action Report

Primary Ash Pond
Columbia Energy Center
Pardeeville, Wisconsin

Prepared for:

Alliant Energy

SCS ENGINEERS

25216067.18 | January 31, 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) Rule [40 CFR 257.50-107]. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.90(e). The applicable sections of the Rule are provided below in italics, followed by applicable information relative to the 2018 Annual Groundwater Monitoring and Corrective Action Report for the CCR Units.

This report covers the period of groundwater monitoring from January 1, 2018, through December 31, 2018.

The groundwater monitoring system for the Primary Ash Pond at the Columbia Energy Center Ash Ponds Facility (APF) monitors a single existing CCR unit:

- Primary Ash Pond (existing CCR surface impoundment)

The system is designed to detect monitored constituents at the waste boundary of the Primary Ash Pond as required by 40 CFR 257.91(d). The groundwater monitoring system consists of two upgradient and four downgradient monitoring wells.

2.0 §257.90(e) ANNUAL REPORT REQUIREMENTS

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

2.1 §257.90(E)(1) SITE MAP

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

A map showing the CCR unit and all background (or upgradient) and downgradient monitoring wells with identification numbers for the groundwater monitoring program is provided as **Figure 1**. Other CCR units are also shown on **Figure 1**.

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

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

No new monitoring wells were installed and no wells were decommissioned as part of the groundwater monitoring program for the CCR unit in 2018.

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

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

Four groundwater sampling events were completed for the Primary Ash Pond CCR unit in 2018. As described in Section 2.4, the site transitioned to an assessment monitoring program in 2018. The first round of assessment monitoring samples were collected in April 2018 and the second round was collected in August 2018. A resampling event for monitoring well MW-303 was completed in September 2018, in accordance with the Sampling and Analysis Plan for the facility. All of the CCR monitoring wells were sampled in October 2018 to continue the semiannual monitoring schedule established for the site.

Groundwater samples collected in the April, August, and October 2018 sampling events were analyzed for both Appendix III and Appendix IV constituents. Samples collected in the MW-303 resampling event in September 2018 were analyzed for selected constituents. A summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the assessment monitoring programs is included in Table 1. The results of the analytical laboratory analyses are provided in the laboratory reports in Appendices A1 through A4.

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

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

Detection monitoring for the Primary Ash Pond was initiated in October 2017. The statistical evaluation of the October 2017 detection monitoring results, completed on January 15, 2018, identified statistically significant increases (SSIs) in detection monitoring constituents at the downgradient wells. SSIs were identified for boron, chloride, fluoride, field pH, sulfate, and total dissolved solids (TDS) at one or more wells based on the October 2017 detection monitoring event. WPL collected the first round of assessment monitoring samples in April 2018 and established an assessment monitoring program on July 16, 2018 in accordance with §257.95(b).

2.5 §257.90(E)(5) OTHER REQUIREMENTS

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

Additional potentially applicable requirements for the annual report, and the location of the requirement within the Rule, are provided in the following sections. For each cited section of the Rule, the portion referencing the annual report requirement is provided below in italics, followed by applicable information relative to the 2018 Annual Groundwater Monitoring and Corrective Action Report for the CCR Unit.

2.5.1 §257.90(e) General Requirements

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

Status of Groundwater Monitoring and Corrective Action Program. The groundwater monitoring and corrective action program is currently in Assessment Monitoring.

Summary of Key Actions Completed.

- Statistical evaluation and determination of SSIs for the October 2017 monitoring event, completed January 15, 2018.
- Alternative source evaluation for the SSIs identified for the October 2017 detection monitoring event, completed April 16, 2018.
- Establishment of assessment monitoring program, completed July 16, 2018.
- Establishment of Groundwater Protection Standards (GPSs) for all detected Appendix IV constituents, completed October 15, 2018.
- Two semiannual groundwater sampling and analysis events (April and October 2018) plus the additional groundwater sampling event in August 2018 as specified in § 257.95(d)(1).

Description of Any Problems Encountered: No problems were encountered during the groundwater sampling events in 2018.

Discussion of Actions to Resolve the Problems. Not applicable.

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

- Statistical evaluation and determination of any statistically significant levels exceeding the GPS for the April, August and October 2018 monitoring events (by 1/14/19);
- Statistical evaluation and determination of any statistically significant levels exceeding the GPS for the April 2019 monitoring events (by 7/15/19);

- If one or more Appendix IV constituents is detected at a statistically significant level about the GPS, then within 30 days WPL will prepare a notification in accordance with §257.95(g) and within 90 days complete an alternative source demonstration or initiate an assessment of corrective measures ((§257.95(g)(3)). WPL will also characterize the release pursuant to §257.95(g)(1) and provide notice pursuant to §257.95(g)(2).

- Two semiannual groundwater sampling and analysis events (April and October 2019).

2.5.2 §257.94(d) Alternative Detection Monitoring Frequency

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

Not applicable. The Primary Ash Pond at the Columbia Energy Center is no longer in Detection Monitoring Program.

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

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

Not applicable. No alternative source demonstration was completed in 2018.

2.5.4 §257.95(c) Alternative Assessment Monitoring Frequency

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

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

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

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

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

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

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

Not applicable. No alternative source demonstration evaluation for assessment monitoring was completed in 2018.

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

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

Not applicable. Corrective measures assessment has not been initiated.

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Tables

1 CCR Rule Groundwater Samples Summary
2 Groundwater Protection Standards

Table 1. CCR Rule Groundwater Samples Summary
Columbia Energy Center Primary Ash Pond/ SCS Engineers Project #25216067.18

Sample Dates	Downgradient Wells				Background Wells	
	MW-4R	MW-303	MW-304	MW-305	MW-84A	MW-301
4/23-25/2018	A	A	A	A	A	A
8/7-8/2018	A	A	A	A	A	A
9/21/2018	--	R-A	--	--	--	--
10/24/2018	A	A	A	A	A	A
Total Samples	3	4	3	3	3	3

Abbreviations:
A = Required by Assessment Monitoring Program
R-A = Resample for the Assessment Monitoring Program

Created by: NDK Date: 1/4/2018
Last revision by: NDK Date: 12/19/2018
Checked by: MDB Date: 12/19/2018

I:\25216067.00\Deliverables\2018 Annual Report - Primary Pond - CCR\Tables\[Table 1 GW_S

Table 2. Groundwater Protection Standards - CCR Program - Assessment Monitoring
Columbia Energy Center Primary Ash Pond / SCS Engineers Project #25216067.18

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

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

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

I:\25216067.00\Deliverables\2018 Annual Report - Primary Pond - CCR\Tables\[Table 2_GPS_COL primary pond.xlsx]Table

Figure 1

Site Plan and Well Location Map

PRIMARY ASH POND

SECONDARY ASH POND

CLOSED ASH PONDS LANDFILL (LICENSE NO. 02325)

PRODUCT RECYCLING AREA

POWER GENERATING STATION

WPDES POND

SUBSTATION

COOLING POND

COOLING POND

MODULE 4

MODULE 3

MODULE 2

MODULE 1

LANDFILL SURFACE WATER RUNOFF/ LEACHATE COLLECTION POND

DRY ASH DISPOSAL FACILITY (EXISTING LANDFILL LICENSE #03025)

MURRAY RD.

HIGHWAY 51

M-3, M-4R, M-5, MW-305, MW-304, MW-308, TW-02, SG-2, BM5, MW-57, MW-307, MW-48A, MW-48B, SG-3, MW-306, MW-303, MW-217, MW-220R, MW-216R, MW-58, MW-59R, BM4, MW-309, MW-310, BM19, HC-3, MW-311, MW-39B, MW-39A, MW-33AR, MW-33B, SG-4, HC-2, MW-83, HC-1, SG-1, MW-302, LS-1, LH-4, LH-3, LH-2, LP-1, MW-1AR, M-1R, MW-86, MW-91B, MW-91AR, MW-84B, MW-84A, MW-16, LS-3R, MW-301, MW-92A, MW-92B, MW-5R, MW-34A, MW-34B, MW-40A, MW-40B

LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DESIGN MANAGEMENT ZONE
- APPROVED LIMITS OF WASTE
- CONSTRUCTED LIMITS OF WASTE
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- SURFACE WATER SAMPLE LOCATION
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- LEACHATE HEADWELL
- CCR MONITORING WELL

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEY BY SCS ENGINEERS IN MAY 2016, JUNE 2016, OCTOBER 2016, NOVEMBER 2016, APRIL 2017, NOVEMBER 2017, JULY 2018, AND AUGUST 2018.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND AUGUST 2012.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. THE LOCATIONS OF THE ASH PONDS FACILITY DESIGN MANAGEMENT ZONE DEMARCATION LINES ARE APPROXIMATE AND BASED ON THE WATER TABLE MAP (OCTOBER 2012) FIGURE BY RMT.
5. THE LOCATION OF THE ACTIVE DRY ASH LANDFILL DESIGN MANAGEMENT ZONE DEMARCATION LINE IS BASED ON A 300 FOOT OFFSET FROM THE DESIGN LIMITS OF ASH EXCEPT WHERE OFFSET WOULD EXTEND LINE BEYOND PROPERTY LINE.

N

200 0 200

SCALE: 1" = 200'

FIGURE 1

SITE PLAN AND WELL LOCATION MAP

COLUMBIA ASH PONDS AND DRY ASH DISPOSAL FACILITIES

SITE

CLIENT

ALLIANT ENERGY
4902 NORTH BILTMORE LN. #1000
MADISON, WI 53718

ENGINEER

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

PROJECT NO.	25216067.00	DRAWN BY:	KP
DRAWN:	01/06/19	CHECKED BY:	NK
REVISED:	01/09/19	APPROVED BY:	TK 01/09/19

L:\25216067.00\Drawings\Planning Report_CCR Wells.dwg, 1/8/2019 8:57:51 AM

Appendix A

Laboratory Reports

A1 Assessment Monitoring Round 1, April 2018

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

July 05, 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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

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

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

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
40168058005	**MW 304**	Water	04/24/18 10:05	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

Pace Analytical Services, LLC
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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
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
40168058005	**MW 304**	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
40168058010	**MW 84A**	EPA 6020	DS1	14	PASI-G

Pace Analytical Services, LLC
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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
		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
40168058011	**MW 301**	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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

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
6020 MET ICPMS	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 04:17	7440-36-0	
Arsenic	**0.36J**	ug/L	1.0	0.28	1	04/27/18 07:54	05/02/18 04:17	7440-38-2	
Barium	**16.5**	ug/L	1.1	0.34	1	04/27/18 07:54	05/02/18 04:17	7440-39-3	
Beryllium	**0.30J**	ug/L	1.0	0.18	1	04/27/18 07:54	05/02/18 04:17	7440-41-7	
Boron	**905**	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 04:17	7440-42-8	
Cadmium	**<0.081**	ug/L	1.0	0.081	1	04/27/18 07:54	05/02/18 04:17	7440-43-9	1q
Calcium	**86400**	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 04:17	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	04/27/18 07:54	05/02/18 04:17	7440-47-3	
Cobalt	**0.16J**	ug/L	1.0	0.085	1	04/27/18 07:54	05/02/18 04:17	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	04/27/18 07:54	05/02/18 04:17	7439-92-1	
Lithium	**4.8**	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:17	7439-93-2	
Molybdenum	**19.1**	ug/L	1.5	0.44	1	04/27/18 07:54	05/02/18 04:17	7439-98-7	
Selenium	**8.6**	ug/L	1.1	0.32	1	04/27/18 07:54	05/02/18 04:17	7782-49-2	
Thallium	**0.21J**	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:17	7440-28-0	
7470 Mercury	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 09:01	7439-97-6	
Field Data	Analytical Method:								
Field pH	**7.44**	Std. Units			1		04/23/18 14:30		
Field Specific Conductance	**790**	umhos/cm			1		04/23/18 14:30		
Oxygen, Dissolved	**1.16**	mg/L			1		04/23/18 14:30	7782-44-7	
REDOX	**40.1**	mV			1		04/23/18 14:30		
Turbidity	**0.42**	NTU			1		04/23/18 14:30		
Static Water Level	**790.43**	feet			1		04/23/18 14:30		
Temperature, Water (C)	**10.6**	deg C			1		04/23/18 14:30		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**516**	mg/L	20.0	8.7	1		04/30/18 16:54		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.010	1		04/30/18 10:19		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**51.6**	mg/L	2.0	0.50	1		05/01/18 20:18	16887-00-6	
Fluoride	**0.16J**	mg/L	0.30	0.10	1		05/01/18 20:18	16984-48-8	
Sulfate	**162**	mg/L	15.0	5.0	5		05/01/18 22:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

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
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.26J**	ug/L	1.0	0.15	1	04/27/18 07:54	05/02/18 04:25	7440-36-0	
Arsenic	**0.48J**	ug/L	1.0	0.28	1	04/27/18 07:54	05/02/18 04:25	7440-38-2	
Barium	**6.0**	ug/L	1.1	0.34	1	04/27/18 07:54	05/02/18 04:25	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	04/27/18 07:54	05/02/18 04:25	7440-41-7	
Boron	**1200**	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 04:25	7440-42-8	
Cadmium	**<0.081**	ug/L	1.0	0.081	1	04/27/18 07:54	05/02/18 04:25	7440-43-9	1q
Calcium	**64800**	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 04:25	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	04/27/18 07:54	05/02/18 04:25	7440-47-3	
Cobalt	**<0.085**	ug/L	1.0	0.085	1	04/27/18 07:54	05/02/18 04:25	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	04/27/18 07:54	05/02/18 04:25	7439-92-1	
Lithium	**<0.14**	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:25	7439-93-2	
Molybdenum	**54.4**	ug/L	1.5	0.44	1	04/27/18 07:54	05/02/18 04:25	7439-98-7	
Selenium	**6.9**	ug/L	1.1	0.32	1	04/27/18 07:54	05/02/18 04:25	7782-49-2	
Thallium	**0.16J**	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:25	7440-28-0	
7470 Mercury	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 09:08	7439-97-6	
Field Data	Analytical Method:								
Field pH	**9.12**	Std. Units			1		04/23/18 15:30		
Field Specific Conductance	**579.5**	umhos/cm			1		04/23/18 15:30		
Oxygen, Dissolved	**0.78**	mg/L			1		04/23/18 15:30	7782-44-7	
REDOX	**-3.3**	mV			1		04/23/18 15:30		
Turbidity	**5.98**	NTU			1		04/23/18 15:30		
Static Water Level	**787.67**	feet			1		04/23/18 15:30		
Temperature, Water (C)	**12.1**	deg C			1		04/23/18 15:30		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**386**	mg/L	20.0	8.7	1		04/30/18 16:54		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**8.2**	Std. Units	0.10	0.010	1		04/30/18 10:21		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**50.6**	mg/L	2.0	0.50	1		05/01/18 20:31	16887-00-6	
Fluoride	**0.37**	mg/L	0.30	0.10	1		05/01/18 20:31	16984-48-8	
Sulfate	**191**	mg/L	15.0	5.0	5		05/01/18 22:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Green Bay, WI 54302
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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
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.28J**	ug/L	1.0	0.15	1	04/27/18 07:54	05/02/18 04:33	7440-36-0	
Arsenic	**39.1**	ug/L	1.0	0.28	1	04/27/18 07:54	05/02/18 04:33	7440-38-2	
Barium	**5.1**	ug/L	1.1	0.34	1	04/27/18 07:54	05/02/18 04:33	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	04/27/18 07:54	05/02/18 04:33	7440-41-7	
Boron	**2330**	ug/L	11.0	3.3	1	04/27/18 07:54	05/02/18 04:33	7440-42-8	
Cadmium	**<0.081**	ug/L	1.0	0.081	1	04/27/18 07:54	05/02/18 04:33	7440-43-9	1q
Calcium	**4610**	ug/L	250	69.8	1	04/27/18 07:54	05/02/18 04:33	7440-70-2	
Chromium	**97.1**	ug/L	3.4	1.0	1	04/27/18 07:54	05/02/18 04:33	7440-47-3	
Cobalt	**0.80J**	ug/L	1.0	0.085	1	04/27/18 07:54	05/02/18 04:33	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	04/27/18 07:54	05/02/18 04:33	7439-92-1	
Lithium	**0.61J**	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:33	7439-93-2	
Molybdenum	**138**	ug/L	1.5	0.44	1	04/27/18 07:54	05/02/18 04:33	7439-98-7	
Selenium	**52.9**	ug/L	1.1	0.32	1	04/27/18 07:54	05/02/18 04:33	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	04/27/18 07:54	05/02/18 04:33	7440-28-0	
7470 Mercury	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 09:10	7439-97-6	
Field Data	Analytical Method:								
Field pH	**10.01**	Std. Units			1		04/24/18 08:50		
Field Specific Conductance	**1447**	umhos/cm			1		04/24/18 08:50		
Oxygen, Dissolved	**4.53**	mg/L			1		04/24/18 08:50	7782-44-7	
REDOX	**-22.3**	mV			1		04/24/18 08:50		
Turbidity	**1.42**	NTU			1		04/24/18 08:50		
Static Water Level	**783.27**	feet			1		04/24/18 08:50		
Temperature, Water (C)	**10.9**	deg C			1		04/24/18 08:50		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**948**	mg/L	20.0	8.7	1		04/30/18 16:56		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**9.4**	Std. Units	0.10	0.010	1		04/30/18 10:24		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<10.0**	mg/L	40.0	10.0	20		05/02/18 10:42	16887-00-6	D3
Fluoride	**<2.0**	mg/L	6.0	2.0	20		05/02/18 10:42	16984-48-8	D3
Sulfate	**527**	mg/L	60.0	20.0	20		05/02/18 10:42	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 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
6020 MET ICPMS	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	
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	
7470 Mercury	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	
Field Data	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		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**406**	mg/L	20.0	8.7	1		04/30/18 16:56		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.010	1		04/30/18 10:30		H6
300.0 IC Anions 28 Days	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	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

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
6020 MET ICPMS	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	
7470 Mercury	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	
Field Data	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		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**328**	mg/L	20.0	8.7	1		04/30/18 16:57		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.010	1		05/01/18 10:46		H6
300.0 IC Anions 28 Days	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	

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
6020 MET ICPMS	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	
7470 Mercury	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 09:27	7439-97-6	
Field Data	Analytical Method:								
Field pH	**6.76**	Std. Units			1		04/25/18 09:45		
Field Specific Conductance	**774**	umhos/cm			1		04/25/18 09:45		
Oxygen, Dissolved	**2.35**	mg/L			1		04/25/18 09:45	7782-44-7	
REDOX	**74.3**	mV			1		04/25/18 09:45		
Turbidity	**1.12**	NTU			1		04/25/18 09:45		
Static Water Level	**785.29**	feet			1		04/25/18 09:45		
Temperature, Water (C)	**7.4**	deg C			1		04/25/18 09:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**464**	mg/L	20.0	8.7	1		04/30/18 16:58		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.0**	Std. Units	0.10	0.010	1		05/01/18 10:47		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**2.3**	mg/L	2.0	0.50	1		05/03/18 14:24	16887-00-6	
Fluoride	**<0.10**	mg/L	0.30	0.10	1		05/03/18 14:24	16984-48-8	
Sulfate	**8.6**	mg/L	3.0	1.0	1		05/03/18 14:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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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, 40168058005, 40168058010, 40168058011

METHOD BLANK: 1682104 Matrix: Water
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058005, 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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REPORT OF LABORATORY ANALYSIS

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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, 40168058005, 40168058010, 40168058011

METHOD BLANK: 1679947 Matrix: Water
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058005, 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	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1679949 1679950

Parameter	Units	40167914001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.36J	500	500	518	509	103	102	75-125	2	20	

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QUALITY CONTROL DATA

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1679949 1679950

Parameter	Units	40167914001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
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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REPORT OF LABORATORY ANALYSIS

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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, 40168058005, 40168058010, 40168058011

METHOD BLANK: 1681718 Matrix: Water
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058005, 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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REPORT OF LABORATORY ANALYSIS

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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, 40168058005

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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

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

QC Batch: 287493 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 40168058010, 40168058011

SAMPLE DUPLICATE: 1682045

Parameter	Units	40168058007 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.7	7.8	0	20	H6

SAMPLE DUPLICATE: 1682046

Parameter	Units	40168098001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.5	1	20	H6

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REPORT OF LABORATORY ANALYSIS

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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, 40168058005

METHOD BLANK: 1681703 Matrix: Water
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058005

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 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max 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 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max 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
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40168058010, 40168058011

METHOD BLANK: 1682168 Matrix: Water
Associated Lab Samples: 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 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
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 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
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

Pace Analytical Services, LLC
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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	**0.217 ± 0.377 (0.673) C:NA T:77%**	pCi/L	05/16/18 20:56	13982-63-3	
Radium-228	EPA 904.0	**0.524 ± 0.456 (0.935) C:79% T:87%**	pCi/L	05/16/18 12:45	15262-20-1	
Total Radium	Total Radium Calculation	**0.741 ± 0.833 (1.61)**	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	**0.189 ± 0.327 (0.584) C:NA T:92%**	pCi/L	05/16/18 21:10	13982-63-3	
Radium-228	EPA 904.0	**0.164 ± 0.498 (1.11) C:81% T:74%**	pCi/L	05/16/18 12:45	15262-20-1	
Total Radium	Total Radium Calculation	**0.353 ± 0.825 (1.69)**	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	**0.0558 ± 0.289 (0.600) C:NA T:99%**	pCi/L	05/16/18 21:10	13982-63-3	
Radium-228	EPA 904.0	**0.444 ± 0.381 (0.774) C:78% T:90%**	pCi/L	05/16/18 12:45	15262-20-1	
Total Radium	Total Radium Calculation	**0.500 ± 0.670 (1.37)**	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	**0.136 ± 0.311 (0.184) C:NA T:85%**	pCi/L	05/16/18 21:10	13982-63-3	
Radium-228	EPA 904.0	**0.804 ± 0.488 (0.930) C:75% T:86%**	pCi/L	05/16/18 12:45	15262-20-1	
Total Radium	Total Radium Calculation	**0.940 ± 0.799 (1.11)**	pCi/L	05/17/18 14:47	7440-14-4	

Sample: MW 84A **Lab ID: 40168058010** Collected: 04/25/18 08:55 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	**0.155 ± 0.237 (0.140) C:NA T:103%**	pCi/L	05/16/18 21:10	13982-63-3	
Radium-228	EPA 904.0	**0.371 ± 0.377 (0.783) C:79% T:87%**	pCi/L	05/16/18 12:43	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

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
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.526 ± 0.614 (0.923)**	pCi/L	05/17/18 14:47	7440-14-4	

Sample: MW 301 **Lab ID: 40168058011** Collected: 04/25/18 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	**0.122 ± 0.293 (0.566) C:NA T:96%**	pCi/L	05/16/18 21:23	13982-63-3	
Radium-228	EPA 904.0	**0.760 ± 0.393 (0.692) C:82% T:84%**	pCi/L	05/16/18 12:43	15262-20-1	
Total Radium	Total Radium Calculation	**0.882 ± 0.686 (1.26)**	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, 40168058005, 40168058010, 40168058011

METHOD BLANK: 1452078 Matrix: Water
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058005, 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	

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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, 40168058005, 40168058010, 40168058011

METHOD BLANK: 1452114 Matrix: Water
Associated Lab Samples: 40168058001, 40168058002, 40168058003, 40168058005, 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	

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REPORT OF LABORATORY ANALYSIS

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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

WORKORDER QUALIFIERS

WO: 40168058

[1]	Revised Report: Select samples are reported on this version.

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
40168058005	MW 304	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
40168058005	MW 304	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				
40168058002	MW 305				
40168058003	MW 303				
40168058005	MW 304				
40168058010	MW 84A				
40168058011	MW 301				
40168058001	M-4R	EPA 903.1	296646		
40168058002	MW 305	EPA 903.1	296646		
40168058003	MW 303	EPA 903.1	296646		
40168058005	MW 304	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		
40168058005	MW 304	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		
40168058002	MW 305	Total Radium Calculation	298891		
40168058003	MW 303	Total Radium Calculation	298891		
40168058005	MW 304	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		
40168058005	MW 304	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		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

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
40168058005	**MW 304**	EPA 9040	287352		
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		
40168058005	**MW 304**	EPA 300.0	287429		
40168058010	**MW 84A**	EPA 300.0	287522		
40168058011	**MW 301**	EPA 300.0	287522		

CCR

Pace Analytical®
www.pacelabs.com

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

CHAIN OF CUSTODY

40168058

(Please Print Clearly)	
Company Name:	SCS Engineers
Branch/Location:	Madison, WI
Project Contact:	Meg Blodgett
Phone:	608 224 2830
Project Number:	25216067-18
Project Name:	WPL Columbia
Project State:	WI
Sampled By (Print):	Jackie Desruyter
Sampled By (Sign):	
PO #:	Regulatory Program:

*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

Quote #:	
Mail To Contact:	Meg Blodgett
Mail To Company:	SCS Engineers
Mail To Address:	2830 Dairy Dr. Madison, WI 53718
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

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, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO)	PRESERVATION (CODE)*	Y/N	Pick Letter	Analyses Requested: metals	pH	TDS, Cl, F, SO4	Radium 226	Radium 228	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
							N	D	A	A	D	D				
001	MW-4R	4-23	1430	GW					x	x	x	x	x			
002	MW 305	4-23	1530	GW					x	x	x	x	x			
003	MW 303	4-24	850	GW					x	x	x	x	x			
004	Field Blank	4-24	945	DI					x	x	x	x	x			
005	MW 304	4-24	1005	GW					x	x	x	x	x	@MW 304		
006	MW 308	4-24	1120	GW					x	x	x	x	x			
007	~~MW33AR~~ MW34A	4-24	1315	GW					x	x	x	x	x			
008	MW 33AR	4-24	1430	GW					x	x	x	x	x	MW34A		
009	MW 302	4-24	1555	GW					x	x	x	x	x			
010	MW 34A	4-25	855	GW					x	x	x	x	x			
011	MW 301	4-25	945	GW					x	x	x	x	x			

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:	Date/Time:	Received By:	Date/Time:
	1330 4-25-18		
Fed Ex	4/26/18 0920		4/26/18 0920

PACE Project No.: 40168058
Receipt Temp = ROI °C
Sample Receipt pH: OK / Adjusted
Cooler Custody Seal: Present / Not Present, Intact / Not Intact

C019a(27Jun2006)

Version 6.0 06/14/06

ORIGINAL

Client Name: SCS Engineers

Sample Preservation Receipt Form

Project # 40168058

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

All containers needing preservation have been checked and noted below: ☒Yes ☐No ☐N/A

Lab Lot# of pH paper: 10454771 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: SSM Date/ Time:

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)
	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							
001											2		1																			2.5 / 5 / 10
002											2		1													2					X		2.5 / 5 / 10
003											2		1													2					X		2.5 / 5 / 10
004											2		1													2					X		2.5 / 5 / 10
005											2		1													2					X		2.5 / 5 / 10
006											2		1													2					X		2.5 / 5 / 10
007											2		1													2					X		2.5 / 5 / 10
008											2		1																		X		2.5 / 5 / 10
009											2		1																		X		2.5 / 5 / 10
010											2		1																		X		2.5 / 5 / 10
011											2		1																		X		2.5 / 5 / 10
012																										2					X		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	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:	1 L poly HNO3

Pace Analytical 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	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: SCS Engineers

Project #:

WO#: 40168058

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other:

Tracking #: 7806 9327 3755, 7806 9318 2538

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: NOF /Corr:

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:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☒Yes ☐No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☒Yes ☐No SSM 4/26/18 MS/MSD: ☐Yes ☒No ☐N/A		8. No volume for medium's on 007-009 SSM 4/26/18
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☒Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☒N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒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:** 4/26/18

A2 Assessment Monitoring Round 2, August 2018

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

August 28, 2018

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on August 10, 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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
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CERTIFICATIONS

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40173851001	**M-4R**	Water	08/07/18 16:50	08/10/18 08:30
40173851002	**MW-84A**	Water	08/08/18 15:15	08/10/18 08:30
40173851003	**MW-301**	Water	08/08/18 16:15	08/10/18 08:30
40173851004	**MW-303**	Water	08/08/18 11:40	08/10/18 08:30
40173851005	**MW-304**	Water	08/08/18 13:10	08/10/18 08:30
40173851006	**MW-305**	Water	08/07/18 15:50	08/10/18 08:30
40173851007	**FIELD BLANK**	Water	08/08/18 11:15	08/10/18 08:30

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SAMPLE ANALYTE COUNT

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40173851001	**M-4R**	EPA 6020	DS1, KXS	12	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
40173851002	**MW-84A**	EPA 6020	DS1, KXS	12	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
40173851003	**MW-301**	EPA 6020	DS1, KXS	12	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
40173851004	**MW-303**	EPA 6020	DS1, KXS	12	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
40173851005	**MW-304**	EPA 6020	DS1, KXS	12	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
40173851006	**MW-305**	EPA 6020	DS1, KXS	12	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
40173851007	**FIELD BLANK**	EPA 6020	DS1, KXS	12	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

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

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

Sample: M-4R **Lab ID: 40173851001** Collected: 08/07/18 16:50 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	08/14/18 07:35	08/15/18 22:36	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	08/14/18 07:35	08/15/18 22:36	7440-38-2	
Barium	**23.9**	ug/L	1.1	0.34	1	08/14/18 07:35	08/15/18 22:36	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	08/14/18 07:35	08/15/18 22:36	7440-41-7	
Boron	**704**	ug/L	22.0	6.6	2	08/14/18 07:35	08/17/18 11:05	7440-42-8	
Calcium	**99700**	ug/L	250	69.8	1	08/14/18 07:35	08/15/18 22:36	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	08/14/18 07:35	08/15/18 22:36	7440-47-3	
Cobalt	**0.12J**	ug/L	1.0	0.085	1	08/14/18 07:35	08/15/18 22:36	7440-48-4	
Lithium	**1.9**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 22:36	7439-93-2	
Molybdenum	**14.7**	ug/L	1.5	0.44	1	08/14/18 07:35	08/15/18 22:36	7439-98-7	
Selenium	**5.5**	ug/L	1.1	0.32	1	08/14/18 07:35	08/15/18 22:36	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 22:36	7440-28-0	
Field Data	Analytical Method:								
Field pH	**7.18**	Std. Units			1		08/07/18 16:50		
Field Specific Conductance	**881**	umhos/cm			1		08/07/18 16:50		
Oxygen, Dissolved	**0.28**	mg/L			1		08/07/18 16:50	7782-44-7	
REDOX	**118.6**	mV			1		08/07/18 16:50		
Turbidity	**0.08**	NTU			1		08/07/18 16:50		
Static Water Level	**787.63**	feet			1		08/07/18 16:50		
Temperature, Water (C)	**13.9**	deg C			1		08/07/18 16:50		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**646**	mg/L	20.0	8.7	1		08/14/18 14:12		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.010	1		08/14/18 09:53		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**48.2**	mg/L	2.0	0.50	1		08/13/18 18:53	16887-00-6	
Fluoride	**0.13J**	mg/L	0.30	0.10	1		08/13/18 18:53	16984-48-8	
Sulfate	**151**	mg/L	30.0	10.0	10		08/14/18 12:31	14808-79-8	

Sample: MW-84A **Lab ID: 40173851002** Collected: 08/08/18 15:15 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	08/14/18 07:35	08/15/18 19:25	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	08/14/18 07:35	08/15/18 19:25	7440-38-2	
Barium	**13.7**	ug/L	1.1	0.34	1	08/14/18 07:35	08/15/18 19:25	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	08/14/18 07:35	08/15/18 19:25	7440-41-7	
Boron	**12.8**	ug/L	11.0	3.3	1	08/14/18 07:35	08/17/18 11:11	7440-42-8	
Calcium	**76000**	ug/L	250	69.8	1	08/14/18 07:35	08/15/18 19:25	7440-70-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

Sample: MW-84A **Lab ID: 40173851002** Collected: 08/08/18 15:15 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Chromium	**1.5J**	ug/L	3.4	1.0	1	08/14/18 07:35	08/15/18 19:25	7440-47-3	
Cobalt	**<0.085**	ug/L	1.0	0.085	1	08/14/18 07:35	08/15/18 19:25	7440-48-4	
Lithium	**0.40J**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 19:25	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	08/14/18 07:35	08/15/18 19:25	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	08/14/18 07:35	08/15/18 19:25	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 19:25	7440-28-0	
Field Data	Analytical Method:								
Field pH	**7.38**	Std. Units			1		08/08/18 15:15		
Field Specific Conductance	**617.1**	umhos/cm			1		08/08/18 15:15		
Oxygen, Dissolved	**8.84**	mg/L			1		08/08/18 15:15	7782-44-7	
REDOX	**142.7**	mV			1		08/08/18 15:15		
Turbidity	**0.71**	NTU			1		08/08/18 15:15		
Static Water Level	**786.55**	feet			1		08/08/18 15:15		
Temperature, Water (C)	**12.0**	deg C			1		08/08/18 15:15		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**372**	mg/L	20.0	8.7	1		08/15/18 16:56		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.010	1		08/14/18 09:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**4.9**	mg/L	2.0	0.50	1		08/13/18 19:05	16887-00-6	
Fluoride	**<0.10**	mg/L	0.30	0.10	1		08/13/18 19:05	16984-48-8	
Sulfate	**1.9J**	mg/L	3.0	1.0	1		08/13/18 19:05	14808-79-8	

Sample: MW-301 **Lab ID: 40173851003** Collected: 08/08/18 16:15 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.36J**	ug/L	1.0	0.15	1	08/14/18 07:35	08/15/18 19:38	7440-36-0	
Arsenic	**0.45J**	ug/L	1.0	0.28	1	08/14/18 07:35	08/15/18 19:38	7440-38-2	
Barium	**10.2**	ug/L	1.1	0.34	1	08/14/18 07:35	08/15/18 19:38	7440-39-3	
Beryllium	**0.37J**	ug/L	1.0	0.18	1	08/14/18 07:35	08/15/18 19:38	7440-41-7	
Boron	**22.8**	ug/L	11.0	3.3	1	08/14/18 07:35	08/17/18 11:46	7440-42-8	
Calcium	**105000**	ug/L	250	69.8	1	08/14/18 07:35	08/15/18 19:38	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	08/14/18 07:35	08/15/18 19:38	7440-47-3	
Cobalt	**0.28J**	ug/L	1.0	0.085	1	08/14/18 07:35	08/15/18 19:38	7440-48-4	
Lithium	**0.85J**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 19:38	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	08/14/18 07:35	08/15/18 19:38	7439-98-7	
Selenium	**0.71J**	ug/L	1.1	0.32	1	08/14/18 07:35	08/15/18 19:38	7782-49-2	
Thallium	**0.30J**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 19:38	7440-28-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

Sample: MW-301 **Lab ID: 40173851003** Collected: 08/08/18 16:15 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Field pH	**6.91**	Std. Units			1		08/08/18 16:15		
Field Specific Conductance	**799**	umhos/cm			1		08/08/18 16:15		
Oxygen, Dissolved	**2.14**	mg/L			1		08/08/18 16:15	7782-44-7	
REDOX	**126.5**	mV			1		08/08/18 16:15		
Turbidity	**0.46**	NTU			1		08/08/18 16:15		
Static Water Level	**787.06**	feet			1		08/08/18 16:15		
Temperature, Water (C)	**10.6**	deg C			1		08/08/18 16:15		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**502**	mg/L	20.0	8.7	1		08/15/18 16:56		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.0**	Std. Units	0.10	0.010	1		08/14/18 09:56		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**5.2**	mg/L	2.0	0.50	1		08/14/18 12:49	16887-00-6	
Fluoride	**<0.10**	mg/L	0.30	0.10	1		08/14/18 12:49	16984-48-8	
Sulfate	**21.6**	mg/L	3.0	1.0	1		08/14/18 12:49	14808-79-8	

Sample: MW-303 **Lab ID: 40173851004** Collected: 08/08/18 11:40 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.15J**	ug/L	1.0	0.15	1	08/14/18 07:35	08/15/18 19:45	7440-36-0	
Arsenic	**8.7**	ug/L	1.0	0.28	1	08/14/18 07:35	08/15/18 19:45	7440-38-2	
Barium	**14.3**	ug/L	1.1	0.34	1	08/14/18 07:35	08/15/18 19:45	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	08/14/18 07:35	08/15/18 19:45	7440-41-7	
Boron	**1410**	ug/L	55.0	16.5	5	08/14/18 07:35	08/17/18 11:25	7440-42-8	
Calcium	**25600**	ug/L	250	69.8	1	08/14/18 07:35	08/15/18 19:45	7440-70-2	
Chromium	**56.8**	ug/L	3.4	1.0	1	08/14/18 07:35	08/15/18 19:45	7440-47-3	
Cobalt	**0.58J**	ug/L	1.0	0.085	1	08/14/18 07:35	08/15/18 19:45	7440-48-4	
Lithium	**1.1**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 19:45	7439-93-2	
Molybdenum	**94.8**	ug/L	1.5	0.44	1	08/14/18 07:35	08/15/18 19:45	7439-98-7	
Selenium	**25.1**	ug/L	1.1	0.32	1	08/14/18 07:35	08/15/18 19:45	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 19:45	7440-28-0	
Field Data	Analytical Method:								
Field pH	**9.30**	Std. Units			1		08/08/18 11:40		
Field Specific Conductance	**1095**	umhos/cm			1		08/08/18 11:40		
Oxygen, Dissolved	**7.59**	mg/L			1		08/08/18 11:40	7782-44-7	
REDOX	**126.1**	mV			1		08/08/18 11:40		
Turbidity	**3.51**	NTU			1		08/08/18 11:40		
Static Water Level	**785.20**	feet			1		08/08/18 11:40		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

Sample: MW-303 **Lab ID: 40173851004** Collected: 08/08/18 11:40 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Temperature, Water (C)	**12.7**	deg C			1		08/08/18 11:40		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**792**	mg/L	20.0	8.7	1		08/15/18 16:56		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**8.9**	Std. Units	0.10	0.010	1		08/14/18 09:58		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<10.0**	mg/L	40.0	10.0	20		08/14/18 21:00	16887-00-6	D3
Fluoride	**<2.0**	mg/L	6.0	2.0	20		08/14/18 21:00	16984-48-8	D3
Sulfate	**449**	mg/L	60.0	20.0	20		08/14/18 21:00	14808-79-8	

Sample: MW-304 **Lab ID: 40173851005** Collected: 08/08/18 13:10 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	08/14/18 07:35	08/15/18 19:52	7440-36-0	
Arsenic	**0.76J**	ug/L	1.0	0.28	1	08/14/18 07:35	08/15/18 19:52	7440-38-2	
Barium	**35.2**	ug/L	1.1	0.34	1	08/14/18 07:35	08/15/18 19:52	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	08/14/18 07:35	08/15/18 19:52	7440-41-7	
Boron	**632**	ug/L	11.0	3.3	1	08/14/18 07:35	08/17/18 11:53	7440-42-8	
Calcium	**84900**	ug/L	250	69.8	1	08/14/18 07:35	08/15/18 19:52	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	08/14/18 07:35	08/15/18 19:52	7440-47-3	
Cobalt	**1.1**	ug/L	1.0	0.085	1	08/14/18 07:35	08/15/18 19:52	7440-48-4	
Lithium	**<0.14**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 19:52	7439-93-2	
Molybdenum	**12.3**	ug/L	1.5	0.44	1	08/14/18 07:35	08/15/18 19:52	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	08/14/18 07:35	08/15/18 19:52	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 19:52	7440-28-0	
Field Data	Analytical Method:								
Field pH	**7.21**	Std. Units			1		08/08/18 13:10		
Field Specific Conductance	**785**	umhos/cm			1		08/08/18 13:10		
Oxygen, Dissolved	**0.29**	mg/L			1		08/08/18 13:10	7782-44-7	
REDOX	**24.8**	mV			1		08/08/18 13:10		
Turbidity	**2.35**	NTU			1		08/08/18 13:10		
Static Water Level	**788.25**	feet			1		08/08/18 13:10		
Temperature, Water (C)	**20.1**	deg C			1		08/08/18 13:10		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**530**	mg/L	20.0	8.7	1		08/15/18 16:56		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

Sample: MW-304 **Lab ID: 40173851005** Collected: 08/08/18 13:10 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.010	1		08/14/18 09:59		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**39.1**	mg/L	20.0	5.0	10		08/14/18 21:14	16887-00-6	
Fluoride	**<1.0**	mg/L	3.0	1.0	10		08/14/18 21:14	16984-48-8	D3
Sulfate	**76.0**	mg/L	30.0	10.0	10		08/14/18 21:14	14808-79-8	

Sample: MW-305 **Lab ID: 40173851006** Collected: 08/07/18 15:50 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.42J**	ug/L	1.0	0.15	1	08/14/18 07:35	08/15/18 19:59	7440-36-0	
Arsenic	**0.42J**	ug/L	1.0	0.28	1	08/14/18 07:35	08/15/18 19:59	7440-38-2	
Barium	**13.5**	ug/L	1.1	0.34	1	08/14/18 07:35	08/15/18 19:59	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	08/14/18 07:35	08/15/18 19:59	7440-41-7	
Boron	**1360**	ug/L	55.0	16.5	5	08/14/18 07:35	08/17/18 11:39	7440-42-8	
Calcium	**91200**	ug/L	250	69.8	1	08/14/18 07:35	08/15/18 19:59	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	08/14/18 07:35	08/15/18 19:59	7440-47-3	
Cobalt	**<0.085**	ug/L	1.0	0.085	1	08/14/18 07:35	08/15/18 19:59	7440-48-4	
Lithium	**<0.14**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 19:59	7439-93-2	
Molybdenum	**55.7**	ug/L	1.5	0.44	1	08/14/18 07:35	08/15/18 19:59	7439-98-7	
Selenium	**4.8**	ug/L	1.1	0.32	1	08/14/18 07:35	08/15/18 19:59	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 19:59	7440-28-0	
Field Data	Analytical Method:								
Field pH	**8.01**	Std. Units			1		08/07/18 15:50		
Field Specific Conductance	**813**	umhos/cm			1		08/07/18 15:50		
Oxygen, Dissolved	**2.04**	mg/L			1		08/07/18 15:50	7782-44-7	
REDOX	**129.9**	mV			1		08/07/18 15:50		
Turbidity	**0.05**	NTU			1		08/07/18 15:50		
Static Water Level	**788.56**	feet			1		08/07/18 15:50		
Temperature, Water (C)	**19.6**	deg C			1		08/07/18 15:50		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**614**	mg/L	20.0	8.7	1		08/14/18 14:13		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**8.1**	Std. Units	0.10	0.010	1		08/14/18 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**45.7**	mg/L	2.0	0.50	1		08/14/18 14:12	16887-00-6	
Fluoride	**0.18J**	mg/L	0.30	0.10	1		08/14/18 14:12	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

Sample: MW-305 **Lab ID: 40173851006** Collected: 08/07/18 15:50 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Sulfate	**276**	mg/L	30.0	10.0	10		08/14/18 16:09	14808-79-8	

Sample: FIELD BLANK **Lab ID: 40173851007** Collected: 08/08/18 11:15 Received: 08/10/18 08:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	08/14/18 07:35	08/15/18 21:00	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	08/14/18 07:35	08/15/18 21:00	7440-38-2	
Barium	**0.90J**	ug/L	1.1	0.34	1	08/14/18 07:35	08/15/18 21:00	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	08/14/18 07:35	08/15/18 21:00	7440-41-7	
Boron	**<3.3**	ug/L	11.0	3.3	1	08/14/18 07:35	08/16/18 17:32	7440-42-8	
Calcium	**<69.8**	ug/L	250	69.8	1	08/14/18 07:35	08/15/18 21:00	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	08/14/18 07:35	08/15/18 21:00	7440-47-3	
Cobalt	**<0.085**	ug/L	1.0	0.085	1	08/14/18 07:35	08/15/18 21:00	7440-48-4	
Lithium	**<0.14**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 21:00	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	08/14/18 07:35	08/15/18 21:00	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	08/14/18 07:35	08/15/18 21:00	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	08/14/18 07:35	08/15/18 21:00	7440-28-0	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<8.7**	mg/L	20.0	8.7	1		08/15/18 16:57		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**6.5**	Std. Units	0.10	0.010	1		08/14/18 10:04		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	2.0	0.50	1		08/14/18 14:26	16887-00-6	
Fluoride	**<0.10**	mg/L	0.30	0.10	1		08/14/18 14:26	16984-48-8	
Sulfate	**<1.0**	mg/L	3.0	1.0	1		08/14/18 14:26	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

QC Batch: 297119 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 40173851001, 40173851002, 40173851003, 40173851004, 40173851005, 40173851006, 40173851007

METHOD BLANK: 1735342 Matrix: Water
Associated Lab Samples: 40173851001, 40173851002, 40173851003, 40173851004, 40173851005, 40173851006, 40173851007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	08/15/18 19:18	
Arsenic	ug/L	<0.28	1.0	08/15/18 19:18	
Barium	ug/L	<0.34	1.1	08/15/18 19:18	
Beryllium	ug/L	<0.18	1.0	08/15/18 19:18	
Boron	ug/L	<3.3	11.0	08/16/18 17:25	
Calcium	ug/L	<69.8	250	08/15/18 19:18	
Chromium	ug/L	<1.0	3.4	08/15/18 19:18	
Cobalt	ug/L	<0.085	1.0	08/15/18 19:18	
Lithium	ug/L	<0.14	1.0	08/15/18 19:18	
Molybdenum	ug/L	<0.44	1.5	08/15/18 19:18	
Selenium	ug/L	<0.32	1.1	08/15/18 19:18	
Thallium	ug/L	<0.14	1.0	08/15/18 19:18	

LABORATORY CONTROL SAMPLE: 1735343

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	533	107	80-120	
Arsenic	ug/L	500	513	103	80-120	
Barium	ug/L	500	495	99	80-120	
Beryllium	ug/L	500	512	102	80-120	
Boron	ug/L	500	492	98	80-120	
Calcium	ug/L	5000	4570	91	80-120	
Chromium	ug/L	500	492	98	80-120	
Cobalt	ug/L	500	488	98	80-120	
Lithium	ug/L	500	484	97	80-120	
Molybdenum	ug/L	500	521	104	80-120	
Selenium	ug/L	500	531	106	80-120	
Thallium	ug/L	500	492	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1735344 1735345

Parameter	Units	40173942001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.0078J mg/L	500	500	232	240	45	46	75-125	3	20	M0
Arsenic	ug/L	0.058 mg/L	500	500	562	582	101	105	75-125	4	20	
Barium	ug/L	8.9 mg/L	500	500	9300	9500	72	112	75-125	2	20	P6

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1735344 1735345

Parameter	Units	40173942001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Beryllium	ug/L	0.026 mg/L	500	500	527	550	100	105	75-125	4	20	
Boron	ug/L	1.4 mg/L	500	500	1820	1930	84	106	75-125	6	20	
Calcium	ug/L	357 mg/L	5000	5000	356000	364000	-24	134	75-125	2	20	P6
Chromium	ug/L	0.13 mg/L	500	500	610	642	96	102	75-125	5	20	
Cobalt	ug/L	0.046 mg/L	500	500	519	544	95	100	75-125	5	20	
Lithium	ug/L	0.27 mg/L	500	500	754	792	97	104	75-125	5	20	
Molybdenum	ug/L	0.031 mg/L	500	500	488	508	91	95	75-125	4	20	
Selenium	ug/L	0.032 mg/L	500	500	525	544	99	102	75-125	4	20	
Thallium	ug/L	0.0064J mg/L	500	500	495	522	98	103	75-125	5	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

QC Batch: 297186 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 40173851001, 40173851006

METHOD BLANK: 1735599 Matrix: Water
Associated Lab Samples: 40173851001, 40173851006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	08/14/18 14:12	

LABORATORY CONTROL SAMPLE: 1735600

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	615	640	104	80-120	

SAMPLE DUPLICATE: 1735601

Parameter	Units	40173851001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	646	592	9	5	R1

SAMPLE DUPLICATE: 1735602

Parameter	Units	40173753003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	818	824	1	5	

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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(920)469-2436

QUALITY CONTROL DATA

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

QC Batch: 297309 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 40173851002, 40173851003, 40173851004, 40173851005, 40173851007

METHOD BLANK: 1736097 Matrix: Water
Associated Lab Samples: 40173851002, 40173851003, 40173851004, 40173851005, 40173851007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	08/15/18 16:55	

LABORATORY CONTROL SAMPLE: 1736098

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	615	594	97	80-120	

SAMPLE DUPLICATE: 1736099

Parameter	Units	40173862001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	642	644	0	5	

SAMPLE DUPLICATE: 1736100

Parameter	Units	40173835001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	702	716	2	5	

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REPORT OF LABORATORY ANALYSIS

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Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

QC Batch: 297133 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 40173851001, 40173851002, 40173851003, 40173851004, 40173851005, 40173851006, 40173851007

SAMPLE DUPLICATE: 1735377

Parameter	Units	40173638001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.3	7.4	1	20	H6

SAMPLE DUPLICATE: 1735378

Parameter	Units	40173796001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.6	8.6	0	20	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

QC Batch: 296938
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40173851001, 40173851002

METHOD BLANK: 1734459 Matrix: Water
Associated Lab Samples: 40173851001, 40173851002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	08/13/18 13:06	
Fluoride	mg/L	<0.10	0.30	08/13/18 13:06	
Sulfate	mg/L	<1.0	3.0	08/13/18 13:06	

LABORATORY CONTROL SAMPLE: 1734460

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.5	103	90-110	
Fluoride	mg/L	2	2.1	104	90-110	
Sulfate	mg/L	20	20.5	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1734461 1734462

Parameter	Units	40173803001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	41.8	100	100	142	142	101	101	90-110	0	15	
Fluoride	mg/L	<0.50	10	10	10.2	10.2	102	102	90-110	0	15	
Sulfate	mg/L	15.0	100	100	113	113	98	98	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1735111 1735112

Parameter	Units	40173851002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	4.9	20	20	24.9	25.1	100	101	90-110	1	15	
Fluoride	mg/L	<0.10	2	2	2.0	2.0	100	101	90-110	1	15	
Sulfate	mg/L	1.9J	20	20	21.7	21.9	99	100	90-110	1	15	

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REPORT OF LABORATORY ANALYSIS

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(920)469-2436

QUALITY CONTROL DATA

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

QC Batch: 297144 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40173851003, 40173851004, 40173851005, 40173851006, 40173851007

METHOD BLANK: 1735407 Matrix: Water
Associated Lab Samples: 40173851003, 40173851004, 40173851005, 40173851006, 40173851007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	08/14/18 11:12	
Fluoride	mg/L	<0.10	0.30	08/14/18 11:12	
Sulfate	mg/L	<1.0	3.0	08/14/18 11:12	

LABORATORY CONTROL SAMPLE: 1735408

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.3	102	90-110	
Fluoride	mg/L	2	2.0	102	90-110	
Sulfate	mg/L	20	20.2	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1735409 1735410

Parameter	Units	40173938002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	502	400	400	876	892	94	98	90-110	2	15	
Fluoride	mg/L	<2.0	40	40	42.3	43.9	106	110	90-110	4	15	
Sulfate	mg/L	209	400	400	607	624	99	104	90-110	3	15	

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REPORT OF LABORATORY ANALYSIS

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Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

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.

LABORATORIES

PASI-G	Pace Analytical Services - Green Bay

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173851

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40173851001	**M-4R**	EPA 3010	297119	EPA 6020	297196
40173851002	**MW-84A**	EPA 3010	297119	EPA 6020	297196
40173851003	**MW-301**	EPA 3010	297119	EPA 6020	297196
40173851004	**MW-303**	EPA 3010	297119	EPA 6020	297196
40173851005	**MW-304**	EPA 3010	297119	EPA 6020	297196
40173851006	**MW-305**	EPA 3010	297119	EPA 6020	297196
40173851007	**FIELD BLANK**	EPA 3010	297119	EPA 6020	297196
40173851001	**M-4R**				
40173851002	**MW-84A**				
40173851003	**MW-301**				
40173851004	**MW-303**				
40173851005	**MW-304**				
40173851006	**MW-305**				
40173851001	**M-4R**	SM 2540C	297186		
40173851002	**MW-84A**	SM 2540C	297309		
40173851003	**MW-301**	SM 2540C	297309		
40173851004	**MW-303**	SM 2540C	297309		
40173851005	**MW-304**	SM 2540C	297309		
40173851006	**MW-305**	SM 2540C	297186		
40173851007	**FIELD BLANK**	SM 2540C	297309		
40173851001	**M-4R**	EPA 9040	297133		
40173851002	**MW-84A**	EPA 9040	297133		
40173851003	**MW-301**	EPA 9040	297133		
40173851004	**MW-303**	EPA 9040	297133		
40173851005	**MW-304**	EPA 9040	297133		
40173851006	**MW-305**	EPA 9040	297133		
40173851007	**FIELD BLANK**	EPA 9040	297133		
40173851001	**M-4R**	EPA 300.0	296938		
40173851002	**MW-84A**	EPA 300.0	296938		
40173851003	**MW-301**	EPA 300.0	297144		
40173851004	**MW-303**	EPA 300.0	297144		
40173851005	**MW-304**	EPA 300.0	297144		
40173851006	**MW-305**	EPA 300.0	297144		
40173851007	**FIELD BLANK**	EPA 300.0	297144		

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

Page 1 of

SSM

40173851

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

(Please Print Clearly)	
Company Name:	SCS
Branch/Location:	Madison
Project Contact:	Meg Blodgett
Phone:	608 216-7362
Project Number:	25216067.18
Project Name:	Alliant Columbia
Project State:	WI
Sampled By (Print):	Paul A. Grover
Sampled By (Sign):	Paul A. Grover
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

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, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO) — Y/N: No
PRESERVATION (CODE)* — Pick Letter: A | A | D | D | D

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested: Ph	TDS, Cl, F, SO4	Metals	Radium 226	Radium 228	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	MW-4	8-7-18	16:50	GW								
002	MW-84A	8-8-18	15:15									
003	MW-301	8-8-18	16:15									
004	MW-303	8-8-18	11:40									
005	MW-304	8-8-18	13:10									
006	MW-305	8-7-18	15:50									
007	Field Blank	8-8-18	11:15	DI								

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:	Date/Time:	Received By:	Date/Time:
Paul A. Grover	8-9-18 10:35		
CS Logistics	8/10/18 0830	pace	8/10/18 0830

PACE Project No.: 40173851
Receipt Temp = 2.4 °C
Sample Receipt pH: OK / Adjusted
Cooler Custody Seal: Present / Not Present
Intact / Not Intact

C019a(27Jun2006)
Version 6.0 06/14/06
ORIGINAL

Pace Container Order #385218

4017385J

Addresses

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

Info

Project Name	Alliant Columbia Ash/Ponds CCR (25216067.18)	**Due Date**	07/30/2018	**Profile**		**Quote**	
Project Manager	Milewsky, Dan	**Return**		**Carrier**	Most Economical	**Location**	

Trip Blanks

- [ ] Include Trip Blanks

Bottle Labels

- [ ] Blank
- [ ] Pre-Printed No Sample IDs
- [X] Pre-Printed With Sample IDs

Bottles

- [ ] Boxed Cases
- [ ] Individually Wrapped
- [X] Grouped By Sample

Return Shipping Labels

- [ ] No Shipper Number
- [ ] With Shipper Number

Misc

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

COC Options

- [X] Number of Blanks 1
- [ ] Pre-Printed

# of Samples	Matrix	Test	Container	Total	# of QC	Lot #	Notes
7	WT	Radium 226	1-1L Plastic w/ HNO3	7	0		
8	WT	Radium 228	1-1L Plastic w/ HNO3	8	0		
8	WT	Metals	250mL plastic w/HNO3	8	0	M-8-103-04BB	
8	WT	pH	250mL plastic unpres	8	0	M-8-124-04BB	
8	WT	TDS, Cl, F, SO4	250mL plastic unpres	8	0	M-8-124-04BB	

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 :	07/27/2018
Prepared By:	Mai Yer Her
Verified By:	

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

Sample Preservation Receipt Form

Client Name: SLS

Project # 401738S1

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☐N/A

Lab Lot# of pH paper: 10150781 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: JE Date/ Time:

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)
	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							
001											2		1													2				X		2.5 / 5 / 10
002											2		1													2				X		2.5 / 5 / 10
003											2		1													2				X		2.5 / 5 / 10
004											2		1													2				X		2.5 / 5 / 10
005											2		1													2				X		2.5 / 5 / 10
006											2		1													2				X		2.5 / 5 / 10
007											2		1													2				X		2.5 / 5 / 10
008																														X		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	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:	HC poly HNO3

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	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: SCS

Project #: WO#: 40173851

Courier: ☑ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other: _____

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: 2.5 /Corr: _____

Temp Blank Present: ☐ yes ☑ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents: Date: 8/10/18 Initials: _____

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

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. PgFF, mail to, invoice 8/10/18
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☑Yes ☐No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☐No ☐N/A	13. 001-10-1L-4R"-HNO3 bottles no time 8/10/18
Trip Blank Custody Seals Present	☐Yes ☐No ☐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: RAK for DM **Date:** 8/10/18

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

September 12, 2018

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173907

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on August 10, 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

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CERTIFICATIONS

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173907

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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SAMPLE SUMMARY

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173907

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40173907001	**M-4**	Water	08/07/18 16:50	08/10/18 08:30
40173907002	**MW-84A**	Water	08/08/18 15:15	08/10/18 08:30
40173907003	**MW-301**	Water	08/08/18 16:15	08/10/18 08:30
40173907004	**MW-303**	Water	08/08/18 11:40	08/10/18 08:30
40173907005	**MW-304**	Water	08/08/18 13:10	08/10/18 08:30
40173907006	**MW-305**	Water	08/07/18 15:50	08/10/18 08:30
40173907007	**FIELD BLANK**	Water	08/08/18 11:15	08/10/18 08:30

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SAMPLE ANALYTE COUNT

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173907

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40173907001	**M-4**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
40173907002	**MW-84A**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
40173907003	**MW-301**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
40173907004	**MW-303**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
40173907005	**MW-304**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
40173907006	**MW-305**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
40173907007	**FIELD BLANK**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173907

Sample: M-4 **Lab ID: 40173907001** Collected: 08/07/18 16:50 Received: 08/10/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.239 ± 0.371 (0.642) C:NA T:84%**	pCi/L	08/24/18 20:27	13982-63-3	
Radium-228	EPA 904.0	**0.241 ± 0.533 (1.18) C:66% T:72%**	pCi/L	08/24/18 14:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.480 ± 0.904 (1.82)**	pCi/L	08/27/18 15:52	7440-14-4	

Sample: MW-84A **Lab ID: 40173907002** Collected: 08/08/18 15:15 Received: 08/10/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.203 ± 0.399 (0.956) C:NA T:75%**	pCi/L	08/24/18 20:27	13982-63-3	
Radium-228	EPA 904.0	**0.529 ± 0.441 (0.884) C:71% T:80%**	pCi/L	08/24/18 14:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.529 ± 0.840 (1.84)**	pCi/L	08/27/18 15:52	7440-14-4	

Sample: MW-301 **Lab ID: 40173907003** Collected: 08/08/18 16:15 Received: 08/10/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.060 ± 0.275 (0.560) C:NA T:88%**	pCi/L	08/24/18 20:27	13982-63-3	
Radium-228	EPA 904.0	**0.0351 ± 0.373 (0.859) C:73% T:76%**	pCi/L	08/24/18 14:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.0351 ± 0.648 (1.42)**	pCi/L	08/27/18 15:52	7440-14-4	

Sample: MW-303 **Lab ID: 40173907004** Collected: 08/08/18 11:40 Received: 08/10/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.299 (0.482) C:NA T:82%**	pCi/L	08/24/18 20:27	13982-63-3	
Radium-228	EPA 904.0	**0.237 ± 0.375 (0.813) C:68% T:88%**	pCi/L	08/24/18 14:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.237 ± 0.674 (1.30)**	pCi/L	08/27/18 15:52	7440-14-4	

Sample: MW-304 **Lab ID: 40173907005** Collected: 08/08/18 13:10 Received: 08/10/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.061 ± 0.278 (0.566) C:NA T:84%**	pCi/L	08/24/18 20:27	13982-63-3	
Radium-228	EPA 904.0	**0.474 ± 0.441 (0.900) C:68% T:74%**	pCi/L	08/24/18 14:38	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173907

Sample: MW-304 **Lab ID: 40173907005** Collected: 08/08/18 13:10 Received: 08/10/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.474 ± 0.719 (1.47)**	pCi/L	08/27/18 15:52	7440-14-4	

Sample: MW-305 **Lab ID: 40173907006** Collected: 08/07/18 15:50 Received: 08/10/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.219 ± 0.334 (0.537) C:NA T:73%**	pCi/L	08/24/18 20:27	13982-63-3	
Radium-228	EPA 904.0	**0.498 ± 0.378 (0.739) C:72% T:79%**	pCi/L	08/24/18 14:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.717 ± 0.712 (1.28)**	pCi/L	08/27/18 15:52	7440-14-4	

Sample: FIELD BLANK **Lab ID: 40173907007** Collected: 08/08/18 11:15 Received: 08/10/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.116 ± 0.321 (0.624) C:NA T:88%**	pCi/L	08/24/18 20:44	13982-63-3	
Radium-228	EPA 904.0	**0.495 ± 0.488 (1.01) C:73% T:70%**	pCi/L	08/24/18 14:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.611 ± 0.809 (1.63)**	pCi/L	08/27/18 15:52	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173907

QC Batch: 309686 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 40173907001, 40173907002, 40173907003, 40173907004, 40173907005, 40173907006, 40173907007

METHOD BLANK: 1513130 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.368 ± 0.357 (0.732) C:75% T:80%	pCi/L	08/24/18 14:38	

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 ALLIANT COL. CCR
Pace Project No.: 40173907

QC Batch: 309678 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 40173907001, 40173907002, 40173907003, 40173907004, 40173907005, 40173907006, 40173907007

METHOD BLANK: 1513120 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.076 ± 0.348 (0.821) C:NA T:69%	pCi/L	08/24/18 19:56	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173907

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.18 ALLIANT COL. CCR
Pace Project No.: 40173907

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40173907001	**M-4**	EPA 903.1	309678		
40173907002	**MW-84A**	EPA 903.1	309678		
40173907003	**MW-301**	EPA 903.1	309678		
40173907004	**MW-303**	EPA 903.1	309678		
40173907005	**MW-304**	EPA 903.1	309678		
40173907006	**MW-305**	EPA 903.1	309678		
40173907007	**FIELD BLANK**	EPA 903.1	309678		
40173907001	**M-4**	EPA 904.0	309686		
40173907002	**MW-84A**	EPA 904.0	309686		
40173907003	**MW-301**	EPA 904.0	309686		
40173907004	**MW-303**	EPA 904.0	309686		
40173907005	**MW-304**	EPA 904.0	309686		
40173907006	**MW-305**	EPA 904.0	309686		
40173907007	**FIELD BLANK**	EPA 904.0	309686		
40173907001	**M-4**	Total Radium Calculation	311075		
40173907002	**MW-84A**	Total Radium Calculation	311075		
40173907003	**MW-301**	Total Radium Calculation	311075		
40173907004	**MW-303**	Total Radium Calculation	311075		
40173907005	**MW-304**	Total Radium Calculation	311075		
40173907006	**MW-305**	Total Radium Calculation	311075		
40173907007	**FIELD BLANK**	Total Radium Calculation	311075		

(Please Print Clearly)

Company Name:	SCS
Branch/Location:	Madison
Project Contact:	Meg Blodgett
Phone:	608 216-7362
Project Number:	25216067.18
Project Name:	Alliant Columbia
Project State:	WI
Sampled By (Print):	Paul A. Grover
Sampled By (Sign):	Paul A. Grover
PO #:	
Regulatory Program:	

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

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

Page 1 of 1 — 40173907 ~~40173851~~ 8/10/18 AL

*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

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

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, B = Biota, C = Charcoal, O = Oil, S = Soil, Sl = Sludge
W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO)				Y/N	No	→	→	→	→					
PRESERVATION (CODE)*				Pick Letter	A	A	D	D	D					
PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Ph	TDS, CL, F, SO4	Metals	Radium 226	Radium 228				CLIENT COMMENTS	LAB COMMENTS (Lab Use Only) / Profile #
001	M-4	8-7-18	16:50	GW										
002	MW-84A	8-8-18	15:15	↓										
003	MW-301	8-8-18	16:15	↓										
004	MW-303	8-8-18	11:40	↓										
005	MW-304	8-8-18	13:10	↓										
006	MW-305	8-7-18	15:50	↓										
007	Field Blank	8-8-18	11:15	DI										

40173907

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:	Date/Time:	Received By:	Date/Time:
Paul A. Grover	8-9-18 10:35		
CS logistics	8/10/18 0830	[signature] pace	8/10/18 0830

PACE Project No. ~~40173851~~

Receipt Temp = RT °C

Sample Receipt pH
OK / Adjusted

Cooler Custody Seal
Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06
ORIGINAL

C019a(27Jun2006)

40173907
~~40173851~~ 8/10/18 AL

Pace Container Order #385218

Addresses

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

Info

Project Name	Alliant Columbia Ash/Ponds CCR (25216067.18)	**Due Date**	07/30/2018	**Profile**		**Quote**	
Project Manager	Milewsky, Dan	**Return**		**Carrier**	Most Economical	**Location**	

Trip Blanks

- [ ] Include Trip Blanks

Bottle Labels

- [ ] Blank
- [ ] Pre-Printed No Sample IDs
- [X] Pre-Printed With Sample IDs

Bottles

- [ ] Boxed Cases
- [ ] Individually Wrapped
- [X] Grouped By Sample

Return Shipping Labels

- [ ] No Shipper Number
- [ ] With Shipper Number

COC Options

- [X] Number of Blanks: 1
- [ ] Pre-Printed

Misc

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

# of Samples	Matrix	Test	Container	Total	# of QC	Lot #	Notes
7	WT	Radium 226	1-1L Plastic w/ HNO3	7	0		
8	WT	Radium 228	1-1L Plastic w/ HNO3	8	0		
8	WT	Metals	250mL plastic w/HNO3	8	0	M-8-103-04BB	
8	WT	pH	250mL plastic unpres	8	0	M-8-124-04BB	
8	WT	TDS, Cl, F, SO4	250mL plastic unpres	8	0	M-8-124-04BB	

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 :	07/27/2018
Prepared By:	Mai Yer Her
Verified By:	

F-ALL-C-009-rev.00, 19Dec2016

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

Sample Preservation Receipt Form

Client Name: SLS Project # ~~401 73851~~ 40173907

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☐N/A Date/Time: 8/10/18

Lab Lot# of pH paper: 10150178 Lab Std #ID of preservation (if pH adjusted): Initial when completed:

	Glass							Plastic							Vials						Jars			General							
Pace Lab #	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	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001											2		1													2					X		2.5 / 5 / 10
002											2		1													2					X		2.5 / 5 / 10
003											2		1													2					X		2.5 / 5 / 10
004											2		1													2					X		2.5 / 5 / 10
005											2		1													2					X		2.5 / 5 / 10
006											2		1													2					X		2.5 / 5 / 10
007											2		1													2					X		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**

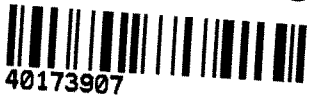
AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	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	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:	FC poly-HNO3

Pace Analytical 1241 Bellevue Street, Green Bay, WI 54302	Document Name: **Sample Condition Upon Receipt (SCUR)**	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: SCS

Project #: **WO#: 40173907**



Courier: ☑ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other: _____

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: 2.5 /Corr: _____

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: 8/10/18
Initials: _____

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. Pg 1, mail to, invoice 8/10/18
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☑Yes ☐No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☐No ☐N/A	13. 001-10-M-4R" - HNO3 bottles no time 8/10/18
Trip Blank Custody Seals Present	☐Yes ☐No ☐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: Rick for Dan **Date:** 8/10/18

Page 2 of 2

A3 Assessment Monitoring Resample Round 2, September 2018

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

December 12, 2018

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25216067.18 ALLIANT COLUMBIA
Pace Project No.: 40180865

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on September 22, 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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25216067.18 ALLIANT COLUMBIA
Pace Project No.: 40180865

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25216067.18 ALLIANT COLUMBIA
Pace Project No.: 40180865

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40176335003	**MW303**	Water	09/21/18 16:40	09/22/18 09:30

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25216067.18 ALLIANT COLUMBIA
Pace Project No.: 40180865

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40176335003	**MW303**	EPA 6020	KXS	3
			AXL	7

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216067.18 ALLIANT COLUMBIA
Pace Project No.: 40180865

Sample: MW303 **Lab ID: 40176335003** Collected: 09/21/18 16:40 Received: 09/22/18 09:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Arsenic	**6.0**	ug/L	1.0	0.28	1	09/27/18 07:05	09/27/18 21:28	7440-38-2	
Molybdenum	**84.7**	ug/L	1.5	0.44	1	09/27/18 07:05	09/27/18 21:28	7439-98-7	
Selenium	**15.8**	ug/L	1.1	0.32	1	09/27/18 07:05	09/27/18 21:28	7782-49-2	
Field Data	Analytical Method:								
Field pH	**9.15**	Std. Units			1		09/21/18 16:40		
Field Specific Conductance	**856**	umhos/cm			1		09/21/18 16:40		
Oxygen, Dissolved	**8.20**	mg/L			1		09/21/18 16:40	7782-44-7	
REDOX	**20.4**	mV			1		09/21/18 16:40		
Turbidity	**44.4**	NTU			1		09/21/18 16:40		
Static Water Level	**786.50**	feet			1		09/21/18 16:40		
Temperature, Water (C)	**13.28**	deg C			1		09/21/18 16:40		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216067.18 ALLIANT COLUMBIA
Pace Project No.: 40180865

QC Batch: 301396 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 40176335003

METHOD BLANK: 1760405 Matrix: Water
Associated Lab Samples: 40176335003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	<0.28	1.0	09/27/18 21:15	
Molybdenum	ug/L	<0.44	1.5	09/27/18 21:15	
Selenium	ug/L	<0.32	1.1	09/27/18 21:15	

LABORATORY CONTROL SAMPLE: 1760406

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	500	499	100	80-120	
Molybdenum	ug/L	500	523	105	80-120	
Selenium	ug/L	500	520	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1760407 1760408

Parameter	Units	40176335003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	6.0	500	500	505	495	100	98	75-125	2	20	
Molybdenum	ug/L	84.7	500	500	609	603	105	104	75-125	1	20	
Selenium	ug/L	15.8	500	500	522	510	101	99	75-125	2	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25216067.18 ALLIANT COLUMBIA
Pace Project No.: 40180865

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, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216067.18 ALLIANT COLUMBIA
Pace Project No.: 40180865

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40176335003	**MW303**	EPA 3010	301396	EPA 6020	301496
40176335003	**MW303**				

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

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

4017633S

*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

(Please Print Clearly)	
Company Name:	SCS Engineers
Branch/Location:	25-Madison
Project Contact:	Tom Kanwoski
Phone:	608-216-7368
Project Number:	25216071.18
Project Name:	Columbia Energy Center
Project State:	WI
Sampled By (Print):	Kate Harms
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Tom Kanwoski
Mail To Company:	SCS Engineers
Mail To Address:	2830 Dairy Drive Madison, WI 53718
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

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
SI = Sludge	WP = Wipe

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

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Y/N	Pick Letter	Boron	Chloride, pH, Sulfate, TDS	Ag, Mo, Se	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	MW33AR	9/21/18	1500	GW		N	D	X	X	X		
002	MW34A	9/21/18	1530	GW		N	D	X	X			
003	MW303	9/21/18	1640	GW		N	D			X		
	~~MW304~~											
004	MW302	9/21/18	1745	GW		N	D	X	X			
005	Field Blank	9/21/18	1750	GW		N	D	X	X	X		

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:	Date/Time:	Received By:	Date/Time:
Kate Harms	9/21/18 1900		
Fed Ex	9/22/18 0430		9/22/18 0430

PACE Project No.
4017633S

Receipt Temp = 0.7 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal
Present / Not Present
Intact / Not Intact

C019a(27Jun2006)

Version 6.0 06/14/06

ORIGINAL

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

Sample Preservation Receipt Form

Client Name: SCS

Project # 40176335

All containers needing preservation have been checked and noted below: ☒Yes ☐No ☐N/A

Lab Lot# of pH paper: 10034771 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: SM Date/ Time:

	Glass							Plastic							Vials						Jars			General									
Pace Lab #	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	VOA Vials (>6mm)*	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001											1		1																		X		2.5 / 5 / 10
002											1		1																		X		2.5 / 5 / 10
003													1																		X		2.5 / 5 / 10
004											1		1																		X		2.5 / 5 / 10
005											1		1																		3		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
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013																																	2.5 / 5 / 10
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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	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:	

Pace Analytical 1241 Bellevue Street, Green Bay, WI 54302	Document Name: **Sample Condition Upon Receipt (SCUR)**	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: SCS

Project #: **WO#: 40176335**

40176335

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other:

Tracking #: 8130 2348 5278

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: Rad /Corr:

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: 9/22/18
Initials: SSM

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☒No ☐N/A	2. payoff, invoice info SSM 9/22/18
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD: ☐Yes ☒No ☐N/A		8.
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☒Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☒N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒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: AL for DM **Date:** 9/24/18

A4 Assessment Monitoring Semiannual Event, October 2018

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25216067 ALLIANT COLUMBIA CCR
Pace Project No.: 40178431

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

Pace Analytical Services, LLC
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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

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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	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
40178431003	**MW-303**	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
40178431004	**MW-304**	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
40178431005	**MW-305**	EPA 6020	KXS	14	PASI-G

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
		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
40178431006	**M-4R**	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
40178431007	**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

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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
6020 MET ICPMS	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	
7470 Mercury	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	
Field Data	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		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**424**	mg/L	20.0	8.7	1		10/30/18 16:23		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.010	1		11/09/18 08:33		H6
300.0 IC Anions 28 Days	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	

REPORT OF LABORATORY ANALYSIS

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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
6020 MET ICPMS	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	
7470 Mercury	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	
Field Data	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		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**330**	mg/L	20.0	8.7	1		10/30/18 16:24		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.5**	Std. Units	0.10	0.010	1		11/09/18 08:35		H6
300.0 IC Anions 28 Days	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	

REPORT OF LABORATORY ANALYSIS

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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
6020 MET ICPMS	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	
7470 Mercury	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	
Field Data	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		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**516**	mg/L	20.0	8.7	1		10/31/18 16:27		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**8.6**	Std. Units	0.10	0.010	1		11/09/18 08:37		H6
300.0 IC Anions 28 Days	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	

REPORT OF LABORATORY ANALYSIS

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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
6020 MET ICPMS	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	
7470 Mercury	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	
Field Data	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		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**384**	mg/L	20.0	8.7	1		10/31/18 16:28		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.5**	Std. Units	0.10	0.010	1		11/09/18 08:39		H6
300.0 IC Anions 28 Days	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	

REPORT OF LABORATORY ANALYSIS

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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
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.58J**	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:51	7440-36-0	
Arsenic	**0.40J**	ug/L	1.0	0.28	1	11/01/18 08:57	11/10/18 06:51	7440-38-2	
Barium	**11.0**	ug/L	4.9	1.5	1	11/01/18 08:57	11/10/18 06:51	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	11/01/18 08:57	11/10/18 06:51	7440-41-7	
Boron	**1600**	ug/L	11.0	3.3	1	11/01/18 08:57	11/10/18 06:51	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	11/01/18 08:57	11/10/18 06:51	7440-43-9	
Calcium	**60200**	ug/L	250	69.8	1	11/01/18 08:57	11/10/18 06:51	7440-70-2	
Chromium	**1.1J**	ug/L	3.4	1.0	1	11/01/18 08:57	11/10/18 06:51	7440-47-3	
Cobalt	**0.13J**	ug/L	1.0	0.12	1	11/01/18 08:57	11/10/18 06:51	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	11/01/18 08:57	11/10/18 06:51	7439-92-1	
Lithium	**0.24J**	ug/L	1.0	0.19	1	11/01/18 08:57	11/10/18 06:51	7439-93-2	
Molybdenum	**45.6**	ug/L	1.5	0.44	1	11/01/18 08:57	11/10/18 06:51	7439-98-7	
Selenium	**5.4**	ug/L	1.1	0.32	1	11/01/18 08:57	11/10/18 06:51	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	11/01/18 08:57	11/10/18 06:51	7440-28-0	
7470 Mercury	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 08:22	7439-97-6	
Field Data	Analytical Method:								
Field pH	**7.70**	Std. Units			1		10/24/18 09:40		
Field Specific Conductance	**565**	umhos/cm			1		10/24/18 09:40		
Oxygen, Dissolved	**2.78**	mg/L			1		10/24/18 09:40	7782-44-7	
REDOX	**102.6**	mV			1		10/24/18 09:40		
Turbidity	**3.52**	NTU			1		10/24/18 09:40		
Static Water Level	**790.04**	feet			1		10/24/18 09:40		
Temperature, Water (C)	**25.7**	deg C			1		10/24/18 09:40		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**312**	mg/L	20.0	8.7	1		10/31/18 16:28		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.8**	Std. Units	0.10	0.010	1		11/09/18 08:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**26.2**	mg/L	2.0	0.50	1		11/01/18 22:15	16887-00-6	
Fluoride	**0.36**	mg/L	0.30	0.10	1		11/01/18 22:15	16984-48-8	
Sulfate	**123**	mg/L	30.0	10.0	10		11/01/18 22:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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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
6020 MET ICPMS	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	
7470 Mercury	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	
Field Data	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		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**424**	mg/L	20.0	8.7	1		10/31/18 16:28		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.010	1		11/09/18 08:41		H6
300.0 IC Anions 28 Days	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

Pace Analytical Services, LLC
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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
6020 MET ICPMS	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	
7470 Mercury	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	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<8.7**	mg/L	20.0	8.7	1		10/31/18 16:28		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**5.7**	Std. Units	0.10	0.010	1		11/09/18 08:43		H6
300.0 IC Anions 28 Days	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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REPORT OF LABORATORY ANALYSIS

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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 Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	<0.15	500	500	520	526	104	105	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25216067 ALLIANT COLUMBIA CCR
Pace Project No.: 40178431

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1782427 1782428

Parameter	Units	40178429002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
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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REPORT OF LABORATORY ANALYSIS

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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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REPORT OF LABORATORY ANALYSIS

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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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REPORT OF LABORATORY ANALYSIS

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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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REPORT OF LABORATORY ANALYSIS

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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 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
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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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 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
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 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
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	

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

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	**0.247 ± 0.484 (0.870) C:NA T:88%**	pCi/L	11/12/18 20:22	13982-63-3	
Radium-228	EPA 904.0	**0.405 ± 0.423 (0.885) C:74% T:89%**	pCi/L	11/08/18 11:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.652 ± 0.907 (1.76)**	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	**0.313 ± 0.409 (0.674) C:NA T:90%**	pCi/L	11/12/18 20:22	13982-63-3	
Radium-228	EPA 904.0	**0.307 ± 0.336 (0.698) C:72% T:85%**	pCi/L	11/08/18 11:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.620 ± 0.745 (1.37)**	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	**0.328 ± 0.465 (0.788) C:NA T:85%**	pCi/L	11/12/18 20:36	13982-63-3	
Radium-228	EPA 904.0	**0.416 ± 0.392 (0.805) C:76% T:84%**	pCi/L	11/08/18 11:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.744 ± 0.857 (1.59)**	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	**0.244 ± 0.415 (0.733) C:NA T:88%**	pCi/L	11/12/18 20:36	13982-63-3	
Radium-228	EPA 904.0	**0.434 ± 0.344 (0.680) C:71% T:90%**	pCi/L	11/08/18 11:09	15262-20-1	
Total Radium	Total Radium Calculation	**0.678 ± 0.759 (1.41)**	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	**0.578 ± 0.523 (0.771) C:NA T:88%**	pCi/L	11/12/18 20:36	13982-63-3	
Radium-228	EPA 904.0	**0.346 ± 0.417 (0.879) C:64% T:80%**	pCi/L	11/08/18 11:05	15262-20-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

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
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.924 ± 0.940 (1.65)**	pCi/L	11/13/18 16:15	7440-14-4	

Sample: M-4R **Lab ID: 40178431006** Collected: 10/24/18 08:43 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	**0.139 ± 0.432 (0.836) C:NA T:84%**	pCi/L	11/12/18 20:36	13982-63-3	
Radium-228	EPA 904.0	**0.191 ± 0.344 (0.754) C:76% T:79%**	pCi/L	11/08/18 11:05	15262-20-1	
Total Radium	Total Radium Calculation	**0.330 ± 0.776 (1.59)**	pCi/L	11/13/18 16:15	7440-14-4	

Sample: FIELD BLANK **Lab ID: 40178431007** Collected: 10/24/18 17:40 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	**0.175 ± 0.345 (0.630) C:NA T:91%**	pCi/L	11/12/18 20:36	13982-63-3	
Radium-228	EPA 904.0	**0.0478 ± 0.325 (0.748) C:72% T:81%**	pCi/L	11/08/18 11:05	15262-20-1	
Total Radium	Total Radium Calculation	**0.223 ± 0.670 (1.38)**	pCi/L	11/13/18 16:26	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25216067 ALLIANT COLUMBIA CCR
Pace Project No.: 40178431

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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25216067 ALLIANT COLUMBIA CCR
Pace Project No.: 40178431

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.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

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		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

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		

40178431

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: SCS ENGINEERS	Report To: Meghan Blodgett	Attention:
Address: 2830 Dairy Drive	Copy To:	Company Name:
Madison, WI 53718		Address:
Email: mblodgett@scsengineers.com	Purchase Order #:	Pace Quote:
Phone: 608-216-7362 Fax:	Project Name: CCR Rule Alliant Columbia (25216067) B	Pace Project Manager: dan.milewsky@pacelabs.com,
Requested Due Date:	Project #:	Pace Profile #:

Regulatory Agency:

State / Location:

MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS

SAMPLE ID: One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique

Collected: Grab

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	START DATE	START TIME	END DATE	END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Radium 226	Radium 228	Metals	pH	TDS, Cl, F, SO4	Residual Chlorine (Y/N)	
1	MW-301	WT				10/24	18:30											X	X	X	X	X		001
2	MW-84A	WT				10/24	17:25											X	X	X	X	X		002
3	MW-303	WT				10/24	12:00											X	X	X	X	X		003
4	MW-304	WT				10/24	11:05											X	X	X	X	X		004
5	MW-305	WT				10/24	9:40											X	X	X	X	X		005
6	M-4R	WT				10/24	8:43											X	X	X	X	X		006
7	FIELD BLANK	WT				10/24/18	17:40											X	X	X	X	X		007
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Metals = B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li Hg, Mo, Se, Tl ALL SAMPLES UNFILTERED	Paul A. [illegible]	10/25/18	20:00							
	Fedex	10/26/18	0920	[illegible] Pace	10/26/18	0920	ROI	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed:

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

Sample Preservation Receipt Form

Client Name: SCS

Project # 40178471

All containers needing preservation have been checked and noted below: ☑Yes □No □N/A

Lab Lot# of pH paper: 10W8078 | Lab Std #ID of preservation (if pH adjusted): 405439

Initial when completed: [initials] | Date/ Time: 6/28/18 1050

Pace Lab #	Glass							Plastic							Vials						Jars			General									
	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	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001											2		1													2					6	✓	2.5 / 5 / 10
002											2		1													2					✓		2.5 / 5 / 10
003											2		1													2					✓		2.5 / 5 / 10
004											2		1													2					✓		2.5 / 5 / 10
005											2		1													2					✓		2.5 / 5 / 10
006											2		1													2					✓		2.5 / 5 / 10
007											2		1													2					✓		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	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:	1L poly HNO3

Pace Analytical 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 25Apr2018
	Document No.: F-GB-C-031-Rev.07	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS

WO# : 40178431

Courier: ☐ CS Logistics ☑ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ 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 ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 0.1 /Corr:

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: RS

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out: JM 10/26/18	☑Yes ☐No ☐N/A	2. no proj state JM 10/26/18
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☑No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☑Yes ☐No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD:	☐Yes ☑No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT		
Trip Blank Present:	☐Yes ☑No ☐N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑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 BN **Date:** 10/26/18