CCR Annual Groundwater Monitoring And Corrective Action Report

Bottom Ash Pond

Sherburne County (Sherco) Generating Plant
Becker, Minnesota

Prepared for:

Northern States Power Company, a Minnesota Corporation

January 29, 2018

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CCR ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

Bottom Ash Pond
Becker, Minnesota

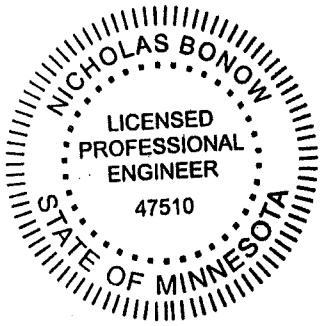
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Additionally, I certify that this report has been prepared to meet the requirements of § 257.90(e), Annual groundwater monitoring and corrective action report, as included in 40 CFR Part 257, Subpart D, Disposal of Coal Combustion Residuals from Electric Utilities.

Signature of Preparer:

Nicholas Bonow, P.E., P.G. #47510
Carlson McCain, Inc.

Date: January 29, 2018



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1. INTRODUCTION

This report presents the documentation of the status of groundwater monitoring and corrective action for the year 2017 (YR2017) for the Bottom Ash Pond (BAP) at the Sherburne County Generating Plant (Sherco) located in Becker, Minnesota. The Sherco plant is owned and operated by Northern States Power Company, a Minnesota Corporation (NSPM).

The BAP is an existing coal combustion residuals (CCR) impoundment and is required to comply with provisions of the U.S. Code of Federal Regulations (CFR), Title 40, Parts 257 and 261 relating to disposal of coal combustion residuals from electric utilities. In particular, this report addresses the requirements of 40 CFR Section 257.90(e), annual groundwater monitoring and corrective action for YR2017. For the purposes of this report, YR2017 includes a sampling event that was conducted at the BAP in December of 2016.

This report has been prepared in general accordance with the reporting procedures outlined in the Sherco Bottom Ash Pond CCR Groundwater Sampling Plan (NSPM, 2017b). Any deviations from the requirements of the Groundwater Sampling Plan are described in subsequent sections of this report.

1.1 Annual Groundwater Monitoring Report Requirements

According to §257.90(e), CCR units must prepare an annual groundwater monitoring and corrective action report each year that complies with the following:

"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:

(1) 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;

(2) 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;

(3) 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;

(4) 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); and

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

Section 3.6.2 of the CCR Groundwater Sampling Plan (NSPM, 2017b) also includes a list of items to be included in the annual report that is similar to items 1 through 5 above, with the addition of a water table contour map using data collected from the current year.

In this report, Section 2 (Site Description) briefly describes the site location and hydrogeologic setting, Section 3 (Monitoring Results) discusses the reporting requirements of the CCR Sampling Plan and §257.90(e), and Section 4 (Discussion) summarizes key actions completed in YR2017, describes any problems reported in YR2017 and the actions to resolve the problems, and key activities projected for 2018.

2. SITE DESCRIPTION

The BAP is located in the City of Becker, Sherburne County, Minnesota. The BAP is approximately 18 acres in size and is part of a larger generating plant site. The BAP construction was last modified in 1982. The BAP location is shown on Figure 1 and an aerial photograph and site layout map for BAP are shown on Figure 2.

2.1 Site Hydrogeology

The site hydrogeology is discussed in more detail in the Bottom Ash Pond Groundwater Monitoring System Certification (Carlson McCain, 2017), which was prepared for compliance with 40 CFR §257.91. Facility hydrogeology is briefly summarized below for convenience. Unless otherwise cited, the data presented in this section is credited to Carlson McCain, 2017.

The Facility is located in the Anoka Sand Plain physiogeographic region. The site consists of moderate to highly permeable alluvial deposits above and below a low-permeability glacial till. Precambrian granite, the first bed rock encountered, is considered impermeable. Ground water flows southwest beneath the Facility, where it discharges into the Mississippi River. The till layer exhibits variable thickness and is absent in some locations, and no perched groundwater conditions have been identified above the till. Groundwater travel velocities are estimated at 153 feet/year.

The conceptual model for the hypothetical (or potential) release of a constituent of concern (COC) from the BAP focuses on groundwater as the transport mechanism. The water table beneath the BAP typically occurs below the Superior till. Exfiltration from BAP area is anticipated to move vertically downward from the base until it reaches the water table and/or till contact. If the exfiltration first contacts the till, it may flow through the till in the downgradient direction, but may also flow locally along the till contact to a zone of higher permeability within the till or a discontinuity of the till until it reaches the water table. Upon reaching the water table, a COC would likely travel mainly horizontally toward the south and/or southwest and towards the Mississippi River.

3. MONITORING RESULTS

Section 3.1 below presents the monitoring results obtained during YR2017 in terms of the specific requirements of §257.90(e) that are to be included in this report.

3.1 Compliance with §257.90(e)

3.1.1 Groundwater Monitoring System (§257.90(e)(1))

The area of the BAP and all upgradient and downgradient monitoring well locations included in the BAP CCR groundwater monitoring system are shown on Figure 2. Figure 2 also includes labels for the well identification numbers that are part of the groundwater monitoring system for the BAP. A summary of the monitoring wells included in the BAP CCR Groundwater Monitoring System is included in Table 1.

3.1.2 Well Installation or Decommissioning (§257.90(e)(2))

No monitoring wells that are part of the groundwater monitoring system for the BAP were installed or decommissioned during YR2017.

3.1.3 Summary of Monitoring Data (§257.90(e)(3))

Monitoring data collected during YR2017 is summarized in Tables 2 and 3. Table 2 summarizes the data collected and includes the number of groundwater samples that were collected for analysis for each upgradient and downgradient well, the dates the samples were collected, and whether the samples were required by the detection monitoring (i.e. Appendix III of 40 CFR §257) or assessment monitoring (i.e. Appendix IV of 40 CFR §257) programs. Table 3 summarizes the analytical parameters and the number of times that each parameter was analyzed for each well in the groundwater monitoring system.

Baseline and Detection Monitoring Data

As required by §257.94(b), a baseline data set was completed by collecting nine independent samples from each of the wells in the groundwater monitoring system from December 2016 through September 2017. Each of the baseline samples were analyzed for the detection monitoring/Appendix III constituents and the assessment monitoring/Appendix IV constituents. Laboratory reports and field datasheets for the baseline dataset are included in Appendix A. Pursuant to §257.94(c), the first semi-annual detection monitoring event was conducted on October 9-11, 2017, and consisted of sampling each well in the monitoring system and analyzing the samples for the detection monitoring/Appendix III constituents. As such, a total of ten rounds of samples were analyzed for Appendix III constituents and nine rounds of samples were analyzed for Appendix IV constituents. Laboratory reports and field datasheets for the October detection monitoring event are included in Appendix B.

Verification Resampling

In accordance with the Statistical Analysis Plan, Sherco Bottom Ash Pond (NSPM, 2017a), the monitoring data from the October 2017 detection monitoring event was analyzed to determine whether the results exhibit a statistically significant increase over background/upgradient concentrations for the Appendix III constituents. Results indicated that compliance data exceeded the upper prediction limit in wells P-22 and P-155 for boron. In response to these apparent exceedances, verification resampling

was conducted at these wells for select parameters on November 15, 2017 and the laboratory report and field datasheets for this event are included as Appendix C. Final review and statistical evaluation of the resampling data was underway, but not yet complete at the conclusion of YR2017.

Groundwater Elevations and Flow Direction

Groundwater elevations and flow direction in the vicinity of the BAP during February and October 2017 are shown on the water table elevation contour maps in Figures 3 and 4, respectively. The contours in Figure 3 were derived from a Sherco site-wide water level gathering effort and the contours in Figure 4 were derived from the wells included in the groundwater monitoring system for the BAP and several additional water level piezometers as noted on Figure 4. For both of the events, the flow direction was generally to the southwest. The flow direction is consistent with historical data from over 20 years of monitoring at the facility and is also consistent with the regional groundwater flow direction towards the Mississippi river.

3.1.4 Transition Between Monitoring Programs (§257.90(e)(4))

No transition from the detection monitoring program to the assessment monitoring program occurred during YR2017.

3.1.5 Other Information (§257.90(e)(5))

The facility does not have any other information that is required to be reported in the annual report as specified in §§ 257.90 through 257.98.

4. DISCUSSION

§257.90(e) states that *"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."*

Based on the rule requirements, Section 4.1 below discusses the key actions completed for the groundwater monitoring program at the BAP; Section 4.2 discusses any problems encountered with the groundwater monitoring and actions to resolve such problems; and Section 4.3 discusses key activities that may occur in the upcoming year.

4.1 Key Actions Completed

Key actions that were completed during YR2017 include the following items, for which compliance was required by October 17, 2017 as specified in §257.90(b)(1):

- (i): The groundwater monitoring system was installed at the facility as required by §257.91 and described by Carlson McCain (2017);
- (ii): The groundwater sampling and analysis program was developed and the selection of statistical procedures to be used for evaluating groundwater monitoring data was included in the program as required by §257.93 and described by NSPM (2017a);
- (iii): Initiation of the detection monitoring program including obtaining a minimum of eight independent samples for each background and downgradient well as required by §257.94(b) was completed as described in Section 3.1.3 of this report; and
- (iv): Evaluation of the groundwater monitoring data for statistically significant increases over background levels for the constituents listed in appendix III of CFR, Title 40, Part 257 as required by §257.94 has begun and samples for the first semi-annual detection monitoring event were obtained on October 9 – 11, 2017.

Other key actions include the following items:

- The BAP CCR Groundwater Monitoring System Certification (Carlson McCain, 2017) was placed in the operating record on October 17, 2017 and on the facility's website on November 14, 2017.
- The BAP Statistical Analysis Plan (NSPM, 2017a) was placed in the operating record on October 17, 2017 and on the facility's website on November 14, 2017.
- Data review and statistical evaluation of the data from the first semi-annual detection monitoring event on October 9 – 11, 2017 was initiated in November 2017, but was not yet complete at the conclusion of YR2017.
- In accordance with the Statistical Analysis Plan (NSPM, 2017a), verification resampling for certain wells/parameters was conducted on November 15, 2017 as described in Section 3.1.3 above.

4.2 Problems

4.2.1 Problems Encountered

No significant problems with the groundwater monitoring system, or deviations from the CCR Groundwater Sampling Plan (NSPM, 2017b) were reported at the facility during YR2017. No corrective action was required at the facility during YR2017.

4.2.2 Resolution of Problems

No significant problems with the groundwater monitoring system were encountered at the facility during YR2017 that required resolution.

4.3 Key Activities for 2018

The following key actions are anticipated at the facility in the year 2018:

1. Completion of the statistical analysis for the November 15, 2017 resampling of wells P-22 and P-155 is anticipated by January 15th, 2018.
2. If a statistically significant increase over background is identified, NSPM will follow the protocols listed in Section 3 of the Statistical Analysis Plan (NSPM, 2017a) for assessment monitoring and reporting.
3. Routine, semi-annual detection monitoring events at monitoring system wells are planned in the spring between March 15 and May 15, 2018 and in the fall between September 15 and November 15, 2018.

5.0 REFERENCES

Carlson McCain, 2017. CCR Groundwater Monitoring System Certification, Bottom Ash Pond, Sherco Generating Plant, prepared for Northern States Power Company, A Minnesota Corporation, October 16, 2017.

NSPM, 2017a. Statistical Analysis Plan, Bottom Ash Pond, Northern States Power Company, a Minnesota Corporation, October 16, 2017.

NSPM, 2017b. Sherco Bottom Ash Pond CCR Ground Water Sampling Plan. Northern States Power Company, a Minnesota Corporation, October 17, 2017.

Tables

Table 1
CCR Groundwater Monitoring System
Bottom Ash Pond

Well ID	Minnesota Unique Well ID	Date Installed	Location Site Coordinates (ft)		Elevation Top of Riser Pipe	Screen Length (ft)	Elevation Top of Screen	Elevation Bottom of Screen	Monitoring Status	Hydrologic Location
			Easting	Northing						
P-01A-1	NA	1/4/78	2028267.7	865408.3	1002.8	2	924	922	Routine Semi-annual	Down-Gradient
P-17	NA	8/26/81	2030284.1	866284.1	964.34	20	923	903	Routine Semi-annual	Up-Gradient
P-22	NA	8/27/81	2027386.3	865147.1	964.33	20	922	902	Routine Semi-annual	Down-Gradient
P-23	NA	8/28/81	2028068.1	866241.6	967.26	30	926	896	Routine Semi-annual	Up-Gradient
P-152A	806318	10/10/14	2031471.6	866696.4	965.87	10	934	924	Routine Semi-annual	Up-Gradient
P-155	812964	9/22/15	2027791	865410	1002.72	10	927	917	Routine Semi-annual	Down-Gradient
P-156	812965	9/22/15	2028707	865410	1002.39	10	927	917	Routine Semi-annual	Down-Gradient
P-157	812966	9/22/15	2028485	866287	968.17	10	929	919	Routine Semi-annual	Up-Gradient
P-158	812967	9/23/15	2029122	866410	966.55	10	927	917	Routine Semi-annual	Up-Gradient

*Notes:

Elevation is feet above mean sea level

Table 2
Summary of Data Collected
Bottom Ash Pond

Upgradient Wells												
Well ID	Number of Samples	Dates Sampled										
		16-Dec[1]	17-Feb[1]	17-Mar[1]	17-Apr[1]	17-May[1]	17-Jun[1]	17-Jul[1]	17-Aug[1]	17-Sep[1]	17-Oct[2]	17-Nov[3]
P-17	10	12/14/2016	2/21/2017	3/21/2017	4/24/2017	5/24/2017	6/21/2017	7/18/2017	8/22/2017	9/12/2017	10/11/2017	NS
P-23	10	12/15/2016	2/21/2017	3/22/2017	4/25/2017	5/16/2017	6/21/2017	7/18/2017	8/22/2017	9/12/2017	10/11/2017	NS
P-152A	10	12/13/2016	2/20/2017	3/22/2017	4/24/2017	5/24/2017	6/19/2017	7/17/2017	8/22/2017	9/12/2017	10/11/2017	NS
P-157	10	12/15/2016	2/21/2017	3/22/2017	4/25/2017	5/16/2017	6/21/2017	7/18/2017	8/22/2017	9/12/2017	10/11/2017	NS
P-158	10	12/14/2016	2/21/2017	3/22/2017	4/24/2017	5/16/2017	6/21/2017	7/18/2017	8/22/2017	9/12/2017	10/11/2017	NS

Downgradient Wells												
Well ID	Number of Samples	Dates Sampled										
		16-Dec[1]	17-Feb[1]	17-Mar[1]	17-Apr[1]	17-May[1]	17-Jun[1]	17-Jul[1]	17-Aug[1]	17-Sep[1]	17-Oct[2]	17-Nov[3]
P-01A-1	10	12/19/2016	2/22/2017	3/22/2017	4/25/2017	5/16/2017	6/21/2017	7/18/2017	8/22/2017	9/13/2017	10/11/2017	NS
P-22	11	12/15/2016	2/21/2017	3/21/2017	4/25/2017	5/16/2017	6/21/2017	7/18/2017	8/22/2017	9/13/2017	10/9/2017	11/15/2017
P-155	11	12/20/2016	2/22/2017	3/23/2017	4/25/2017	5/16/2017	6/21/2017	7/18/2017	8/22/2017	9/13/2017	10/11/2017	11/15/2017
P-156	10	12/19/2016	2/22/2017	3/22/2017	4/25/2017	5/16/2017	6/21/2017	7/18/2017	8/22/2017	9/13/2017	10/11/2017	NS

NS = Not Sampled

[1] Sampled for the detection monitoring background data set for parameters listed in Appendix III and IV of 40 CFR §257 as required by §257.94(b).

[2] Sampled for detection monitoring for parameters listed in Appendix III of 40 CFR §257 as required by §257.94(a).

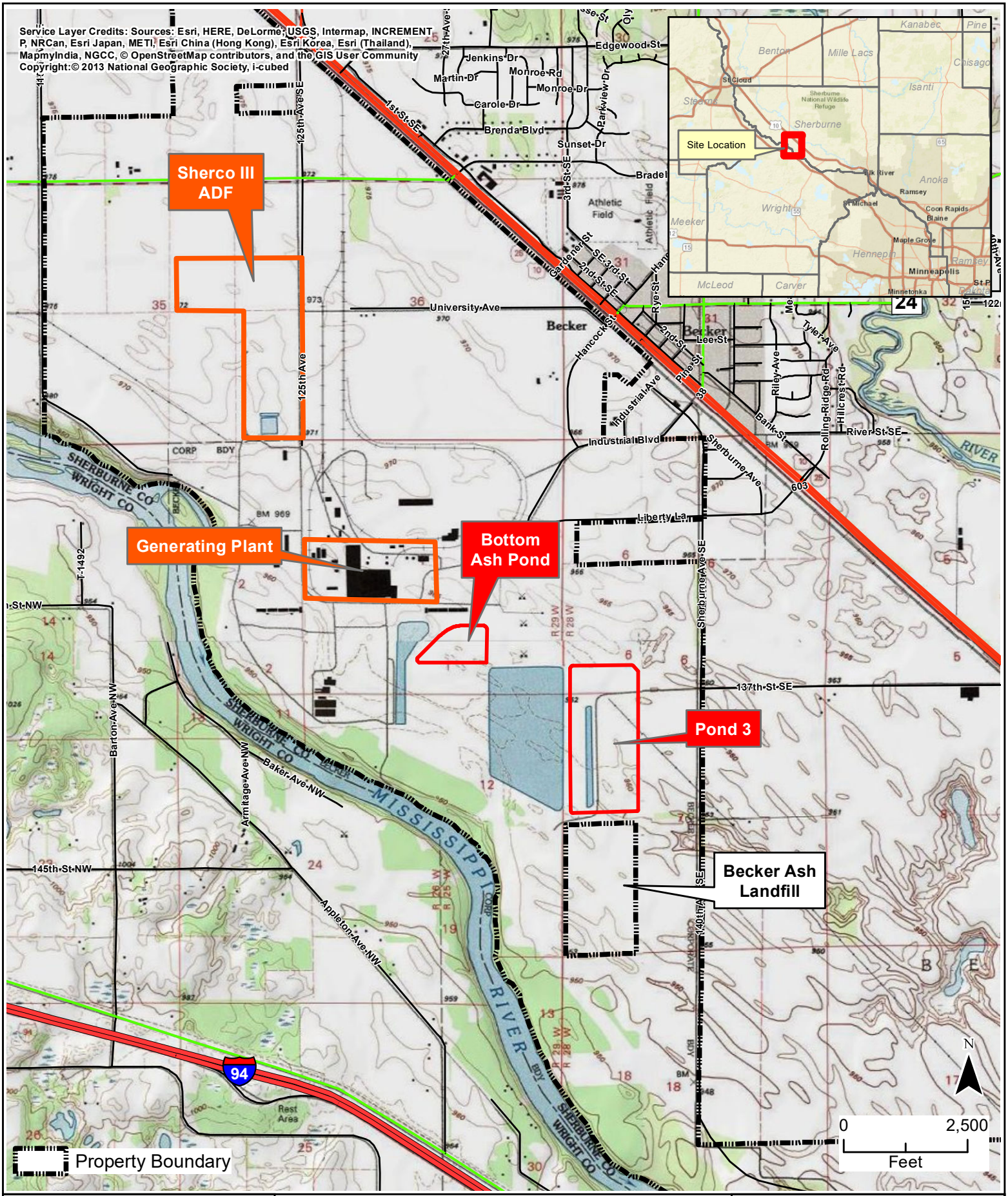
[3] Sampled for select detection monitoring parameters listed in Appendix III of 40 CFR §257 for verification resampling in accordance with Section 2.6 of the Statistical Analysis Plan (NSPM, 2017).

Table 3
Count of Parameters Analyzed by Well
Bottom Ash Pond

Appendix III Parameters									
Parameter	Well ID and Number of Samples								
	P-01A-1	P-17	P-22	P-23	P-152A	P-155	P-156	P-157	P-158
Boron, total (mg/L)	10	10	11	10	10	11	10	10	10
Calcium, total (mg/L)	10	10	10	10	10	10	10	10	10
Chloride, total (mg/L)	10	10	10	10	10	10	10	10	10
Fluoride, total (mg/L)	10	10	10	10	10	10	10	10	10
pH (lab) (pH)	10	10	10	10	10	10	10	10	10
Sulfate, total (mg/L)	10	10	10	10	10	10	10	10	10
Total Dissolved Solids (mg/L)	10	10	10	10	10	10	10	10	10

Appendix IV Parameters									
Parameter	Well ID and Number of Samples								
	P-01A-1	P-17	P-22	P-23	P-152A	P-155	P-156	P-157	P-158
Antimony, total (mg/L)	9	9	9	9	9	9	9	9	9
Arsenic, total (mg/L)	9	9	9	9	9	9	9	9	9
Barium, total (mg/L)	9	9	9	9	9	9	9	9	9
Beryllium, total (mg/L)	9	9	9	9	9	9	9	9	9
Cadmium,total (mg/L)	9	9	9	9	9	9	9	9	9
Chromium, total (mg/L)	9	9	9	9	9	9	9	9	9
Cobalt, total (mg/L)	9	9	9	9	9	9	9	9	9
Lead, total (mg/L)	9	9	9	9	9	9	9	9	9
Lithium Total (mg/L)	9	9	9	9	9	9	9	9	9
Mercury, total (mg/L)	9	9	9	9	9	9	9	9	9
Molybdenum, total (mg/L)	9	9	9	9	9	9	9	9	9
Selenium, total (mg/L)	9	9	9	9	9	9	9	9	9
Thallium, total (mg/L)	9	9	9	9	9	9	9	9	9
Radium, 226 and 228 combined (pCi/L)	9	9	9	9	9	9	9	9	9

Figures



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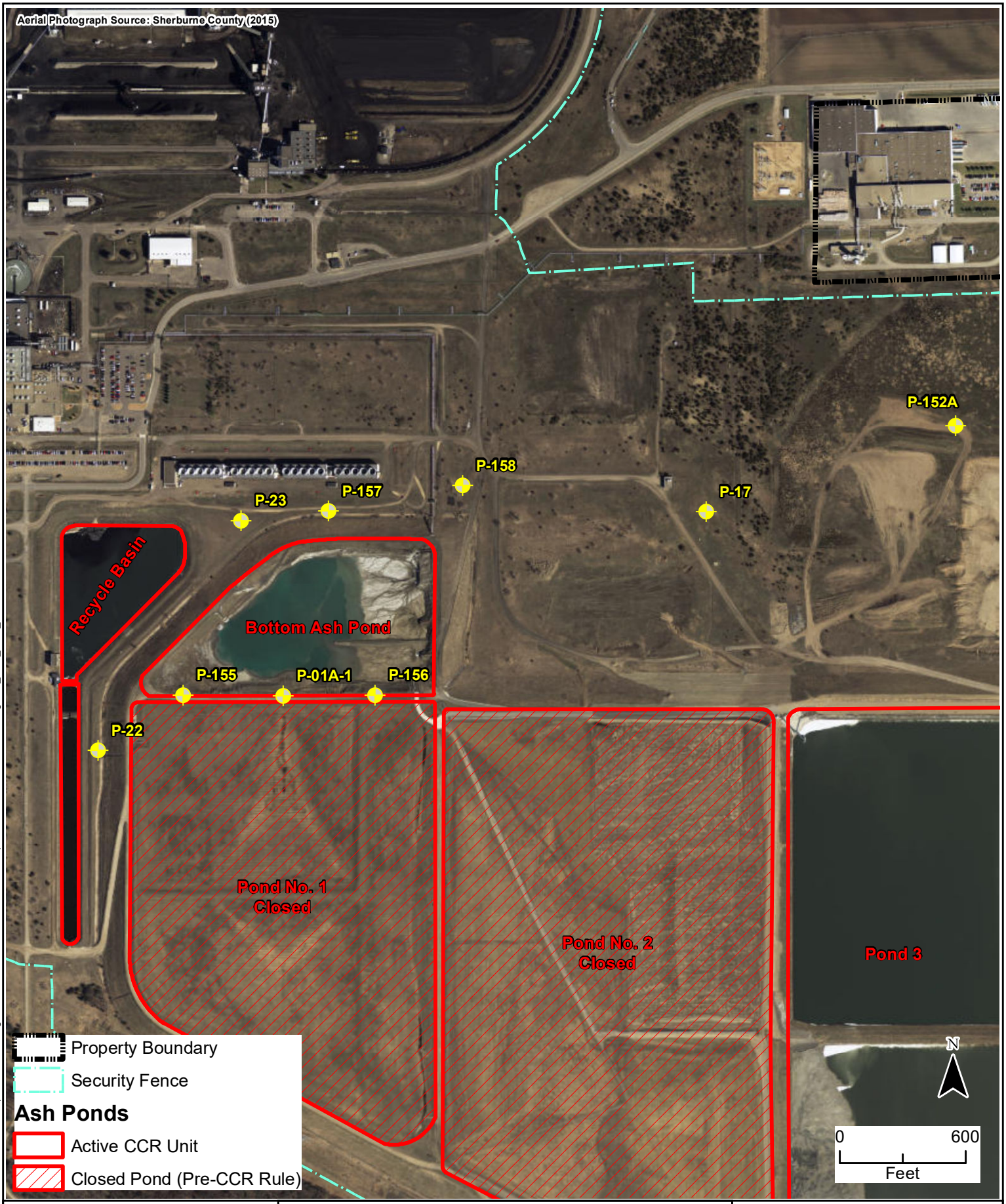
CCR ANNUAL GROUNDWATER MONITORING REPORT

Bottom Ash Pond

Sherburne County Generating Plant
Becker, Minnesota

FIGURE 1

SITE LOCATION MAP



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CCR ANNUAL GROUNDWATER MONITORING REPORT
Bottom Ash Pond
Sherburne County Generating Plant
Becker, Minnesota

FIGURE 2

CCR GROUNDWATER MONITORING SYSTEM



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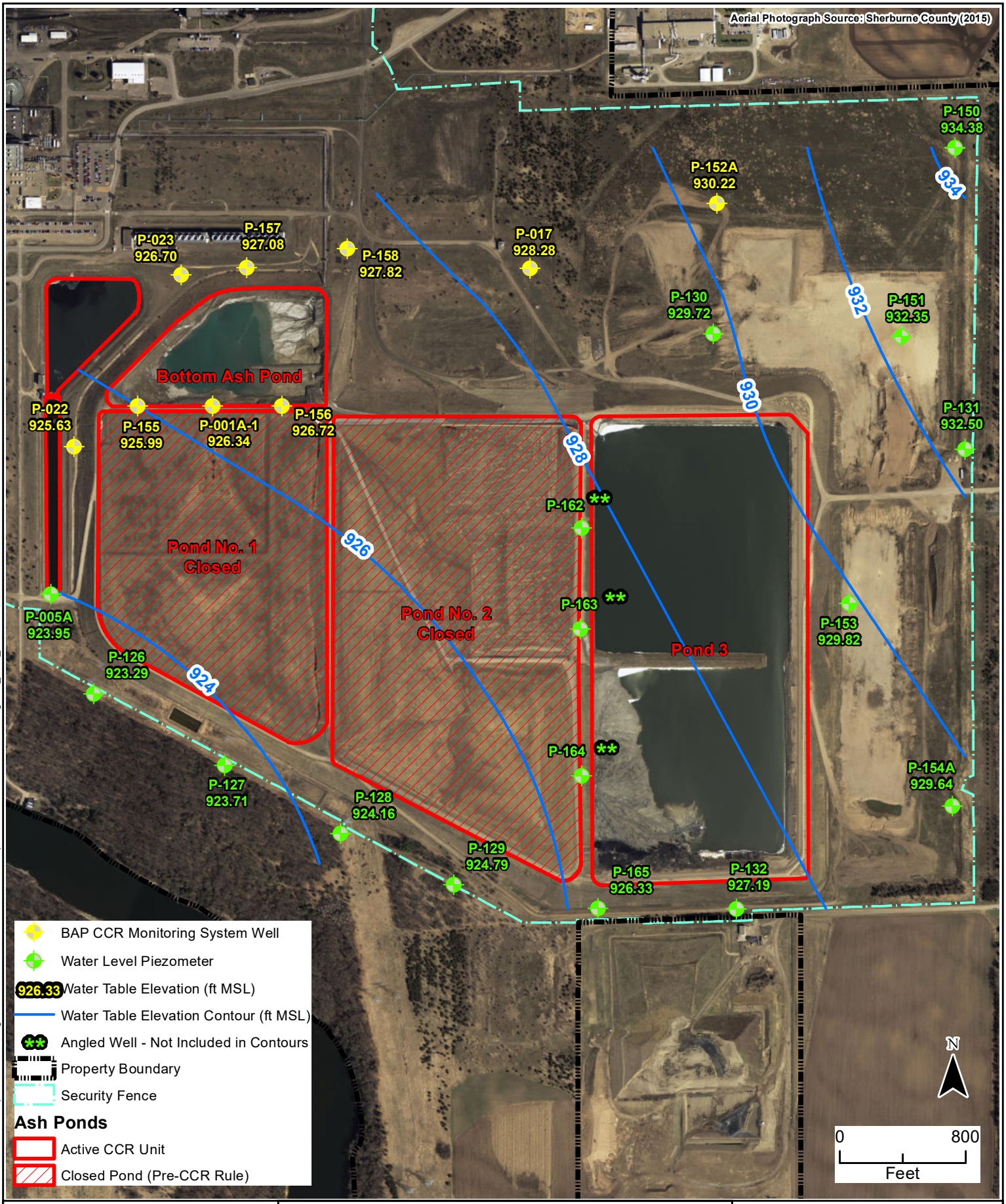
CCR ANNUAL GROUNDWATER MONITORING REPORT
Bottom Ash Pond
Sherburne County Generating Plant
Becker, Minnesota

FIGURE 3
WATER TABLE ELEVATION CONTOUR MAP (02/20-23/2017)



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CCR ANNUAL GROUNDWATER MONITORING REPORT
Bottom Ash Pond
Sherburne County Generating Plant
Becker, Minnesota

FIGURE 4
WATER TABLE ELEVATION CONTOUR MAP (10/9-12/2017)

Appendix A

December 2016 to September 2017 **Baseline** Dataset
Field Datasheets and Laboratory Reports

December 2016

Field Datasheets and Laboratory Reports

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) David Anderson Date 12-13-16 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	4.00	14.0	1040	DJA
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.06	14.0	1040	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.14	14.0	1040	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.08 ~~10.14~~ DJA 12/13/16	14.0	1056	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.18	1.0	1655	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value	1413	Low Standard Value	1000
Cond Std: 1413 umhos/cm Fisher - Lot #: CC15030 *Exp Date: 06/08/17* Exp. Date		Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18* Exp. Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1410	14.0	1000	14.0

Meter Make YSI Sonde ID #5
IC/ICV Time 1055 / 1100
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1700 Initials DJA Std. Value 1413 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1400 Temp (°C) 1.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ~~DJA 12/13/16~~ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Lead Technician Signature: David Anderson Date: 12-13-16

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) David Anderson Date 12-13-16 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	246	Secondary Source Std. Value (mV)	246
Mfg.	YSI Zobells	ORP Std. (Zobell's Soln.) YSI - Lot #: 15G100067 Exp Date: 07/13/17	
Lot No.	16F100570		
Exp Date	12/2016		
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
246	14.0	248	14.0

Meter Make YSI Sonde ID #5
IC/ICV Time 1105 / 1110
Initials DJA

ICV: (Pass) / Fail
ICV acceptable if ± 10 mV of standard value.

CCV Time 1705	Initials DJA	Std. Value 263	☒ Calibration Standard ☐ Secondary Source Standard	
Result (mV) 260	Temp (°C) 1.0	CCV: (Pass) / Fail	(CCV acceptable if ± 10 mV of standard value)	
CCV Time DJA	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard	
Result (mV)	Temp (°C) 12-13-16	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)	
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard	
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)	

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) Zero Standard (mg/L)	
Ambient Temp: 14.0 °C		Mfg.	
Barometric Pressure 29.29 inches Hg		Lot No. DJA	
Barometric Pressure 743.97 mm Hg		Exp Date	
Theoretical Value[1] NA mg/L			
Meter Result	Temp (°C)	Meter Result (mg/L)	Temp (°C)
IC Air 97 % / IC Air 10.5 mg/L	14.0	10.4	14.0

Meter Make YSI Sonde ID #5
IC/ICV Time 1030 / 1035
Initials DJA

ICV: (Pass) / Fail
ICV acceptable ± 0.5 mg/L of saturation value; < 0.5 mg/L for zero standard.

[1] Theoretical value obtained from Table VI in FSD Water Manual | Note: Inches Hg x 25.4 = mm Hg

CCV Time 1650	Initials DJA	CCV: (Pass) / Fail	(CCV acceptable if ± 0.5 mg/L of saturation value)
Result (mg/L) 15.0	Temp (°C) 1.0	Theoretical Value[1] NA	
CCV Time	Initials DJA	CCV: Pass / Fail	(CCV acceptable if ± 0.5 mg/L of saturation value)
Result (mg/L)	Temp (°C)	Theoretical Value[1]	
CCV Time	Initials	CCV: Pass / Fail	(CCV acceptable if ± 0.5 mg/L of saturation value)
Result (mg/L)	Temp (°C)	Theoretical Value[1]	

Form Revised: 11/14/2013

Lead Technician Signature: David Anderson Date: 12-13-16

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) David Anderson Date 12-13-16 Page 3 of 3

Meter Make WTW Turb. 350 Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C582192/C579784 C579786/C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	10.0	99	1000	IC Time 1120 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	99	998	ICV Time 1125 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.02	10.1	100	997	CCV Time 1710 Initials DJA CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 12/13/16			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 12-13-16

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) David Anderson Date 12-14-16 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	4.01	10.0	0815	DJA
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.10	10.0	0815	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.20	10.0	0815	DJA

IC Slope (%) NA Pass / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.08	10.0	0825	DJA

Pass / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.20	2.0	1705	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value: 1413		Low Standard Value: 1000	
Cond Std: 1413 umhos/cm Fisher - Lot #: CC15030 *Exp Date: 06/08/17* Exp. Date		Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18* Exp. Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1410	10.0	1000	10.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0830 / 0832
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1710 Initials DJA Std. Value 1413 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1360 Temp (°C) 2.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA 12-14-16 Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 12-14-16

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) David Anderson Date 12/14/16 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	250	Secondary Source Std. Value (mV)	250
Mfg. YSI Zobells		ORP Std. (Zobell's Soln.) YSI - Lot #: 15G100067 Exp Date: 07/13/17	
Lot No. 16F100570			
Exp Date 12/2016		Exp:	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
250	10.0	249	10.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0835 / 0838

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1715	Initials DJA	Std. Value 262	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 256	Temp (°C) 2.0	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time DJA	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) 12/14/16	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) Zero Standard (mg/L)	
Ambient Temp: 10.0 °C		Mfg.	
Barometric Pressure 29.06 inches Hg		Lot No. DJA 12/14/16	
Barometric Pressure 738.12 mm Hg			
Theoretical Value[1] NA mg/L		Exp Date	
Meter Result	Temp (°C)	Meter Result (mg/L)	Temp (°C)
IC Air 98 % / IC Air 11.1 mg/L	10.0	11.0	10.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0805 / 0810

Initials DJA

ICV: (Pass) / Fail

ICV acceptable ± 0.5 mg/L of saturation value; < 0.5 mg/L for zero standard.

[1] Theoretical value obtained from Table VI in FSD Water Manual | Note: Inches Hg x 25.4 = mm Hg

CCV Time 1700	Initials DJA	CCV: (Pass) / Fail	(CCV acceptable if ± 0.5 mg/L of saturation value)		
Result (mg/L) 14.4	Temp (°C) 2.0	Theoretical Value[1] NA			
CCV Time	Initials DJA 12/14/16	CCV: Pass / Fail	(CCV acceptable if ± 0.5 mg/L of saturation value)		
Result (mg/L)	Temp (°C)	Theoretical Value[1]			
CCV Time	Initials	CCV: Pass / Fail	(CCV acceptable if ± 0.5 mg/L of saturation value)		
Result (mg/L)	Temp (°C)	Theoretical Value[1]			

Form Revised: 11/14/2013

Lead Technician Signature: David Anderson Date: 12/14/16

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) David Anderson Date 12/14/16 Page 3 of 3

Meter Make WTW Turb. 350 Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C582192/C579784 C579786/C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	99	998	IC Time 0845 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.02	9.9	98	997	ICV Time 0855 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.8	98	998	CCV Time 1720 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 12/14/16			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 12-14-16

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) David Anderson Date 12-15-16 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	4.03	9.0	0730	DJA
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.11	9.0	0730	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.22	9.0	0730	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.09	9.0	0740	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.20	1.0	1645	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value	1413	Low Standard Value	1000
Cond Std: 1413 umhos/cm Fisher - Lot #: CC15030 *Exp Date: 06/08/17* Exp Date		Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18* Exp Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1412	9.0	1000	9.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0745 / 0750
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1650 Initials DJA Std. Value 1413 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1400 Temp (°C) 1.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA 12-15-16 Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 12-15-16

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) David Anderson Date 12-15-16 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	252	Secondary Source Std. Value (mV)	252
Mfg.	YSI Zobell's	ORP Std. (Zobell's Soln.)	
Lot No.	16F100570	YSI - Lot #: 15G100067	
Exp Date	12/2016	Exp Date: 07/13/17	
Exp.			
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
250	9.0	248	9.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0755 / 0800

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1655	Initials DJA	Std. Value 264	☒ Calibration Standard ☐ Secondary Source Standard	
Result (mV) 260	Temp (°C) 1.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*	
CCV Time DJA	Initials 12-15-16	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard	
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*	
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard	
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*	

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) Zero Standard (mg/L)	
Ambient Temp: 9.0 °C		Mfg.	
Barometric Pressure 29.35 inches Hg		Lot No. DJA 12-15-16	
Barometric Pressure 745.49 mm Hg		Exp Date	
Theoretical Value[1] NA mg/L			
Meter Result	Temp (°C)	Meter Result (mg/L)	Temp (°C)
IC Air 98 % / IC Air 11.4 mg/L	9.0	11.3	9.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0720 / 0725

Initials DJA

ICV: (Pass) / Fail

ICV acceptable ± 0.5 mg/L of saturation value; < 0.5 mg/L for zero standard.

[1] Theoretical value obtained from Table VI in FSD Water Manual | Note: Inches Hg x 25.4 = mm Hg

CCV Time 1640	Initials DJA	CCV: Pass / Fail	*(CCV acceptable if ± 0.5 mg/L of saturation value)*
Result (mg/L) 14.0	Temp (°C) 1.0	Theoretical Value[1] NA	
CCV Time	Initials DJA 12-15-16	CCV: Pass / Fail	*(CCV acceptable if ± 0.5 mg/L of saturation value)*
Result (mg/L)	Temp (°C)	Theoretical Value[1]	
CCV Time	Initials	CCV: Pass / Fail	*(CCV acceptable if ± 0.5 mg/L of saturation value)*
Result (mg/L)	Temp (°C)	Theoretical Value[1]	

Form Revised: 11/14/2013

Lead Technician Signature: David Anderson Date: 12-15-16

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) David Anderson Date 12-15-16 Page 3 of 3

Meter Make WTW Turb. 350 Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C582192/C579784 C579786/C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	9.9	99	998	IC Time 0810 Initials DJA IC: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	98	998	ICV Time 0820 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.8	98	999	CCV Time 1700 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 12-15-16			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 12-15-16

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) David Anderson Date 12-19-16 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.98	13.0	0750	DJA
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.10	13.0	0750	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.17	13.0	0750	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.08	13.0	0800	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.13	8.0	1655	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value	1413	Low Standard Value	1000
Cond Std: 1413 umhos/cm Fisher - Lot #: CC15030 *Exp Date: 06/08/17* Exp. Date		Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18* Exp. Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1413	13.0	1000	13.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0805 / 0810
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1700 Initials DJA Std. Value 1413 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1400 Temp (°C) 8.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA 12-19-16 Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 12-19-16

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) David Anderson Date 12-19-16 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	248	Secondary Source Std. Value (mV)	248
Mfg.	YSI Zobells	ORP Std. (Zobell's Soln.) YSI - Lot #: 15G100067 Exp Date: 07/13/17	
Lot No.	16F100570		
Exp Date	12/2016		
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
248	13.0	246	13.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0815 / 0820

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time	Initials	Std. Value		
1765	DJA	254	☒ Calibration Standard ☐ Secondary Source Standard	
Result (mV) 251	Temp (°C) 8.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*	
CCV Time	Initials DJA 12-19-16	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard	
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*	
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard	
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*	

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) Zero Standard (mg/L)	
Ambient Temp: 13.0 °C		Mfg.	
Barometric Pressure 29.35 inches Hg		Lot No. DJA 12/19/16	
Barometric Pressure 745.49 mm Hg		Exp Date	
Theoretical Value[1] NA mg/L			
Meter Result	Temp (°C)	Meter Result (mg/L)	Temp (°C)
IC Air 97 % / IC Air 10.9 mg/L	13.0	10.7	13.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0740 / 0745

Initials DJA

ICV: (Pass) / Fail

ICV acceptable ± 0.5 mg/L of saturation value; < 0.5 mg/L for zero standard.

[1] Theoretical value obtained from Table VI in FSD Water Manual | Note: Inches Hg x 25.4 = mm Hg

CCV Time	Initials	CCV:		
1650	DJA	(Pass) / Fail	*(CCV acceptable if ± 0.5 mg/L of saturation value)*	
Result (mg/L) 11.7	Temp (°C) ~~13.0~~ 8.0	Theoretical Value[1] NA		
CCV Time	Initials DJA 12-19-16	CCV: Pass / Fail	*(CCV acceptable if ± 0.5 mg/L of saturation value)*	
Result (mg/L)	Temp (°C)	Theoretical Value[1]		
CCV Time	Initials	CCV: Pass / Fail	*(CCV acceptable if ± 0.5 mg/L of saturation value)*	
Result (mg/L)	Temp (°C)	Theoretical Value[1]		

Form Revised: 11/14/2013

Lead Technician Signature: David Anderson Date: 12-19-16

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) David Anderson Date 12-19-16 Page 3 of 3

Meter Make WTW Turb. 350 Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C582192/C579784 C579786/C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	10.0	99	999	IC Time 0830 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	99	998	ICV Time 0840 Initials DJA ICV: (Pass) Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	10.0	99	998	CCV Time 1710 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 12-19-16			CCV Time ____ Initials ____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 12-19-16

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) David Anderson Date 12-20-16 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	4.00	7.0	0805	DJA
Buffer Value / Manufacturer / Lot No / Exp. Date	**Meter Value**	**Temp (°C)**	**Time**	**Initials**
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.08	7.0	0805	DJA
Buffer Value / Manufacturer / Lot No / Exp. Date	**Meter Value**	**Temp (°C)**	**Time**	**Initials**
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.23	7.0	0805	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.10	7.0	0815	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*				DJA

Pass / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value	1413	Low Standard Value	1000
Cond Std: 1413 umhos/cm Fisher - Lot #: CC15030 *Exp Date: 06/08/17* Exp. Date		Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18* Exp. Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1412	7.0	990	7.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0820 / 0825
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time _____ Initials DJA Std. Value 1413 ☒ High Standard ☐ Low Standard
Result (µS/cm) _____ Temp (°C) _____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA 12/20/16 Initials _____ Std. Value _____ ☐ High Standard ☐ Low Standard
Result (µS/cm) _____ Temp (°C) _____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time _____ Initials _____ Std. Value _____ ☐ High Standard ☐ Low Standard
Result (µS/cm) _____ Temp (°C) _____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 12/20/16

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) David Anderson Date 12/20/16 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	254	Secondary Source Std. Value (mV)	254
Mfg.	YSI Zobells	ORP Std. (Zobell's Soln.) YSI - Lot #: 15G100067 Exp Date: 07/13/17	
Lot No.	16F100570		
Exp Date	12/2016		
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
254	7.0	252	7.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0830 / 0835

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time _____ Initials DJA Std. Value _____ ☒ Calibration Standard ☐ Secondary Source Standard

Result (mV) _____ Temp (°C) _____ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

CCV Time DJA Initials _____ Std. Value _____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) _____ Temp (°C) 12/20/16 CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

CCV Time _____ Initials _____ Std. Value _____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) _____ Temp (°C) _____ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) Zero Standard (mg/L)	
Ambient Temp: 7.0 °C		Mfg.	
Barometric Pressure 28.89 inches Hg		Lot No. DJA 12/20/16	
Barometric Pressure 733.8 mm Hg		Exp Date	
Theoretical Value[1] NA mg/L			
Meter Result	Temp (°C)	Meter Result (mg/L)	Temp (°C)
IC Air 98 % / IC Air 11.9 mg/L	7.0	11.8	7.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0755 / 0800

Initials DJA

ICV: (Pass) / Fail

ICV acceptable ± 0.5 mg/L of saturation value; < 0.5 mg/L for zero standard.

[1] Theoretical value obtained from Table VI in FSD Water Manual | Note: Inches Hg x 25.4 = mm Hg

CCV Time _____ Initials DJA CCV: Pass / Fail *(CCV acceptable if ± 0.5 mg/L of saturation value)*

Result (mg/L) _____ Temp (°C) _____ Theoretical Value[1] NA

CCV Time _____ Initials _____ CCV: Pass / Fail *(CCV acceptable if ± 0.5 mg/L of saturation value)*

Result (mg/L) _____ Temp (°C) DJA 12/20/16 Theoretical Value[1] _____

CCV Time _____ Initials _____ CCV: Pass / Fail *(CCV acceptable if ± 0.5 mg/L of saturation value)*

Result (mg/L) _____ Temp (°C) _____ Theoretical Value[1] _____

Form Revised: 11/14/2013

Lead Technician Signature: David Anderson Date: 12/20/16

Xcel Energy - Sherco CCR, Dec. 2016
Field Proj. # 16-1407

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) David Anderson Date 12/20/16 Page 3 of 3

Meter Make WTW Turb. 350 Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C582192/C579784 C579786/C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	10.0	100	1001	IC Time 0840 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	99	998	ICV Time 0845 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials DJA CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 12/20/16			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 12/20/16

Form Revised: 11/14/2013

Attach additional notes if necessary.

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Dec. Project No. 16-1407

Monitoring Point ID P-01d-1 Labeled P-01A

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	80.98	Feet
Static water level measurement before purging	76.02	Feet
Static water level measurement at time of sampling	76.02	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 12-19-16 Water Column 4.96 Feet

Time Purged 1620-1632 One Casing Volume 0.8 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 2.4 Gallons

Field Sampling Data

Date Sampled 12-19-16

Time Sampled 1640

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 8.3 (mg/l)

Spec. Cond. 880 (µmhos/cm) Turbidity 0.8 (NTU)

Temp. 7.5 (°C) Eh 113 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 13° + sunny, wind SW 15

Sample Description: clear + odorless

Observations:

DJA 12/19/16

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1624	7.8	890	7.5	8.4	NA	112	0.8
1628	7.8	880	7.5	8.3	NA	113	1.6
1632	7.8	880	7.5	8.3	NA	113	2.4

DJA 12/19/16

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 12/19/16

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Dec. Project No. 16-1407

Monitoring Point ID P-17 Labeled P17

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 58.76 Feet

Static water level measurement before purging 35.43 Feet

Static water level measurement at time of sampling 35.44 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 12-14-16 Water Column 23.33 Feet

Time Purged 1450-1547 One Casing Volume 3.8 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 11.4 Gallons

Field Sampling Data

Date Sampled 12-14-16

Time Sampled 1600

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 8.1 (units) D.O 9.6 (mg/l)

Spec. Cond. 1300 (µmhos/cm) Turbidity 20.0 (NTU)

Temp. 7.0 (°C) Eh 104 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: ~4° + sunny, wind NW 20

Sample Description: clear + odorless

Observations: DTA 12-14-16

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1509	8.2	1330	7.0	9.8	NA	110	3.8
1528	8.1	1310	7.0	9.7	NA	107	7.6
1547	8.1	1300	7.0	9.6	NA	104	11.4

DTA 12/14/16

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 12/14/16

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Dec. Project No. 16-1407

Monitoring Point ID P-22 Labeled P-22

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 57.85 Feet

Static water level measurement before purging 38.31 Feet

Static water level measurement at time of sampling 38.31 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 12-15-16 Water Column 19.54 Feet

Time Purged 1040 - 1113 One Casing Volume 3.2 Gallons

Pump Rate 0.3 (GPM)/LPM Volume Purged 9.9 Gallons

Field Sampling Data

Date Sampled 12-15-16

Time Sampled 1120

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 7.8 (mg/l)

Spec. Cond. 1120 (µmhos/cm) Turbidity 4.0 (NTU)

Temp. 9.0 (°C) Eh 122 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: -5° + sunny, wind NW 10

Sample Description: clear + odorless

Observations: ~~DJA 12-15-16~~

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1051	7.6	1110	9.0	8.2	NA	120	3.3
1102	7.6	1120	9.0	8.0	NA	121	6.6
1113	7.6	1120	9.0	7.8	NA	122	9.9

~~DJA 12/15/16~~

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 12-15-16

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Dec. Project No. 16-1407

Monitoring Point ID P-23 Labeled P-23

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 67.34 Feet

Static water level measurement before purging 40.15 Feet

Static water level measurement at time of sampling 40.15 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 12-15-16 Water Column 27.19 Feet

Time Purged 0930 - 1015 One Casing Volume 4.4 Gallons

Pump Rate 0.3 (GPM) / LPM Volume Purged 13.5 Gallons

Field Sampling Data

Date Sampled 12-15-16

Time Sampled 1025

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 8.8 (mg/l)

Spec. Cond. 1000 (µmhos/cm) Turbidity 3.8 (NTU)

Temp. 7.5 (°C) Eh 143 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: -5's+ sunny, wind NW 10

Sample Description: clear + odorless

Observations: DJA 12-15-16

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0945	7.6	1020	7.5	8.9	NA	140	4.5
1000	7.6	1010	7.5	8.8	NA	142	9.0
1015	7.6	1000	7.5	8.8	NA	143	13.5

DJA 12/15/16

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 12-15-16

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Dec. Project No. 16-1407

Monitoring Point ID P-152a Labeled 806318

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 42.18 Feet

Static water level measurement before purging 34.87 Feet

Static water level measurement at time of sampling 34.87 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 12-13-16 Water Column 7.31 Feet

Time Purged 1510 - 1528 One Casing Volume 1.2 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 3.6 Gallons

Field Sampling Data

Date Sampled 12-13-16

Time Sampled 1540

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 10.1 (mg/l)

Spec. Cond. 1300 (µmhos/cm) Turbidity 4.5 (NTU)

Temp. 8.0 (°C) Eh 162 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 5° + sunny, wind W 10

Sample Description: clear + odorless

Observations: DJA 12/13/16

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1516	7.4	1320	8.0	10.2	NA	160	1.2
1522	7.4	1310	8.0	10.1	NA	161	2.4
1528	7.4	1300	8.0	10.1	NA	162	3.6

DJA 12/13/16

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 12/13/16

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Dec. Project No. 16-1407

Monitoring Point ID P-155 Labeled 812964

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	85.47	Feet
Static water level measurement before purging	76.36	Feet
Static water level measurement at time of sampling	76.36	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 12-20-16 Water Column 9.11 Feet

Time Purged 0900-0924 One Casing Volume 1.5 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 12-20-16

Time Sampled 0930

Sampling Equip. dbove pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 7.6 (mg/l)

Spec. Cond. 1410 (µmhos/cm) Turbidity 11.7 (NTU)

Temp. 8.5 (°C) Eh 119 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 18° + sunny, wind SW 20

Sample Description: clear + odorless

Observations:

DTA 12/20/16

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0908	8.0	1430	9.0	7.6	NA	115	1.6
0916	7.9	1420	8.5	7.5	NA	118	3.2
0924	7.9	1410	8.5	7.6	NA	119	4.8

DTA 12/20/16

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 12/20/16

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Dec. Project No. 16-1407

Monitoring Point ID P-156 Labeled 8/2965

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 85.53 Feet

Static water level measurement before purging 75.20 Feet

Static water level measurement at time of sampling 75.20 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 12-19-16 Water Column 10.33 Feet

Time Purged 1520-1547 One Casing Volume 1.7 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 12-19-16

Time Sampled 1550

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 8.7 (mg/l)

Spec. Cond. 840 (µmhos/cm) Turbidity 25.3 (NTU)

Temp. 7.0 (°C) Eh 102 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 13° + sunny, wind SW 15

Sample Description: clear + odorless

Observations:

DTA 12/19/16

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1529	7.8	850	7.0	8.8	NA	100	1.8
1538	7.8	840	7.0	8.7	NA	101	3.6
1547	7.8	840	7.0	8.7	NA	102	5.4

DTA 12/19/16

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 12/19/16

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Dec. Project No. 16-1407

Monitoring Point ID P-157 Labeled 812966

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 49.06 Feet

Static water level measurement before purging 40.65 Feet

Static water level measurement at time of sampling 40.65 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 12-15-16 Water Column 8.41 Feet

Time Purged 0850 - 0911 One Casing Volume 1.4 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 12-15-16

Time Sampled 0920

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 8.7 (mg/l)

Spec. Cond. 1050 (µmhos/cm) Turbidity 6.1 (NTU)

Temp. 7.0 (°C) Eh 109 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: ~5° + sunny, wind NW 10

Sample Description: clear + odorless

Observations: DJA 12-15-16

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0857	7.6	1060	7.0	9.0	NA	106	1.4
0904	7.6	1050	7.0	8.9	NA	108	2.8
0911	7.6	1050	7.0	8.7	NA	109	4.2

DJA 12-15-16

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 12-15-16

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Dec Project No. 16-1407

Monitoring Point ID P-158 Labeled 812967

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	49.16	Feet
Static water level measurement before purging	38.24	Feet
Static water level measurement at time of sampling	38.24	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 12-14-16 Water Column 10.92 Feet

Time Purged 1615-1642 One Casing Volume 1.8 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 12-14-16

Time Sampled 1650

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 10.5 (mg/l)

Spec. Cond. 1200 (µmhos/cm) Turbidity 3.6 (NTU)

Temp. 8.0 (°C) Eh 166 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: ~5° + sunny, wind NW 20

Sample Description: clear + odorless

Observations: DJA 12-14-16

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1624	7.6	1220	7.5	10.8	NA	167	1.8
1633	7.5	1210	7.5	10.6	NA	166	3.6
1642	7.5	1200	8.0	10.5	NA	166	5.4
			DJA 12/14/16				

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 12-14-16

Amended Report

Original Report ID: MBL0192 FINAL 01 10 2017 0110

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification #MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

11 January 2018

Charles A Donkers

Environmental Services-Water Minneapolis

250 Marquette Plaza

Minneapolis, MN 55401

RE: Sherco CCR

cc: Laboratory report re-created to only include wells in the Bottom Ash Pond CCR Groundwater Monitoring System. HSD 1/11/18

Enclosed are the results of analyses for samples received by the laboratory on 12/16/2016 12:20-12/21/2016 06:00. If you have any questions concerning this report, please feel free to contact me.

I certify that this analysis report was prepared under my direction or supervision under a system designed to assure that qualified personnel analyzed the submitted samples. All protocols for analysis were followed as required by Minnesota Rules and the Applicable Management Plan.

Sincerely,

Steve Davis

Project Manager

Amended Report

Original Report ID: MBL0225 FINAL 01 10 2017 0111

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Rinse		MBL0192-01	Water	12/13/2016 13:50	12/16/2016 12:20
P-152a		MBL0192-03	Water	12/13/2016 15:40	12/16/2016 12:20
P-17		MBL0192-11	Water	12/14/2016 16:00	12/16/2016 12:20
P-158		MBL0192-12	Water	12/14/2016 16:50	12/16/2016 12:20
P-157		MBL0192-13	Water	12/15/2016 9:20	12/16/2016 12:20
P-23		MBL0192-14	Water	12/15/2016 10:25	12/16/2016 12:20
P-22		MBL0192-15	Water	12/15/2016 11:20	12/16/2016 12:20
Duplicate		MBL0192-21	Water	12/15/2016 16:30	12/16/2016 12:20
P-156		MBL0225-05	Water	12/19/2016 15:50	12/21/2016 6:00
P-01a-1		MBL0225-06	Water	12/19/2016 16:40	12/21/2016 6:00
P-155		MBL0225-07	Water	12/20/2016 9:30	12/21/2016 6:00

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Rinse

MBL0192-01 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 15:27	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 15:27	EPA 300.0	CRL
Sulfate	< 1.00	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 15:27	EPA 300.0	CRL
Wet Chemistry										
pH	6.57		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 10:58	SM 4500-H+ B	CRL
Total Dissolved Solids	< 20.0	20.0	mg/L		1	BBL0358	12/19/16 10:10	12/19/16 10:10	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:46	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:46	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:46	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:46	EPA 200.8	HSD
Chromium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:46	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:46	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:46	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:46	EPA 200.8	HSD
Selenium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:46	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:46	EPA 200.8	HSD
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 8:46	EPA 200.7	HSD
Barium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 8:44	EPA 200.7	HSD
Calcium	< 0.500	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 8:44	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 8:44	EPA 200.7	HSD

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Amended Report

Original Report ID: MBL0225 FINAL 01 10 2017 0111

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Rinse

MBL0192-01 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCA0033	1/4/17 8:19	1/4/17 14:41	EPA 245.1, 7470A	HRD

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-152a

MBL0192-03 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 16:07	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 16:07	EPA 300.0	CRL
Sulfate	9.58	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 16:07	EPA 300.0	CRL
Wet Chemistry										
pH	7.88		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 11:19	SM 4500-H+ B	CRL
Total Dissolved Solids	210	20.0	mg/L		1	BBL0358	12/19/16 10:10	12/19/16 10:10	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:07	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:07	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:07	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:07	EPA 200.8	HSD
Chromium	1.08	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:07	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:07	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:07	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:07	EPA 200.8	HSD
Selenium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:07	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:07	EPA 200.8	HSD
Total Metals by ICP										
Boron	0.0535	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:10	EPA 200.7	HSD
Barium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:08	EPA 200.7	HSD
Calcium	57.1	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:08	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:08	EPA 200.7	HSD

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Amended Report

Original Report ID: MBL0225 FINAL 01 10 2017 0111

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-152a

MBL0192-03 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCA0033	1/4/17 8:19	1/4/17 14:48	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-17

MBL0192-11 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	27.5	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 20:33	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 20:33	EPA 300.0	CRL
Sulfate	35.3	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 20:33	EPA 300.0	CRL
Wet Chemistry										
pH	8.01		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 12:21	SM 4500-H+ B	CRL
Total Dissolved Solids	322	20.0	mg/L		1	BBL0390	12/20/16 9:41	12/20/16 9:41	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.640	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:50	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:50	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:50	EPA 200.8	HSD
Cobalt	0.700	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:50	EPA 200.8	HSD
Chromium	2.26	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:50	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:50	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:50	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:50	EPA 200.8	HSD
Selenium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:50	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:50	EPA 200.8	HSD
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:50	EPA 200.7	HSD
Barium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:49	EPA 200.7	HSD
Calcium	75.2	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:49	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:49	EPA 200.7	HSD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-17

MBL0192-11 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCA0033	1/4/17 8:19	1/4/17 15:02	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-158

MBL0192-12 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	5.19	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 20:53	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 20:53	EPA 300.0	CRL
Sulfate	147	5.00	mg/L		5	BBL0397	12/20/16 9:12	12/21/16 9:41	EPA 300.0	CRL
Wet Chemistry										
pH	7.83		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 12:29	SM 4500-H+ B	CRL
Total Dissolved Solids	498	20.0	mg/L		1	BBL0390	12/20/16 9:41	12/20/16 9:41	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:55	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:55	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:55	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:55	EPA 200.8	HSD
Chromium	1.46	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:55	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:55	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:55	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:55	EPA 200.8	HSD
Selenium	2.30	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:55	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:55	EPA 200.8	HSD
Total Metals by ICP										
Boron	0.852	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:55	EPA 200.7	HSD
Barium	0.0854	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:54	EPA 200.7	HSD
Calcium	106	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:54	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:54	EPA 200.7	HSD

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1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-158

MBL0192-12 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCA0033	1/4/17 8:19	1/4/17 15:07	EPA 245.1, 7470A	HRD

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-157

MBL0192-13 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	12.6	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 21:14	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 21:14	EPA 300.0	CRL
Sulfate	91.3	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 21:14	EPA 300.0	CRL
Wet Chemistry										
pH	7.78		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 12:36	SM 4500-H+ B	CRL
Total Dissolved Solids	430	20.0	mg/L		1	BBL0390	12/20/16 9:41	12/20/16 9:41	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:12	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:12	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:12	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:12	EPA 200.8	HSD
Chromium	2.54	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:12	EPA 200.8	HSD
Molybdenum	2.33	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:12	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:12	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:12	EPA 200.8	HSD
Selenium	2.08	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:12	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:12	EPA 200.8	HSD
Total Metals by ICP										
Boron	0.278	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 10:15	EPA 200.7	HSD
Barium	0.0581	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 10:13	EPA 200.7	HSD
Calcium	97.1	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 10:13	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 10:13	EPA 200.7	HSD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-157

MBL0192-13 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCA0033	1/4/17 8:19	1/4/17 15:09	EPA 245.1, 7470A	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-23

MBL0192-14 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	21.0	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 21:34	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 21:34	EPA 300.0	CRL
Sulfate	96.1	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 21:34	EPA 300.0	CRL
Wet Chemistry										
pH	7.91		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 12:42	SM 4500-H+ B	CRL
Total Dissolved Solids	382	20.0	mg/L		1	BBL0390	12/20/16 9:41	12/20/16 9:41	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.570	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:17	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:17	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:17	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:17	EPA 200.8	HSD
Chromium	1.95	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:17	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:17	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:17	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:17	EPA 200.8	HSD
Selenium	1.27	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:17	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 11:17	EPA 200.8	HSD
Total Metals by ICP										
Boron	0.382	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 10:20	EPA 200.7	HSD
Barium	0.0614	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 10:19	EPA 200.7	HSD
Calcium	85.0	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 10:19	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 10:19	EPA 200.7	HSD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-23

MBL0192-14 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCA0033	1/4/17 8:19	1/4/17 15:10	EPA 245.1, 7470A	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-22

MBL0192-15 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	14.7	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 21:54	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 21:54	EPA 300.0	CRL
Sulfate	188	5.00	mg/L		5	BBL0397	12/20/16 9:12	12/21/16 10:01	EPA 300.0	CRL
Wet Chemistry										
pH	7.89		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 12:49	SM 4500-H+ B	CRL
Total Dissolved Solids	530	20.0	mg/L		1	BBL0390	12/20/16 9:41	12/20/16 9:41	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 9:38	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 9:38	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 9:38	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 9:38	EPA 200.8	HSD
Chromium	1.27	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 9:38	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 9:38	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 9:38	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 9:38	EPA 200.8	HSD
Selenium	7.46	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 9:38	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 9:38	EPA 200.8	HSD
Total Metals by ICP										
Boron	1.66	0.0500	mg/L		1	BBL0411	12/21/16 8:01	12/22/16 9:04	EPA 200.7	HSD
Barium	0.0740	0.0500	mg/L		1	BBL0411	12/21/16 8:01	12/22/16 9:03	EPA 200.7	HSD
Calcium	110	0.500	mg/L		1	BBL0411	12/21/16 8:01	12/22/16 9:03	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0411	12/21/16 8:01	12/22/16 9:03	EPA 200.7	HSD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-22

MBL0192-15 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCA0033	1/4/17 8:19	1/4/17 15:12	EPA 245.1, 7470A	HRD

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Duplicate

MBL0192-21 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	34.6	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 15:15	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 15:15	EPA 300.0	CRL
Sulfate	29.8	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 15:15	EPA 300.0	CRL
Wet Chemistry										
pH	7.94		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 13:38	SM 4500-H+ B	CRL
Total Dissolved Solids	338	20.0	mg/L		1	BBL0409	12/21/16 10:26	12/21/16 10:26	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.758	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 10:21	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 10:21	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 10:21	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 10:21	EPA 200.8	HSD
Chromium	1.02	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 10:21	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 10:21	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 10:21	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 10:21	EPA 200.8	HSD
Selenium	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 10:21	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0413	12/21/16 8:18	12/22/16 10:21	EPA 200.8	HSD
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BBL0411	12/21/16 8:01	12/22/16 9:35	EPA 200.7	HSD
Barium	0.0881	0.0500	mg/L		1	BBL0411	12/21/16 8:01	12/22/16 9:33	EPA 200.7	HSD
Calcium	89.9	0.500	mg/L		1	BBL0411	12/21/16 8:01	12/22/16 9:33	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0411	12/21/16 8:01	12/22/16 9:33	EPA 200.7	HSD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Duplicate

MBL0192-21 (Water) - Chain of Custody Number: 2020054/2020056

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCA0034	1/4/17 8:22	1/4/17 15:43	EPA 245.1, 7470A	HRD

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-156

MBL0225-05 (Water) - Chain of Custody Number: 2020055

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	3.54	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 20:21	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 20:21	EPA 300.0	CRL
Sulfate	25.2	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 20:21	EPA 300.0	CRL
Wet Chemistry										
pH	7.86		pH Units	M_TTT	1	BBL0417	12/21/16 9:29	12/21/16 10:57	SM 4500-H+ B	CRL
Total Dissolved Solids	242	20.0	mg/L		1	BBL0439	12/22/16 10:11	12/22/16 10:11	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.593	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 9:55	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 9:55	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 9:55	EPA 200.8	HSD
Cobalt	0.603	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 9:55	EPA 200.8	HSD
Chromium	2.78	1.00	ug/L	M_B-01	1	BBL0505	12/28/16 10:07	1/5/17 9:55	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 9:55	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 9:55	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 9:55	EPA 200.8	HSD
Selenium	0.980	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 9:55	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 9:55	EPA 200.8	HSD
Total Metals by ICP										
Boron	0.165	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 11:38	EPA 200.7	HSD
Barium	0.0570	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 11:36	EPA 200.7	HSD
Calcium	61.4	1.25	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 11:36	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 11:36	EPA 200.7	HSD

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Amended Report

Original Report ID: MBL0225 FINAL 01 10 2017 0111

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-156

MBL0225-05 (Water) - Chain of Custody Number: 2020055

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCA0034	1/4/17 8:22	1/4/17 16:00	EPA 245.1, 7470A	HRD

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-01a-1

MBL0225-06 (Water) - Chain of Custody Number: 2020055

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	9.73	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 20:42	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 20:42	EPA 300.0	CRL
Sulfate	119	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 20:42	EPA 300.0	CRL
Wet Chemistry										
pH	7.67		pH Units	M_TTT	1	BBL0417	12/21/16 9:29	12/21/16 11:04	SM 4500-H+ B	CRL
Total Dissolved Solids	420	20.0	mg/L		1	BBL0439	12/22/16 10:11	12/22/16 10:11	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:00	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:00	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:00	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:00	EPA 200.8	HSD
Chromium	1.31	1.00	ug/L	M_B-01	1	BBL0505	12/28/16 10:07	1/5/17 10:00	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:00	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:00	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:00	EPA 200.8	HSD
Selenium	8.10	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:00	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:00	EPA 200.8	HSD
Total Metals by ICP										
Boron	0.946	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 11:43	EPA 200.7	HSD
Barium	< 0.0500	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 11:41	EPA 200.7	HSD
Calcium	91.1	1.25	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 11:41	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 11:41	EPA 200.7	HSD

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Amended Report

Original Report ID: MBL0225 FINAL 01 10 2017 0111

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-01a-1

MBL0225-06 (Water) - Chain of Custody Number: 2020055

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCA0034	1/4/17 8:22	1/4/17 16:02	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-155

MBL0225-07 (Water) - Chain of Custody Number: 2020055

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	12.6	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 21:22	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 21:22	EPA 300.0	CRL
Sulfate	154	5.00	mg/L		5	BBL0416	12/21/16 9:14	12/21/16 21:43	EPA 300.0	CRL
Wet Chemistry										
pH	7.69		pH Units	M_TTT	1	BBL0417	12/21/16 9:29	12/21/16 11:10	SM 4500-H+ B	CRL
Total Dissolved Solids	432	20.0	mg/L		1	BBL0439	12/22/16 10:11	12/22/16 10:11	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:16	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:16	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:16	EPA 200.8	HSD
Cobalt	0.717	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:16	EPA 200.8	HSD
Chromium	1.94	1.00	ug/L	M_B-01	1	BBL0505	12/28/16 10:07	1/5/17 10:16	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:16	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:16	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:16	EPA 200.8	HSD
Selenium	3.75	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:16	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:16	EPA 200.8	HSD
Total Metals by ICP										
Boron	1.75	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:02	EPA 200.7	HSD
Barium	0.0746	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:00	EPA 200.7	HSD
Calcium	91.0	1.25	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:00	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:00	EPA 200.7	HSD

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Amended Report

Original Report ID: MBL0225 FINAL 01 10 2017 0111

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Minneapolis, MN 55043
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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

P-155

MBL0225-07 (Water) - Chain of Custody Number: 2020055

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCA0034	1/4/17 8:22	1/4/17 16:04	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0397 - Wet Prep										
Blank (BBL0397-BLK1)				Prepared & Analyzed: 12/20/2016						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BBL0397-BLK2)				Prepared & Analyzed: 12/20/2016						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BBL0397-BS1)				Prepared & Analyzed: 12/20/2016						
Chloride	25.0	1.00	mg/L	25.000		100	90-110			
Fluoride	5.01	0.750	mg/L	5.0000		100	90-110			
Sulfate	100	1.00	mg/L	100.00		100	90-110			
LCS (BBL0397-BS2)				Prepared & Analyzed: 12/20/2016						
Chloride	24.5	1.00	mg/L	25.000		98.0	90-110			
Fluoride	4.73	0.750	mg/L	5.0000		94.7	90-110			
Sulfate	97.4	1.00	mg/L	100.00		97.4	90-110			
LCS (BBL0397-BS3)				Prepared: 12/20/2016 Analyzed: 12/21/2016						
Chloride	24.4	1.00	mg/L	25.000		97.5	90-110			
Fluoride	4.72	0.750	mg/L	5.0000		94.3	90-110			
Sulfate	96.9	1.00	mg/L	100.00		96.9	90-110			
LCS (BBL0397-BS4)				Prepared: 12/20/2016 Analyzed: 12/21/2016						
Chloride	25.2	1.00	mg/L	25.000		101	90-110			
Fluoride	4.92	0.750	mg/L	5.0000		98.4	90-110			
Sulfate	101	1.00	mg/L	100.00		101	90-110			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0397 - Wet Prep										
Duplicate (BBL0397-DUP1)		**Source: MBL0192-03**		Prepared & Analyzed: 12/20/2016						
Chloride	0.679	1.00	mg/L		0.675			0.591	20	
Fluoride	0.117	0.750	mg/L		0.115			1.72	20	
Sulfate	9.53	1.00	mg/L		9.58			0.555	20	
Duplicate (BBL0397-DUP2)		**Source: MBL0192-04**		Prepared & Analyzed: 12/20/2016						
Chloride	1.21	1.00	mg/L		1.26			3.48	20	
Fluoride	0.118	0.750	mg/L		0.116			1.71	20	
Sulfate	9.45	1.00	mg/L		9.43			0.159	20	
Matrix Spike (BBL0397-MS1)		**Source: MBL0192-03**		Prepared & Analyzed: 12/20/2016						
Chloride	12.8	1.00	mg/L	12.500	0.675	97.1	80-120			
Fluoride	2.55	0.750	mg/L	2.5000	0.115	97.4	80-120			
Sulfate	59.2	1.00	mg/L	50.000	9.58	99.3	80-120			
Matrix Spike (BBL0397-MS2)		**Source: MBL0192-04**		Prepared & Analyzed: 12/20/2016						
Chloride	13.3	1.00	mg/L	12.500	1.26	96.1	80-120			
Fluoride	2.45	0.750	mg/L	2.5000	0.116	93.3	80-120			
Sulfate	58.8	1.00	mg/L	50.000	9.43	98.7	80-120			
Matrix Spike Dup (BBL0397-MSD1)		**Source: MBL0192-03**		Prepared & Analyzed: 12/20/2016						
Chloride	13.0	1.00	mg/L	12.500	0.675	98.4	80-120	1.27	20	
Fluoride	2.50	0.750	mg/L	2.5000	0.115	95.2	80-120	2.14	20	
Sulfate	59.7	1.00	mg/L	50.000	9.58	100	80-120	0.782	20	
Matrix Spike Dup (BBL0397-MSD2)		**Source: MBL0192-04**		Prepared & Analyzed: 12/20/2016						
Chloride	13.5	1.00	mg/L	12.500	1.26	98.2	80-120	1.92	20	
Fluoride	2.42	0.750	mg/L	2.5000	0.116	92.0	80-120	1.40	20	
Sulfate	59.6	1.00	mg/L	50.000	9.43	100	80-120	1.37	20	

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0416 - Wet Prep										
Blank (BBL0416-BLK1)				Prepared & Analyzed: 12/21/2016						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BBL0416-BLK2)				Prepared & Analyzed: 12/21/2016						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BBL0416-BS1)				Prepared & Analyzed: 12/21/2016						
Chloride	24.2	1.00	mg/L	25.000		96.8	90-110			
Fluoride	4.75	0.750	mg/L	5.0000		95.0	90-110			
Sulfate	96.8	1.00	mg/L	100.00		96.8	90-110			
LCS (BBL0416-BS2)				Prepared & Analyzed: 12/21/2016						
Chloride	24.5	1.00	mg/L	25.000		97.8	90-110			
Fluoride	4.69	0.750	mg/L	5.0000		93.8	90-110			
Sulfate	97.2	1.00	mg/L	100.00		97.2	90-110			
LCS (BBL0416-BS3)				Prepared & Analyzed: 12/21/2016						
Chloride	25.4	1.00	mg/L	25.000		102	90-110			
Fluoride	4.92	0.750	mg/L	5.0000		98.4	90-110			
Sulfate	101	1.00	mg/L	100.00		101	90-110			
LCS (BBL0416-BS4)				Prepared: 12/21/2016 Analyzed: 12/22/2016						
Chloride	25.1	1.00	mg/L	25.000		100	90-110			
Fluoride	4.90	0.750	mg/L	5.0000		98.1	90-110			
Sulfate	100	1.00	mg/L	100.00		100	90-110			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0416 - Wet Prep										
Duplicate (BBL0416-DUP1)		**Source: MBL0225-02**		Prepared & Analyzed: 12/21/2016						
Chloride	35.5	1.00	mg/L		35.7			0.433	20	
Fluoride	0.122	0.750	mg/L		0.122			0.00	20	
Sulfate	24.9	1.00	mg/L		24.9			0.0362	20	
Duplicate (BBL0416-DUP2)		**Source: MBL0225-05**		Prepared & Analyzed: 12/21/2016						
Chloride	3.54	1.00	mg/L		3.54			0.113	20	
Fluoride	0.141	0.750	mg/L		0.139			1.43	20	
Sulfate	25.0	1.00	mg/L		25.2			0.565	20	
Matrix Spike (BBL0416-MS1)		**Source: MBL0225-02**		Prepared & Analyzed: 12/21/2016						
Chloride	47.9	1.00	mg/L	12.500	35.7	97.7	80-120			
Fluoride	2.52	0.750	mg/L	2.5000	0.122	95.8	80-120			
Sulfate	75.0	1.00	mg/L	50.000	24.9	100	80-120			
Matrix Spike (BBL0416-MS2)		**Source: MBL0225-05**		Prepared & Analyzed: 12/21/2016						
Chloride	15.9	1.00	mg/L	12.500	3.54	99.1	80-120			
Fluoride	2.59	0.750	mg/L	2.5000	0.139	98.0	80-120			
Sulfate	75.0	1.00	mg/L	50.000	25.2	99.6	80-120			
Matrix Spike Dup (BBL0416-MSD1)		**Source: MBL0225-02**		Prepared & Analyzed: 12/21/2016						
Chloride	48.0	1.00	mg/L	12.500	35.7	98.6	80-120	0.213	20	
Fluoride	2.49	0.750	mg/L	2.5000	0.122	94.9	80-120	0.878	20	
Sulfate	75.3	1.00	mg/L	50.000	24.9	101	80-120	0.391	20	
Matrix Spike Dup (BBL0416-MSD2)		**Source: MBL0225-05**		Prepared & Analyzed: 12/21/2016						
Chloride	16.1	1.00	mg/L	12.500	3.54	100	80-120	0.906	20	
Fluoride	2.53	0.750	mg/L	2.5000	0.139	95.6	80-120	2.31	20	
Sulfate	75.4	1.00	mg/L	50.000	25.2	100	80-120	0.544	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0358 - Wet Prep										
Blank (BBL0358-BLK1)				Prepared & Analyzed: 12/19/2016						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BBL0358-DUP1)			**Source: MBL0192-02**	Prepared & Analyzed: 12/19/2016						
Total Dissolved Solids	276	20.0	mg/L		282			2.15	20	
Batch BBL0360 - Wet Prep										
LCS (BBL0360-BS1)				Prepared & Analyzed: 12/19/2016						
pH	7.15		pH Units	7.0000		102	90-110			
LCS (BBL0360-BS2)				Prepared & Analyzed: 12/19/2016						
pH	7.17		pH Units	7.0000		102	90-110			
Duplicate (BBL0360-DUP1)			**Source: MBL0192-02**	Prepared & Analyzed: 12/19/2016						
pH	7.91		pH Units		7.93			0.253	20	
Duplicate (BBL0360-DUP2)			**Source: MBL0192-11**	Prepared & Analyzed: 12/19/2016						
pH	8.00		pH Units		8.01			0.125	20	
Duplicate (BBL0360-DUP3)			**Source: MBL0192-21**	Prepared & Analyzed: 12/19/2016						
pH	7.93		pH Units		7.94			0.126	20	
Batch BBL0390 - Wet Prep										
Blank (BBL0390-BLK1)				Prepared & Analyzed: 12/20/2016						
Total Dissolved Solids	<20.0	20.0	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0390 - Wet Prep										
Duplicate (BBL0390-DUP1)		**Source: MBL0192-11**		Prepared & Analyzed: 12/20/2016						
Total Dissolved Solids	318	20.0	mg/L		322			1.25	20	
Batch BBL0409 - Wet Prep										
Blank (BBL0409-BLK1)				Prepared & Analyzed: 12/21/2016						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BBL0409-DUP1)		**Source: MBL0192-21**		Prepared & Analyzed: 12/21/2016						
Total Dissolved Solids	352	20.0	mg/L		338			4.06	20	
Batch BBL0417 - Wet Prep										
LCS (BBL0417-BS1)				Prepared & Analyzed: 12/21/2016						
pH	7.07		pH Units	7.0000		101	90-110			
Duplicate (BBL0417-DUP1)		**Source: MBL0225-01**		Prepared & Analyzed: 12/21/2016						
pH	7.75		pH Units		7.81			0.771	20	
Batch BBL0439 - Wet Prep										
Blank (BBL0439-BLK1)				Prepared & Analyzed: 12/22/2016						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BBL0439-DUP1)		**Source: MBL0225-04**		Prepared & Analyzed: 12/22/2016						
Total Dissolved Solids	370	20.0	mg/L		324			13.3	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0395 - EPA 200.2, EPA 3005										
Blank (BBL0395-BLK1)				Prepared: 12/20/2016 Analyzed: 12/21/2016						
Cadmium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
LCS (BBL0395-BS1)				Prepared: 12/20/2016 Analyzed: 12/21/2016						
Selenium	95.3	0.500	ug/L	100.00		95.3	85-115			
Cadmium	103	0.500	ug/L	100.00		103	85-115			
Beryllium	100	0.500	ug/L	100.00		100	85-115			
Antimony	101	0.500	ug/L	100.00		101	85-115			
Arsenic	98.7	0.500	ug/L	100.00		98.7	85-115			
Thallium	103	0.500	ug/L	100.00		103	85-115			
Molybdenum	103	0.500	ug/L	100.00		103	85-115			
Chromium	101	0.500	ug/L	100.00		101	85-115			
Lead	102	0.500	ug/L	100.00		102	85-115			
Cobalt	104	0.500	ug/L	100.00		104	85-115			
Duplicate (BBL0395-DUP1)		**Source: MBL0192-04**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Molybdenum	0.160	0.500	ug/L		0.123			25.9	20	M_D-RL
Beryllium	0.0434	0.500	ug/L		0.00615			150	20	M_D-RL
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Chromium	1.56	0.500	ug/L		1.53			1.72	20	
Lead	0.0461	0.500	ug/L		0.0277			50.0	20	M_D-RL
Antimony	0.0972	0.500	ug/L		0.0739			27.3	20	M_D-RL
Thallium	0.0534	0.500	ug/L		0.0105			134	20	M_D-RL
Selenium	0.115	0.500	ug/L		0.0911			23.6	20	M_D-RL
Cobalt	0.0575	0.500	ug/L		0.0545			5.29	20	
Arsenic	0.479	0.500	ug/L		0.538			11.5	20	

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0395 - EPA 200.2, EPA 3005										
Duplicate (BBL0395-DUP2)		**Source: MBL0192-05**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Thallium	0.0130	0.500	ug/L		0.00814			46.0	20	M_D-RL
Cobalt	<0.500	0.500	ug/L		0.0312				20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Selenium	0.257	0.500	ug/L		0.233			9.57	20	
Antimony	0.0880	0.500	ug/L		0.0708			21.7	20	M_D-RL
Arsenic	0.501	0.500	ug/L		0.532			6.12	20	
Lead	0.0338	0.500	ug/L		0.0206			48.3	20	M_D-RL
Chromium	1.25	0.500	ug/L		1.11			11.9	20	
Molybdenum	0.302	0.500	ug/L		0.321			6.19	20	
Beryllium	0.00728	0.500	ug/L		<0.500				20	
Matrix Spike (BBL0395-MS1)		**Source: MBL0192-04**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Lead	93.2	0.500	ug/L	100.00	0.0277	93.2	70-130			
Antimony	100	0.500	ug/L	100.00	0.0739	100	70-130			
Arsenic	104	0.500	ug/L	100.00	0.538	103	70-130			
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130			
Selenium	97.9	0.500	ug/L	100.00	0.0911	97.8	70-130			
Thallium	96.6	0.500	ug/L	100.00	0.0105	96.6	70-130			
Cobalt	105	0.500	ug/L	100.00	0.0545	105	70-130			
Beryllium	100	0.500	ug/L	100.00	0.00615	100	70-130			
Chromium	107	0.500	ug/L	100.00	1.53	106	70-130			
Molybdenum	104	0.500	ug/L	100.00	0.123	103	70-130			
Matrix Spike (BBL0395-MS2)		**Source: MBL0192-05**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Molybdenum	106	0.500	ug/L	100.00	0.321	105	70-130			
Arsenic	104	0.500	ug/L	100.00	0.532	104	70-130			
Selenium	97.1	0.500	ug/L	100.00	0.233	96.9	70-130			
Beryllium	103	0.500	ug/L	100.00	<0.500	103	70-130			
Cadmium	102	0.500	ug/L	100.00	<0.500	102	70-130			
Cobalt	106	0.500	ug/L	100.00	0.0312	106	70-130			
Chromium	105	0.500	ug/L	100.00	1.11	104	70-130			
Thallium	100	0.500	ug/L	100.00	0.00814	100	70-130			
Lead	98.2	0.500	ug/L	100.00	0.0206	98.1	70-130			
Antimony	102	0.500	ug/L	100.00	0.0708	102	70-130			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0395 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BBL0395-MSD1)		**Source: MBL0192-04**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Molybdenum	105	0.500	ug/L	100.00	0.123	105	70-130	1.05	20	
Antimony	101	0.500	ug/L	100.00	0.0739	101	70-130	0.474	20	
Selenium	97.4	0.500	ug/L	100.00	0.0911	97.3	70-130	0.439	20	
Thallium	98.2	0.500	ug/L	100.00	0.0105	98.2	70-130	1.59	20	
Lead	94.5	0.500	ug/L	100.00	0.0277	94.5	70-130	1.37	20	
Arsenic	104	0.500	ug/L	100.00	0.538	103	70-130	0.109	20	
Chromium	108	0.500	ug/L	100.00	1.53	106	70-130	0.135	20	
Cobalt	107	0.500	ug/L	100.00	0.0545	107	70-130	1.77	20	
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130	0.0525	20	
Beryllium	102	0.500	ug/L	100.00	0.00615	102	70-130	2.07	20	
Matrix Spike Dup (BBL0395-MSD2)		**Source: MBL0192-05**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Antimony	97.9	0.500	ug/L	100.00	0.0708	97.8	70-130	4.15	20	
Selenium	97.8	0.500	ug/L	100.00	0.233	97.6	70-130	0.659	20	
Lead	94.0	0.500	ug/L	100.00	0.0206	93.9	70-130	4.36	20	
Chromium	107	0.500	ug/L	100.00	1.11	106	70-130	1.99	20	
Cobalt	105	0.500	ug/L	100.00	0.0312	105	70-130	0.766	20	
Thallium	95.4	0.500	ug/L	100.00	0.00814	95.4	70-130	4.73	20	
Molybdenum	102	0.500	ug/L	100.00	0.321	102	70-130	3.53	20	
Beryllium	104	0.500	ug/L	100.00	<0.500	104	70-130	0.0407	20	
Arsenic	102	0.500	ug/L	100.00	0.532	101	70-130	2.41	20	
Cadmium	102	0.500	ug/L	100.00	<0.500	102	70-130	0.287	20	
Batch BBL0413 - EPA 200.2, EPA 3005										
Blank (BBL0413-BLK1)				Prepared: 12/21/2016 Analyzed: 12/22/2016						
Thallium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0413 - EPA 200.2, EPA 3005										
LCS (BBL0413-BS1)				Prepared: 12/21/2016 Analyzed: 12/22/2016						
Molybdenum	97.1	0.500	ug/L	100.00		97.1	85-115			
Beryllium	97.6	0.500	ug/L	100.00		97.6	85-115			
Selenium	95.8	0.500	ug/L	100.00		95.8	85-115			
Antimony	97.3	0.500	ug/L	100.00		97.3	85-115			
Cobalt	102	0.500	ug/L	100.00		102	85-115			
Arsenic	98.0	0.500	ug/L	100.00		98.0	85-115			
Lead	101	0.500	ug/L	100.00		101	85-115			
Chromium	101	0.500	ug/L	100.00		101	85-115			
Cadmium	97.1	0.500	ug/L	100.00		97.1	85-115			
Thallium	101	0.500	ug/L	100.00		101	85-115			
Duplicate (BBL0413-DUP1)		**Source: MBL0192-17**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Selenium	0.418	0.500	ug/L		0.372			11.7	20	
Thallium	0.0478	0.500	ug/L		0.0145			107	20	M_D-RL
Cadmium	0.0241	0.500	ug/L		<0.500				20	
Cobalt	0.472	0.500	ug/L		0.471			0.210	20	
Arsenic	0.636	0.500	ug/L		0.642			1.03	20	
Chromium	1.67	0.500	ug/L		1.58			5.93	20	
Antimony	0.0949	0.500	ug/L		0.0856			10.3	20	
Lead	0.295	0.500	ug/L		0.278			6.14	20	
Molybdenum	0.121	0.500	ug/L		0.108			11.8	20	
Beryllium	0.0630	0.500	ug/L		0.0277			77.8	20	M_D-RL
Duplicate (BBL0413-DUP2)		**Source: MBL0192-18**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Selenium	0.229	0.500	ug/L		0.180			23.9	20	M_D-RL
Beryllium	0.0209	0.500	ug/L		0.0228			8.69	20	
Chromium	1.25	0.500	ug/L		1.14			9.16	20	
Thallium	0.0123	0.500	ug/L		0.00766			46.4	20	M_D-RL
Lead	0.238	0.500	ug/L		0.243			1.95	20	
Antimony	0.0894	0.500	ug/L		0.0681			27.1	20	M_D-RL
Arsenic	0.866	0.500	ug/L		0.948			9.05	20	
Molybdenum	0.107	0.500	ug/L		0.110			1.91	20	
Cobalt	0.647	0.500	ug/L		0.602			7.23	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0413 - EPA 200.2, EPA 3005										
Matrix Spike (BBL0413-MS1)		**Source: MBL0192-17**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Selenium	99.1	0.500	ug/L	100.00	0.372	98.7	70-130			
Molybdenum	97.4	0.500	ug/L	100.00	0.108	97.3	70-130			
Antimony	98.5	0.500	ug/L	100.00	0.0856	98.4	70-130			
Cobalt	102	0.500	ug/L	100.00	0.471	102	70-130			
Chromium	103	0.500	ug/L	100.00	1.58	101	70-130			
Lead	93.7	0.500	ug/L	100.00	0.278	93.4	70-130			
Cadmium	97.8	0.500	ug/L	100.00	<0.500	97.8	70-130			
Beryllium	105	0.500	ug/L	100.00	0.0277	105	70-130			
Thallium	95.9	0.500	ug/L	100.00	0.0145	95.8	70-130			
Arsenic	103	0.500	ug/L	100.00	0.642	102	70-130			
Matrix Spike (BBL0413-MS2)		**Source: MBL0192-18**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Cobalt	103	0.500	ug/L	100.00	0.602	102	70-130			
Arsenic	103	0.500	ug/L	100.00	0.948	102	70-130			
Chromium	102	0.500	ug/L	100.00	1.14	101	70-130			
Molybdenum	99.3	0.500	ug/L	100.00	0.110	99.2	70-130			
Thallium	95.5	0.500	ug/L	100.00	0.00766	95.5	70-130			
Lead	94.6	0.500	ug/L	100.00	0.243	94.3	70-130			
Antimony	99.4	0.500	ug/L	100.00	0.0681	99.3	70-130			
Cadmium	97.4	0.500	ug/L	100.00	<0.500	97.4	70-130			
Beryllium	100	0.500	ug/L	100.00	0.0228	100	70-130			
Selenium	97.9	0.500	ug/L	100.00	0.180	97.7	70-130			
Matrix Spike Dup (BBL0413-MSD1)		**Source: MBL0192-17**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Selenium	95.7	0.500	ug/L	100.00	0.372	95.3	70-130	3.48	20	
Thallium	96.7	0.500	ug/L	100.00	0.0145	96.7	70-130	0.880	20	
Antimony	99.3	0.500	ug/L	100.00	0.0856	99.2	70-130	0.795	20	
Beryllium	101	0.500	ug/L	100.00	0.0277	101	70-130	3.22	20	
Chromium	102	0.500	ug/L	100.00	1.58	100	70-130	1.16	20	
Cadmium	98.2	0.500	ug/L	100.00	<0.500	98.2	70-130	0.437	20	
Arsenic	101	0.500	ug/L	100.00	0.642	101	70-130	1.68	20	
Lead	94.6	0.500	ug/L	100.00	0.278	94.4	70-130	0.982	20	
Cobalt	102	0.500	ug/L	100.00	0.471	102	70-130	0.0632	20	
Molybdenum	98.5	0.500	ug/L	100.00	0.108	98.4	70-130	1.08	20	

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0413 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BBL0413-MSD2)		**Source: MBL0192-18**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Chromium	103	0.500	ug/L	100.00	1.14	102	70-130	1.13	20	
Molybdenum	94.5	0.500	ug/L	100.00	0.110	94.4	70-130	4.92	20	
Beryllium	102	0.500	ug/L	100.00	0.0228	102	70-130	1.94	20	
Cadmium	96.8	0.500	ug/L	100.00	<0.500	96.8	70-130	0.688	20	
Arsenic	101	0.500	ug/L	100.00	0.948	99.8	70-130	1.83	20	
Lead	89.9	0.500	ug/L	100.00	0.243	89.7	70-130	5.05	20	
Antimony	96.3	0.500	ug/L	100.00	0.0681	96.2	70-130	3.16	20	
Selenium	97.3	0.500	ug/L	100.00	0.180	97.1	70-130	0.596	20	
Cobalt	104	0.500	ug/L	100.00	0.602	103	70-130	1.22	20	
Thallium	92.6	0.500	ug/L	100.00	0.00766	92.6	70-130	3.03	20	
Batch BBL0505 - EPA 200.2, EPA 3005										
Blank (BBL0505-BLK1)				Prepared: 12/28/2016 Analyzed: 01/05/2017						
Lead	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Chromium	<1.00	1.00	ug/L							M_B-01
Beryllium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
LCS (BBL0505-BS1)				Prepared: 12/28/2016 Analyzed: 01/05/2017						
Arsenic	94.8	0.500	ug/L	100.00		94.8	85-115			
Lead	97.1	0.500	ug/L	100.00		97.1	85-115			
Chromium	97.5	1.00	ug/L	100.00		97.5	85-115			M_B-01
Cadmium	98.2	0.500	ug/L	100.00		98.2	85-115			
Thallium	96.8	0.500	ug/L	100.00		96.8	85-115			
Beryllium	96.3	0.500	ug/L	100.00		96.3	85-115			
Cobalt	97.4	0.500	ug/L	100.00		97.4	85-115			
Selenium	96.1	0.500	ug/L	100.00		96.1	85-115			
Molybdenum	93.9	0.500	ug/L	100.00		93.9	85-115			
Antimony	94.8	0.500	ug/L	100.00		94.8	85-115			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0505 - EPA 200.2, EPA 3005										
Duplicate (BBL0505-DUP1)		**Source: MBL0225-03**		Prepared: 12/28/2016 Analyzed: 01/05/2017						
Antimony	0.0859	0.500	ug/L		0.0777			10.1	20	
Selenium	0.359	0.500	ug/L		0.265			30.2	20	M_D-RL
Thallium	0.0623	0.500	ug/L		0.0235			90.5	20	M_D-RL
Cobalt	0.911	0.500	ug/L		0.880			3.43	20	
Beryllium	0.0334	0.500	ug/L		0.0126			90.3	20	M_D-RL
Arsenic	1.18	0.500	ug/L		1.15			2.85	20	
Molybdenum	0.219	0.500	ug/L		0.184			17.1	20	
Lead	0.315	0.500	ug/L		0.299			5.23	20	
Cadmium	0.0451	0.500	ug/L		0.0315			35.4	20	M_D-RL
Chromium	1.23	1.00	ug/L		1.04			16.7	20	M_B-01
Matrix Spike (BBL0505-MS1)		**Source: MBL0225-03**		Prepared: 12/28/2016 Analyzed: 01/05/2017						
Molybdenum	97.8	0.500	ug/L	100.00	0.184	97.6	70-130			
Arsenic	104	0.500	ug/L	100.00	1.15	103	70-130			
Selenium	99.6	0.500	ug/L	100.00	0.265	99.3	70-130			
Lead	94.1	0.500	ug/L	100.00	0.299	93.8	70-130			
Thallium	95.9	0.500	ug/L	100.00	0.0235	95.9	70-130			
Antimony	100	0.500	ug/L	100.00	0.0777	100	70-130			
Cobalt	100	0.500	ug/L	100.00	0.880	99.4	70-130			
Beryllium	99.6	0.500	ug/L	100.00	0.0126	99.6	70-130			
Chromium	99.4	1.00	ug/L	100.00	1.04	98.3	70-130			M_B-01
Cadmium	97.8	0.500	ug/L	100.00	0.0315	97.8	70-130			
Matrix Spike Dup (BBL0505-MSD1)		**Source: MBL0225-03**		Prepared: 12/28/2016 Analyzed: 01/05/2017						
Lead	91.6	0.500	ug/L	100.00	0.299	91.3	70-130	2.59	20	
Beryllium	101	0.500	ug/L	100.00	0.0126	101	70-130	1.50	20	
Selenium	100	0.500	ug/L	100.00	0.265	100	70-130	0.732	20	
Cobalt	100	0.500	ug/L	100.00	0.880	99.2	70-130	0.223	20	
Molybdenum	96.6	0.500	ug/L	100.00	0.184	96.5	70-130	1.16	20	
Chromium	100	1.00	ug/L	100.00	1.04	99.3	70-130	0.977	20	M_B-01
Cadmium	98.5	0.500	ug/L	100.00	0.0315	98.4	70-130	0.652	20	
Thallium	94.0	0.500	ug/L	100.00	0.0235	94.0	70-130	2.00	20	
Antimony	98.0	0.500	ug/L	100.00	0.0777	98.0	70-130	2.19	20	
Arsenic	104	0.500	ug/L	100.00	1.15	103	70-130	0.0669	20	

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0376 - EPA 200.2, EPA 3005										
Blank (BBL0376-BLK1)				Prepared: 12/20/2016 Analyzed: 12/21/2016						
Lithium	<0.0500	0.0500	mg/L							
Boron	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Barium	<0.0500	0.0500	mg/L							
LCS (BBL0376-BS1)				Prepared: 12/20/2016 Analyzed: 12/21/2016						
Barium	1.01	0.0500	mg/L	1.0000		101	85-115			
Lithium	1.01	0.0500	mg/L	1.0000		101	85-115			
Calcium	103	0.500	mg/L	100.00		103	85-115			
Boron	1.01	0.0500	mg/L	1.0000		101	85-115			
Duplicate (BBL0376-DUP1)		**Source: MBL0192-02**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Calcium	59.3	0.500	mg/L		59.6			0.457	20	
Barium	0.0559	0.0500	mg/L		0.0563			0.781	20	
Boron	<0.0500	0.0500	mg/L		<0.0500				20	
Lithium	0.0138	0.0500	mg/L		0.0140			1.39	20	
Duplicate (BBL0376-DUP2)		**Source: MBL0192-03**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Calcium	56.3	0.500	mg/L		57.1			1.31	20	
Barium	0.0423	0.0500	mg/L		0.0427			0.936	20	
Lithium	0.0130	0.0500	mg/L		0.0135			3.67	20	
Boron	0.0547	0.0500	mg/L		0.0535			2.14	20	
Matrix Spike (BBL0376-MS1)		**Source: MBL0192-02**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Barium	1.08	0.0500	mg/L	1.0000	0.0563	102	70-130			
Lithium	1.01	0.0500	mg/L	1.0000	0.0140	99.7	75-125			
Boron	1.07	0.0500	mg/L	1.0000	<0.0500	107	70-130			
Calcium	165	0.500	mg/L	100.00	59.6	106	70-130			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0376 - EPA 200.2, EPA 3005										
Matrix Spike (BBL0376-MS2)		**Source: MBL0192-03**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Boron	1.07	0.0500	mg/L	1.0000	0.0535	102	70-130			
Barium	1.02	0.0500	mg/L	1.0000	0.0427	98.0	70-130			
Lithium	0.982	0.0500	mg/L	1.0000	0.0135	96.9	75-125			
Calcium	157	0.500	mg/L	100.00	57.1	99.6	70-130			
Matrix Spike Dup (BBL0376-MSD1)		**Source: MBL0192-02**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Boron	1.05	0.0500	mg/L	1.0000	<0.0500	105	70-130	1.75	20	
Calcium	162	0.500	mg/L	100.00	59.6	103	70-130	1.99	20	
Barium	1.05	0.0500	mg/L	1.0000	0.0563	99.7	70-130	2.17	20	
Lithium	1.00	0.0500	mg/L	1.0000	0.0140	99.1	75-125	0.631	20	
Matrix Spike Dup (BBL0376-MSD2)		**Source: MBL0192-03**		Prepared: 12/20/2016 Analyzed: 12/21/2016						
Calcium	160	0.500	mg/L	100.00	57.1	103	70-130	2.10	20	
Boron	1.09	0.0500	mg/L	1.0000	0.0535	104	70-130	2.23	20	
Barium	1.04	0.0500	mg/L	1.0000	0.0427	100	70-130	1.86	20	
Lithium	1.00	0.0500	mg/L	1.0000	0.0135	98.7	75-125	1.88	20	
Batch BBL0411 - EPA 200.2, EPA 3005										
Blank (BBL0411-BLK1)				Prepared: 12/21/2016 Analyzed: 12/22/2016						
Lithium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Boron	<0.0500	0.0500	mg/L							
Barium	<0.0500	0.0500	mg/L							
LCS (BBL0411-BS1)				Prepared: 12/21/2016 Analyzed: 12/22/2016						
Calcium	100	0.500	mg/L	100.00		100	85-115			
Lithium	0.975	0.0500	mg/L	1.0000		97.5	85-115			
Barium	0.979	0.0500	mg/L	1.0000		97.9	85-115			
Boron	0.936	0.0500	mg/L	1.0000		93.6	85-115			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0411 - EPA 200.2, EPA 3005										
Duplicate (BBL0411-DUP1)		**Source: MBL0192-15**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Calcium	108	0.500	mg/L		110			1.59	20	
Barium	0.0730	0.0500	mg/L		0.0740			1.36	20	
Lithium	0.0134	0.0500	mg/L		0.0132			1.62	20	
Boron	1.66	0.0500	mg/L		1.66			0.428	20	
Duplicate (BBL0411-DUP2)		**Source: MBL0192-16**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Lithium	0.0220	0.0500	mg/L		0.0205			6.77	20	
Boron	0.134	0.0500	mg/L		0.135			1.17	20	
Barium	0.889	0.0500	mg/L		0.863			2.97	20	
Calcium	157	0.500	mg/L		162			3.11	20	
Matrix Spike (BBL0411-MS1)		**Source: MBL0192-15**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Boron	2.54	0.0500	mg/L	1.0000	1.66	88.3	70-130			
Lithium	0.982	0.0500	mg/L	1.0000	0.0132	96.9	75-125			
Barium	1.03	0.0500	mg/L	1.0000	0.0740	95.9	70-130			
Calcium	206	0.500	mg/L	100.00	110	96.2	70-130			
Matrix Spike (BBL0411-MS2)		**Source: MBL0192-16**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Boron	1.06	0.0500	mg/L	1.0000	0.135	92.7	70-130			
Calcium	259	0.500	mg/L	100.00	162	97.1	70-130			
Lithium	0.965	0.0500	mg/L	1.0000	0.0205	94.4	75-125			
Barium	1.82	0.0500	mg/L	1.0000	0.863	96.1	70-130			
Matrix Spike Dup (BBL0411-MSD1)		**Source: MBL0192-15**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Lithium	1.00	0.0500	mg/L	1.0000	0.0132	98.9	75-125	2.04	20	
Barium	1.06	0.0500	mg/L	1.0000	0.0740	98.4	70-130	2.40	20	
Calcium	211	0.500	mg/L	100.00	110	101	70-130	2.25	20	
Boron	2.58	0.0500	mg/L	1.0000	1.66	92.3	70-130	1.53	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0411 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BBL0411-MSD2)		**Source: MBL0192-16**		Prepared: 12/21/2016 Analyzed: 12/22/2016						
Lithium	0.989	0.0500	mg/L	1.0000	0.0205	96.9	75-125	2.50	20	
Barium	1.88	0.0500	mg/L	1.0000	0.863	102	70-130	3.22	20	
Calcium	268	0.500	mg/L	100.00	162	106	70-130	3.34	20	
Boron	1.08	0.0500	mg/L	1.0000	0.135	94.6	70-130	1.80	20	
Batch BBL0504 - EPA 200.2, EPA 3005										
Blank (BBL0504-BLK1)				Prepared: 12/28/2016 Analyzed: 01/04/2017						
Barium	<0.0500	0.0500	mg/L							
Boron	<0.0500	0.0500	mg/L							
Calcium	<1.25	1.25	mg/L							
Lithium	<0.0500	0.0500	mg/L							
LCS (BBL0504-BS1)				Prepared: 12/28/2016 Analyzed: 01/04/2017						
Boron	0.952	0.0500	mg/L	1.0000		95.2	85-115			
Calcium	99.8	1.25	mg/L	100.00		99.8	85-115			
Lithium	0.982	0.0500	mg/L	1.0000		98.2	85-115			
Barium	0.984	0.0500	mg/L	1.0000		98.4	85-115			
Duplicate (BBL0504-DUP1)		**Source: MBL0225-02**		Prepared: 12/28/2016 Analyzed: 01/04/2017						
Boron	<0.0500	0.0500	mg/L		<0.0500				20	
Lithium	0.0178	0.0500	mg/L		0.0182			2.21	20	
Calcium	81.5	1.25	mg/L		80.9			0.673	20	
Barium	0.0854	0.0500	mg/L		0.0847			0.876	20	
Matrix Spike (BBL0504-MS1)		**Source: MBL0225-02**		Prepared: 12/28/2016 Analyzed: 01/04/2017						
Boron	0.978	0.0500	mg/L	1.0000	<0.0500	97.8	70-130			
Lithium	0.978	0.0500	mg/L	1.0000	0.0182	96.0	75-125			
Calcium	181	1.25	mg/L	100.00	80.9	100	70-130			
Barium	1.04	0.0500	mg/L	1.0000	0.0847	96.0	70-130			

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BBL0504 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BBL0504-MSD1)		**Source: MBL0225-02**		Prepared: 12/28/2016 Analyzed: 01/04/2017						
Lithium	1.01	0.0500	mg/L	1.0000	0.0182	99.1	75-125	3.11	20	
Barium	1.08	0.0500	mg/L	1.0000	0.0847	99.6	70-130	3.45	20	
Calcium	187	1.25	mg/L	100.00	80.9	106	70-130	3.26	20	
Boron	1.02	0.0500	mg/L	1.0000	<0.0500	102	70-130	4.02	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCA0033 - EPA 245.1, EPA 7470A										
Blank (BCA0033-BLK1)				Prepared & Analyzed: 01/04/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCA0033-BS1)				Prepared & Analyzed: 01/04/2017						
Mercury	2.56	0.200	ug/L	3.0000		85.4	85-115			
Duplicate (BCA0033-DUP1)		**Source: MBL0192-06**		Prepared & Analyzed: 01/04/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCA0033-DUP2)		**Source: MBL0192-07**		Prepared & Analyzed: 01/04/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCA0033-MS1)		**Source: MBL0192-06**		Prepared & Analyzed: 01/04/2017						
Mercury	2.66	0.200	ug/L	3.0000	<0.200	88.7	70-130			
Matrix Spike (BCA0033-MS2)		**Source: MBL0192-07**		Prepared & Analyzed: 01/04/2017						
Mercury	2.56	0.200	ug/L	3.0000	<0.200	85.3	70-130			
Matrix Spike Dup (BCA0033-MSD1)		**Source: MBL0192-06**		Prepared & Analyzed: 01/04/2017						
Mercury	2.60	0.200	ug/L	3.0000	<0.200	86.8	70-130	2.11	20	
Matrix Spike Dup (BCA0033-MSD2)		**Source: MBL0192-07**		Prepared & Analyzed: 01/04/2017						
Mercury	2.51	0.200	ug/L	3.0000	<0.200	83.8	70-130	1.77	20	
Batch BCA0034 - EPA 245.1, EPA 7470A										
Blank (BCA0034-BLK1)				Prepared & Analyzed: 01/04/2017						
Mercury	<0.200	0.200	ug/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCA0034 - EPA 245.1, EPA 7470A										
LCS (BCA0034-BS1)				Prepared & Analyzed: 01/04/2017						
Mercury	2.57	0.200	ug/L	3.0000		85.5	85-115			
Duplicate (BCA0034-DUP1)		**Source: MBL0192-21**		Prepared & Analyzed: 01/04/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCA0034-DUP2)		**Source: MBL0192-22**		Prepared & Analyzed: 01/04/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCA0034-MS1)		**Source: MBL0192-21**		Prepared & Analyzed: 01/04/2017						
Mercury	2.66	0.200	ug/L	3.0000	<0.200	88.5	70-130			
Matrix Spike (BCA0034-MS2)		**Source: MBL0192-22**		Prepared & Analyzed: 01/04/2017						
Mercury	2.56	0.200	ug/L	3.0000	<0.200	85.5	70-130			
Matrix Spike Dup (BCA0034-MSD1)		**Source: MBL0192-21**		Prepared & Analyzed: 01/04/2017						
Mercury	2.63	0.200	ug/L	3.0000	<0.200	87.6	70-130	1.06	20	
Matrix Spike Dup (BCA0034-MSD2)		**Source: MBL0192-22**		Prepared & Analyzed: 01/04/2017						
Mercury	2.56	0.200	ug/L	3.0000	<0.200	85.4	70-130	0.137	20	
Batch BCA0133 - EPA 245.1, EPA 7470A										
Blank (BCA0133-BLK1)				Prepared & Analyzed: 01/09/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCA0133-BS1)				Prepared & Analyzed: 01/09/2017						
Mercury	2.43	0.200	ug/L	3.0000		81.0	85-115			M_LCS

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCA0133 - EPA 245.1, EPA 7470A										
Duplicate (BCA0133-DUP1)		**Source: MBL0225-02**		Prepared & Analyzed: 01/09/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCA0133-DUP2)		**Source: MBL0225-03**		Prepared & Analyzed: 01/09/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCA0133-MS1)		**Source: MBL0225-02**		Prepared & Analyzed: 01/09/2017						
Mercury	2.62	0.200	ug/L	3.0000	<0.200	87.4	70-130			
Matrix Spike (BCA0133-MS2)		**Source: MBL0225-03**		Prepared & Analyzed: 01/09/2017						
Mercury	2.58	0.200	ug/L	3.0000	<0.200	86.0	70-130			
Matrix Spike Dup (BCA0133-MSD1)		**Source: MBL0225-02**		Prepared & Analyzed: 01/09/2017						
Mercury	2.60	0.200	ug/L	3.0000	<0.200	86.7	70-130	0.716	20	
Matrix Spike Dup (BCA0133-MSD2)		**Source: MBL0225-03**		Prepared & Analyzed: 01/09/2017						
Mercury	2.61	0.200	ug/L	3.0000	<0.200	86.9	70-130	1.09	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 06:32

Qualifiers and Definitions

M_TTT	Sample received at the lab outside of required hold time.
M_LCS	The recovery of this analyte in the LCS was outside the control limits. The batch was accepted based on acceptable MS and MSD that meet the LCS criteria.
M_D-RL	The RPD for the sample duplicate was outside of QC acceptance limits due to<RL.
M_B-01	This analyte was found in the method blank, which was possibly contaminated in the lab during preparation. The reporting limit was raised due to the contamination.
Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 2

2020054

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR-Dec. 2016	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Rinse	WT				12/13/16	1350		4	1	1	2						Y			
2	P-150						1430		4	1	1	2						Y			
3	P-152d						1540		4	1	1	2						Y			
4	P-130						1640		4	1	1	2						Y			
5	P-131	WT				12/14/16	0950		4	1	1	2						Y			
6	P-151						1040		4	1	1	2						Y			
7	P-153						1130		4	1	1	2						Y			
8	P-154d						1240		4	1	1	2						Y			
9	P-165						1335		4	1	1	2						Y			
10	P-132						1430		4	1	1	2						Y			
11	P-17						1600		4	1	1	2						Y			
12	P-158						1650		4	1	1	2						Y			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1.) marked HNO3 bottles filtered and unfiltered	David Anderson/Pace	12/16/16	1200		12/16/16	12:20	1	Y	N	Y

ORIGINAL

2.6°C

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 12/14/16

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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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

2020055

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR-Dec. 2016	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-125	WT				12/19/16	1200		4	1	1	2							✓		
2	P-141						1250		4	1	1	2							✓		
3	P-134						1350		4	1	1	2							✓		
4	P-120						1440		4	1	1	2							✓		
5	P-156						1550		4	1	1	2							✓		
6	P-01a-1						1640		4	1	1	2							✓		
7	P-155	WT				12/20/16	0930		4	1	1	2							✓		
8	P-162						1110		4	1	1	2							✓		
9	P-163						1220		4	1	1	2							✓		
10	P-164						1320		4	1	1	2							✓		
11																					
12	DJA	12/20/16																			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
1. marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	12/20/16	1440	[illegible]	12/20/16	1450	3.3°C	X	N	X

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 12/20/16

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

IRGun M400841

F-ALL-Q-020rev.07, 15-May-2007

pHstrips MB00508

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Page: 2 of 2

2020056

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Dorkets	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR-Dec. 2016	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-157	WT				12/15/16	0920		4	1	1	2						✓	✓		
2	P-23						1025		4	1	1	2						✓	✓		
3	P-22						1120		4	1	1	2						✓	✓		
4	P-74-1						1210		4	1	1	2						✓	✓		
5	P-73a-1						1320		4	1	1	2						✓	✓		
6	P-138A						1440		4	1	1	2						✓	✓		
7	P-137A						1530		4	1	1	2						✓	✓		
8	P-117						1630		4	1	1	2						✓	✓		
9	Duplicate						1630		4	1	1	2						✓	✓		
10	P-98	WT				12/16/16	0855		4	1	1	2						✓	✓		
11	P-75-1						0940		4	1	1	2						✓	✓		
12	P-97						1030		4	1	1	2						✓	✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
① marked HNO3 bottles filtered and unfiltered	David Anderson/Pace	12-16-16	1200		12/16/16	12:20	1	Y	N	Y

IR gun 1400841 ORIGINAL

pHstrips mB00508 2.6 °C

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 12-16-16

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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

January 25, 2017

Mr. David Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Dear Mr. Anderson:
Enclosed are the analytical results for sample(s) received by the laboratory on December 21, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Bob Michels
bob.michels@pacelabs.com
Project Manager

Enclosures

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Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10373901001	P-150	Water	12/13/16 14:30	12/21/16 09:00
10373901002	P-152a	Water	12/13/16 15:40	12/21/16 09:00
10373901003	P-130	Water	12/13/16 16:40	12/21/16 09:00
10373901004	P-131	Water	12/14/16 09:50	12/21/16 09:00
10373901005	P-151	Water	12/14/16 10:40	12/21/16 09:00
10373901006	P-153	Water	12/14/16 11:30	12/21/16 09:00
10373901007	P-154a	Water	12/14/16 12:40	12/21/16 09:00
10373901008	P-165	Water	12/14/16 13:35	12/21/16 09:00
10373901009	P-132	Water	12/14/16 14:30	12/21/16 09:00
10373901010	P-17	Water	12/14/16 16:00	12/21/16 09:00
10373901011	P-158	Water	12/14/16 16:50	12/21/16 09:00
10373901012	P-157	Water	12/15/16 09:20	12/21/16 09:00
10373901013	P-23	Water	12/15/16 10:25	12/21/16 09:00
10373901014	P-22	Water	12/15/16 11:20	12/21/16 09:00
10373901015	P-74-1	Water	12/15/16 12:10	12/21/16 09:00
10373901016	P-73a-1	Water	12/15/16 13:20	12/21/16 09:00
10373901017	P-138A	Water	12/15/16 14:40	12/21/16 09:00
10373901018	P-137A	Water	12/15/16 15:30	12/21/16 09:00
10373901019	P-117	Water	12/15/16 16:30	12/21/16 09:00
10373901020	P-98	Water	12/16/16 08:55	12/21/16 09:00
10373901021	P-75-1	Water	12/16/16 09:40	12/21/16 09:00
10373901022	P-97	Water	12/16/16 10:30	12/21/16 09:00
10373901023	P-125	Water	12/19/16 12:00	12/21/16 09:00
10373901024	P-141	Water	12/19/16 12:50	12/21/16 09:00
10373901025	P-134	Water	12/19/16 13:50	12/21/16 09:00
10373901026	P-120	Water	12/19/16 14:40	12/21/16 09:00
10373901027	P-156	Water	12/19/16 15:50	12/21/16 09:00
10373901028	P-01a-1	Water	12/19/16 16:40	12/21/16 09:00
10373901029	P-155	Water	12/20/16 09:30	12/21/16 09:00
10373901030	P-162	Water	12/20/16 11:10	12/21/16 09:00
10373901031	P-163	Water	12/20/16 12:20	12/21/16 09:00
10373901032	P-164	Water	12/20/16 13:20	12/21/16 09:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10373901001	P-150	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901002	P-152a	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901003	P-130	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901004	P-131	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901005	P-151	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901006	P-153	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901007	P-154a	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901008	P-165	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901009	P-132	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901010	P-17	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901011	P-158	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901012	P-157	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901013	P-23	EPA 903.1	WRR	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901014	**P-22**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901015	**P-74-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901016	**P-73a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901017	**P-138A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901018	**P-137A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901019	**P-117**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901020	**P-98**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
10373901021	**P-75-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
10373901022	**P-97**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
10373901023	**P-125**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
10373901024	**P-141**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
10373901025	**P-134**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Total Radium Calculation	RMK	1	PASI-PA
10373901026	**P-120**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
10373901027	**P-156**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
10373901028	**P-01a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
10373901029	**P-155**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
10373901030	**P-162**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
10373901031	**P-163**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
10373901032	**P-164**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

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(612)607-1700

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Sample: P-150 **Lab ID: 10373901001** Collected: 12/13/16 14:30 Received: 12/21/16 09:00 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 ± 0.526 (1.09) C:NA T:95%**	pCi/L	01/20/17 19:33	13982-63-3	
Radium-228	EPA 904.0	**0.822 ± 0.486 (0.904) C:71% T:86%**	pCi/L	01/21/17 16:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.822 ± 1.01 (1.99)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-152a **Lab ID: 10373901002** Collected: 12/13/16 15:40 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.076 ± 0.392 (0.907) C:NA T:94%**	pCi/L	01/20/17 19:33	13982-63-3	
Radium-228	EPA 904.0	**0.823 ± 0.483 (0.891) C:66% T:90%**	pCi/L	01/21/17 16:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.823 ± 0.875 (1.80)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-130 **Lab ID: 10373901003** Collected: 12/13/16 16:40 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0773 ± 0.401 (0.832) C:NA T:97%**	pCi/L	01/20/17 19:33	13982-63-3	
Radium-228	EPA 904.0	**0.800 ± 0.500 (0.954) C:67% T:94%**	pCi/L	01/21/17 16:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.877 ± 0.901 (1.79)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-131 **Lab ID: 10373901004** Collected: 12/14/16 09:50 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.417 ± 0.435 (1.18) C:NA T:85%**	pCi/L	01/20/17 19:56	13982-63-3	
Radium-228	EPA 904.0	**0.890 ± 0.478 (0.859) C:72% T:90%**	pCi/L	01/21/17 16:40	15262-20-1	
Total Radium	Total Radium Calculation	**0.890 ± 0.913 (2.04)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-151 **Lab ID: 10373901005** Collected: 12/14/16 10:40 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.231 ± 0.622 (1.15) C:NA T:92%**	pCi/L	01/20/17 19:56	13982-63-3	
Radium-228	EPA 904.0	**1.31 ± 0.526 (0.822) C:73% T:88%**	pCi/L	01/21/17 16:40	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Sample: P-151 **Lab ID: 10373901005** Collected: 12/14/16 10:40 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**1.54 ± 1.15 (1.97)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-153 **Lab ID: 10373901006** Collected: 12/14/16 11:30 Received: 12/21/16 09:00 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 ± 0.402 (0.901) C:NA T:90%**	pCi/L	01/20/17 19:56	13982-63-3	
Radium-228	EPA 904.0	**0.739 ± 0.540 (1.06) C:67% T:79%**	pCi/L	01/21/17 16:40	15262-20-1	
Total Radium	Total Radium Calculation	**0.739 ± 0.942 (1.96)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-154a **Lab ID: 10373901007** Collected: 12/14/16 12:40 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0886 ± 0.626 (1.25) C:NA T:88%**	pCi/L	01/20/17 19:56	13982-63-3	
Radium-228	EPA 904.0	**0.756 ± 0.506 (0.979) C:71% T:85%**	pCi/L	01/21/17 16:40	15262-20-1	
Total Radium	Total Radium Calculation	**0.845 ± 1.13 (2.23)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-165 **Lab ID: 10373901008** Collected: 12/14/16 13:35 Received: 12/21/16 09:00 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 ± 0.372 (0.930) C:NA T:91%**	pCi/L	01/20/17 19:33	13982-63-3	
Radium-228	EPA 904.0	**0.575 ± 0.457 (0.912) C:69% T:90%**	pCi/L	01/21/17 16:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.575 ± 0.829 (1.84)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-132 **Lab ID: 10373901009** Collected: 12/14/16 14:30 Received: 12/21/16 09:00 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 ± 0.327 (0.665) C:NA T:97%**	pCi/L	01/20/17 19:33	13982-63-3	
Radium-228	EPA 904.0	**0.382 ± 0.458 (0.969) C:69% T:81%**	pCi/L	01/21/17 16:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.382 ± 0.785 (1.63)**	pCi/L	01/23/17 08:45	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Sample: P-17 **Lab ID: 10373901010** Collected: 12/14/16 16:00 Received: 12/21/16 09:00 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 ± 0.496 (1.05) C:NA T:89%**	pCi/L	01/20/17 19:33	13982-63-3	
Radium-228	EPA 904.0	**1.13 ± 0.529 (0.901) C:70% T:86%**	pCi/L	01/21/17 16:41	15262-20-1	
Total Radium	Total Radium Calculation	**1.13 ± 1.03 (1.95)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-158 **Lab ID: 10373901011** Collected: 12/14/16 16:50 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.248 ± 0.487 (1.17) C:NA T:85%**	pCi/L	01/20/17 19:33	13982-63-3	
Radium-228	EPA 904.0	**0.733 ± 0.532 (1.05) C:65% T:88%**	pCi/L	01/21/17 16:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.733 ± 1.02 (2.22)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-157 **Lab ID: 10373901012** Collected: 12/15/16 09:20 Received: 12/21/16 09:00 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 ± 0.528 (1.10) C:NA T:96%**	pCi/L	01/20/17 20:16	13982-63-3	
Radium-228	EPA 904.0	**0.459 ± 0.495 (1.03) C:64% T:84%**	pCi/L	01/21/17 16:42	15262-20-1	
Total Radium	Total Radium Calculation	**0.459 ± 1.02 (2.13)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-23 **Lab ID: 10373901013** Collected: 12/15/16 10:25 Received: 12/21/16 09:00 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 ± 0.619 (1.15) C:NA T:85%**	pCi/L	01/20/17 20:16	13982-63-3	
Radium-228	EPA 904.0	**2.68 ± 0.825 (1.03) C:68% T:73%**	pCi/L	01/21/17 16:42	15262-20-1	
Total Radium	Total Radium Calculation	**2.92 ± 1.44 (2.18)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-22 **Lab ID: 10373901014** Collected: 12/15/16 11:20 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.238 ± 0.412 (0.736) C:NA T:90%**	pCi/L	01/20/17 20:16	13982-63-3	
Radium-228	EPA 904.0	**0.518 ± 0.475 (0.964) C:67% T:76%**	pCi/L	01/21/17 16:42	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Sample: P-22 **Lab ID: 10373901014** Collected: 12/15/16 11:20 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.756 ± 0.887 (1.70)**	pCi/L	01/23/17 08:45	7440-14-4	

Sample: P-74-1 **Lab ID: 10373901015** Collected: 12/15/16 12:10 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.20 ± 0.766 (0.962) C:NA T:90%**	pCi/L	01/20/17 20:16	13982-63-3	
Radium-228	EPA 904.0	**5.11 ± 1.21 (1.01) C:64% T:86%**	pCi/L	01/21/17 16:42	15262-20-1	
Total Radium	Total Radium Calculation	**6.31 ± 1.98 (1.97)**	pCi/L	01/23/17 08:57	7440-14-4	

Sample: P-73a-1 **Lab ID: 10373901016** Collected: 12/15/16 13:20 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.076 ± 0.346 (0.705) C:NA T:96%**	pCi/L	01/20/17 19:57	13982-63-3	
Radium-228	EPA 904.0	**1.33 ± 0.518 (0.778) C:69% T:91%**	pCi/L	01/21/17 16:42	15262-20-1	
Total Radium	Total Radium Calculation	**1.33 ± 0.864 (1.48)**	pCi/L	01/23/17 08:57	7440-14-4	

Sample: P-138A **Lab ID: 10373901017** Collected: 12/15/16 14:40 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.084 ± 0.383 (0.902) C:NA T:88%**	pCi/L	01/20/17 19:57	13982-63-3	
Radium-228	EPA 904.0	**1.12 ± 0.512 (0.865) C:63% T:85%**	pCi/L	01/21/17 19:22	15262-20-1	
Total Radium	Total Radium Calculation	**1.12 ± 0.895 (1.77)**	pCi/L	01/23/17 08:57	7440-14-4	

Sample: P-137A **Lab ID: 10373901018** Collected: 12/15/16 15:30 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.163 ± 0.392 (0.980) C:NA T:86%**	pCi/L	01/20/17 20:16	13982-63-3	
Radium-228	EPA 904.0	**0.0557 ± 0.420 (0.907) C:65% T:81%**	pCi/L	01/21/17 19:22	15262-20-1	
Total Radium	Total Radium Calculation	**0.0557 ± 0.812 (1.89)**	pCi/L	01/23/17 08:57	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Sample: P-117 **Lab ID: 10373901019** Collected: 12/15/16 16:30 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.233 ± 0.457 (1.09) C:NA T:89%**	pCi/L	01/20/17 20:16	13982-63-3	
Radium-228	EPA 904.0	**0.685 ± 0.472 (0.890) C:59% T:87%**	pCi/L	01/21/17 19:21	15262-20-1	
Total Radium	Total Radium Calculation	**0.685 ± 0.929 (1.98)**	pCi/L	01/23/17 08:57	7440-14-4	

Sample: P-98 **Lab ID: 10373901020** Collected: 12/16/16 08:55 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.086 ± 0.504 (1.12) C:NA T:88%**	pCi/L	01/20/17 20:28	13982-63-3	
Radium-228	EPA 904.0	**0.868 ± 0.464 (0.813) C:69% T:86%**	pCi/L	01/21/17 19:21	15262-20-1	
Total Radium	Total Radium Calculation	**0.868 ± 0.968 (1.93)**	pCi/L	01/23/17 08:57	7440-14-4	

Sample: P-75-1 **Lab ID: 10373901021** Collected: 12/16/16 09:40 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.140 ± 0.515 (1.11) C:NA T:91%**	pCi/L	01/19/17 10:10	13982-63-3	
Radium-228	EPA 904.0	**0.387 ± 0.378 (0.776) C:72% T:80%**	pCi/L	01/18/17 15:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.387 ± 0.893 (1.89)**	pCi/L	01/20/17 11:59	7440-14-4	

Sample: P-97 **Lab ID: 10373901022** Collected: 12/16/16 10:30 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0709 ± 0.323 (0.192) C:NA T:90%**	pCi/L	01/19/17 10:10	13982-63-3	
Radium-228	EPA 904.0	**1.05 ± 0.586 (1.09) C:71% T:71%**	pCi/L	01/18/17 15:47	15262-20-1	
Total Radium	Total Radium Calculation	**1.12 ± 0.909 (1.28)**	pCi/L	01/20/17 11:59	7440-14-4	

Sample: P-125 **Lab ID: 10373901023** Collected: 12/19/16 12:00 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.133 ± 0.304 (0.716) C:NA T:98%**	pCi/L	01/19/17 10:10	13982-63-3	
Radium-228	EPA 904.0	**0.670 ± 0.434 (0.818) C:72% T:76%**	pCi/L	01/18/17 15:47	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Sample: P-125 **Lab ID: 10373901023** Collected: 12/19/16 12:00 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.670 ± 0.738 (1.53)**	pCi/L	01/20/17 11:59	7440-14-4	

Sample: P-141 **Lab ID: 10373901024** Collected: 12/19/16 12:50 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.135 ± 0.308 (0.496) C:NA T:96%**	pCi/L	01/19/17 10:22	13982-63-3	
Radium-228	EPA 904.0	**0.142 ± 0.323 (0.717) C:75% T:86%**	pCi/L	01/18/17 15:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.277 ± 0.631 (1.21)**	pCi/L	01/20/17 11:59	7440-14-4	

Sample: P-134 **Lab ID: 10373901025** Collected: 12/19/16 13:50 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.428 ± 0.733 (1.28) C:NA T:85%**	pCi/L	01/25/17 11:17	13982-63-3	
Radium-228	EPA 904.0	**0.585 ± 0.350 (0.643) C:81% T:82%**	pCi/L	01/18/17 15:47	15262-20-1	
Total Radium	Total Radium Calculation	**1.01 ± 1.08 (1.92)**	pCi/L	01/25/17 16:35	7440-14-4	

Sample: P-120 **Lab ID: 10373901026** Collected: 12/19/16 14:40 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**3.27 ± 1.26 (0.950) C:NA T:65%**	pCi/L	01/19/17 10:22	13982-63-3	
Radium-228	EPA 904.0	**3.47 ± 0.859 (0.708) C:71% T:76%**	pCi/L	01/18/17 15:48	15262-20-1	
Total Radium	Total Radium Calculation	**6.74 ± 2.12 (1.66)**	pCi/L	01/20/17 11:59	7440-14-4	

Sample: P-156 **Lab ID: 10373901027** Collected: 12/19/16 15:50 Received: 12/21/16 09:00 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 ± 0.336 (0.684) C:NA T:87%**	pCi/L	01/19/17 10:23	13982-63-3	
Radium-228	EPA 904.0	**0.668 ± 0.419 (0.771) C:71% T:73%**	pCi/L	01/18/17 15:48	15262-20-1	
Total Radium	Total Radium Calculation	**0.668 ± 0.755 (1.46)**	pCi/L	01/20/17 11:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Sample: P-01a-1 **Lab ID: 10373901028** Collected: 12/19/16 16:40 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.214 ± 0.326 (0.525) C:NA T:94%**	pCi/L	01/19/17 10:23	13982-63-3	
Radium-228	EPA 904.0	**0.343 ± 0.395 (0.828) C:68% T:78%**	pCi/L	01/18/17 15:48	15262-20-1	
Total Radium	Total Radium Calculation	**0.557 ± 0.721 (1.35)**	pCi/L	01/20/17 11:59	7440-14-4	

Sample: P-155 **Lab ID: 10373901029** Collected: 12/20/16 09:30 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.232 ± 0.353 (0.568) C:NA T:87%**	pCi/L	01/19/17 10:23	13982-63-3	
Radium-228	EPA 904.0	**0.869 ± 0.386 (0.581) C:72% T:77%**	pCi/L	01/18/17 15:48	15262-20-1	
Total Radium	Total Radium Calculation	**1.10 ± 0.739 (1.15)**	pCi/L	01/20/17 11:59	7440-14-4	

Sample: P-162 **Lab ID: 10373901030** Collected: 12/20/16 11:10 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.152 ± 0.347 (0.559) C:NA T:88%**	pCi/L	01/19/17 10:23	13982-63-3	
Radium-228	EPA 904.0	**0.788 ± 0.489 (0.901) C:75% T:62%**	pCi/L	01/18/17 15:48	15262-20-1	
Total Radium	Total Radium Calculation	**0.940 ± 0.836 (1.46)**	pCi/L	01/20/17 11:59	7440-14-4	

Sample: P-163 **Lab ID: 10373901031** Collected: 12/20/16 12:20 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0697 ± 0.318 (0.513) C:NA T:90%**	pCi/L	01/19/17 10:53	13982-63-3	
Radium-228	EPA 904.0	**0.179 ± 0.319 (0.699) C:72% T:82%**	pCi/L	01/18/17 15:48	15262-20-1	
Total Radium	Total Radium Calculation	**0.249 ± 0.637 (1.21)**	pCi/L	01/20/17 11:59	7440-14-4	

Sample: P-164 **Lab ID: 10373901032** Collected: 12/20/16 13:20 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.206 ± 0.313 (0.823) C:NA T:96%**	pCi/L	01/19/17 10:40	13982-63-3	
Radium-228	EPA 904.0	**0.291 ± 0.300 (0.614) C:73% T:82%**	pCi/L	01/18/17 15:49	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Sample: P-164 **Lab ID: 10373901032** Collected: 12/20/16 13:20 Received: 12/21/16 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.291 ± 0.613 (1.44)**	pCi/L	01/20/17 11:59	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

QC Batch: 245973 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 10373901021, 10373901022, 10373901023, 10373901024, 10373901026, 10373901027, 10373901028, 10373901029, 10373901030, 10373901031, 10373901032

METHOD BLANK: 1209822 Matrix: Water
Associated Lab Samples: 10373901021, 10373901022, 10373901023, 10373901024, 10373901026, 10373901027, 10373901028, 10373901029, 10373901030, 10373901031, 10373901032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0677 ± 0.309 (0.498) C:NA T:97%	pCi/L	01/19/17 10:10	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

QC Batch: 245963 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 10373901001, 10373901002, 10373901003, 10373901004, 10373901005, 10373901006, 10373901007, 10373901008, 10373901009, 10373901010, 10373901011, 10373901012, 10373901013, 10373901014, 10373901015, 10373901016, 10373901017, 10373901018, 10373901019, 10373901020

METHOD BLANK: 1209781 Matrix: Water
Associated Lab Samples: 10373901001, 10373901002, 10373901003, 10373901004, 10373901005, 10373901006, 10373901007, 10373901008, 10373901009, 10373901010, 10373901011, 10373901012, 10373901013, 10373901014, 10373901015, 10373901016, 10373901017, 10373901018, 10373901019, 10373901020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.607 ± 0.475 (0.558) C:NA T:94%	pCi/L	01/20/17 19:33	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

QC Batch: 245964 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 10373901001, 10373901002, 10373901003, 10373901004, 10373901005, 10373901006, 10373901007, 10373901008, 10373901009, 10373901010, 10373901011, 10373901012, 10373901013, 10373901014, 10373901015, 10373901016, 10373901017, 10373901018, 10373901019, 10373901020

METHOD BLANK: 1209782 Matrix: Water
Associated Lab Samples: 10373901001, 10373901002, 10373901003, 10373901004, 10373901005, 10373901006, 10373901007, 10373901008, 10373901009, 10373901010, 10373901011, 10373901012, 10373901013, 10373901014, 10373901015, 10373901016, 10373901017, 10373901018, 10373901019, 10373901020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.416 ± 0.437 (0.910) C:68% T:92%	pCi/L	01/21/17 16:39	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

QC Batch: 246753 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 10373901025

METHOD BLANK: 1213373 Matrix: Water
Associated Lab Samples: 10373901025

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.218 ± 0.378 (0.953) C:NA T:100%	pCi/L	01/25/17 11:01	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

QC Batch: 245975 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 10373901021, 10373901022, 10373901023, 10373901024, 10373901025, 10373901026, 10373901027, 10373901028, 10373901029, 10373901030, 10373901031, 10373901032

METHOD BLANK: 1209829 Matrix: Water
Associated Lab Samples: 10373901021, 10373901022, 10373901023, 10373901024, 10373901025, 10373901026, 10373901027, 10373901028, 10373901029, 10373901030, 10373901031, 10373901032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.373 ± 0.322 (0.643) C:73% T:88%	pCi/L	01/18/17 15:48	

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QUALIFIERS

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10373901001	P-150	EPA 903.1	245963		
10373901002	P-152a	EPA 903.1	245963		
10373901003	P-130	EPA 903.1	245963		
10373901004	P-131	EPA 903.1	245963		
10373901005	P-151	EPA 903.1	245963		
10373901006	P-153	EPA 903.1	245963		
10373901007	P-154a	EPA 903.1	245963		
10373901008	P-165	EPA 903.1	245963		
10373901009	P-132	EPA 903.1	245963		
10373901010	P-17	EPA 903.1	245963		
10373901011	P-158	EPA 903.1	245963		
10373901012	P-157	EPA 903.1	245963		
10373901013	P-23	EPA 903.1	245963		
10373901014	P-22	EPA 903.1	245963		
10373901015	P-74-1	EPA 903.1	245963		
10373901016	P-73a-1	EPA 903.1	245963		
10373901017	P-138A	EPA 903.1	245963		
10373901018	P-137A	EPA 903.1	245963		
10373901019	P-117	EPA 903.1	245963		
10373901020	P-98	EPA 903.1	245963		
10373901021	P-75-1	EPA 903.1	245973		
10373901022	P-97	EPA 903.1	245973		
10373901023	P-125	EPA 903.1	245973		
10373901024	P-141	EPA 903.1	245973		
10373901025	P-134	EPA 903.1	246753		
10373901026	P-120	EPA 903.1	245973		
10373901027	P-156	EPA 903.1	245973		
10373901028	P-01a-1	EPA 903.1	245973		
10373901029	P-155	EPA 903.1	245973		
10373901030	P-162	EPA 903.1	245973		
10373901031	P-163	EPA 903.1	245973		
10373901032	P-164	EPA 903.1	245973		
10373901001	P-150	EPA 904.0	245964		
10373901002	P-152a	EPA 904.0	245964		
10373901003	P-130	EPA 904.0	245964		
10373901004	P-131	EPA 904.0	245964		
10373901005	P-151	EPA 904.0	245964		
10373901006	P-153	EPA 904.0	245964		
10373901007	P-154a	EPA 904.0	245964		
10373901008	P-165	EPA 904.0	245964		
10373901009	P-132	EPA 904.0	245964		
10373901010	P-17	EPA 904.0	245964		
10373901011	P-158	EPA 904.0	245964		
10373901012	P-157	EPA 904.0	245964		
10373901013	P-23	EPA 904.0	245964		
10373901014	P-22	EPA 904.0	245964		
10373901015	P-74-1	EPA 904.0	245964		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10373901016	P-73a-1	EPA 904.0	245964		
10373901017	P-138A	EPA 904.0	245964		
10373901018	P-137A	EPA 904.0	245964		
10373901019	P-117	EPA 904.0	245964		
10373901020	P-98	EPA 904.0	245964		
10373901021	P-75-1	EPA 904.0	245975		
10373901022	P-97	EPA 904.0	245975		
10373901023	P-125	EPA 904.0	245975		
10373901024	P-141	EPA 904.0	245975		
10373901025	P-134	EPA 904.0	245975		
10373901026	P-120	EPA 904.0	245975		
10373901027	P-156	EPA 904.0	245975		
10373901028	P-01a-1	EPA 904.0	245975		
10373901029	P-155	EPA 904.0	245975		
10373901030	P-162	EPA 904.0	245975		
10373901031	P-163	EPA 904.0	245975		
10373901032	P-164	EPA 904.0	245975		
10373901001	P-150	Total Radium Calculation	247093		
10373901002	P-152a	Total Radium Calculation	247093		
10373901003	P-130	Total Radium Calculation	247093		
10373901004	P-131	Total Radium Calculation	247093		
10373901005	P-151	Total Radium Calculation	247093		
10373901006	P-153	Total Radium Calculation	247093		
10373901007	P-154a	Total Radium Calculation	247093		
10373901008	P-165	Total Radium Calculation	247093		
10373901009	P-132	Total Radium Calculation	247093		
10373901010	P-17	Total Radium Calculation	247093		
10373901011	P-158	Total Radium Calculation	247093		
10373901012	P-157	Total Radium Calculation	247093		
10373901013	P-23	Total Radium Calculation	247093		
10373901014	P-22	Total Radium Calculation	247093		
10373901015	P-74-1	Total Radium Calculation	247096		
10373901016	P-73a-1	Total Radium Calculation	247096		
10373901017	P-138A	Total Radium Calculation	247096		
10373901018	P-137A	Total Radium Calculation	247096		
10373901019	P-117	Total Radium Calculation	247096		
10373901020	P-98	Total Radium Calculation	247096		
10373901021	P-75-1	Total Radium Calculation	246983		
10373901022	P-97	Total Radium Calculation	246983		
10373901023	P-125	Total Radium Calculation	246983		
10373901024	P-141	Total Radium Calculation	246983		
10373901025	P-134	Total Radium Calculation	247483		
10373901026	P-120	Total Radium Calculation	246983		
10373901027	P-156	Total Radium Calculation	246983		
10373901028	P-01a-1	Total Radium Calculation	246983		
10373901029	P-155	Total Radium Calculation	246983		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 16-1407 Xcel-ShercoCCR Dec2016
Pace Project No.: 10373901

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10373901030	**P-162**	Total Radium Calculation	246983		
10373901031	**P-163**	Total Radium Calculation	246983		
10373901032	**P-164**	Total Radium Calculation	246983		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

10373901

Page: 1 of 3

2020089

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 16-1407, Xcel-Sherco CCR
Project Number: Dec. 2016

Section C Invoice Information:

Attention: C.J. Ruikkie
Company Name:
Address:
Pace Quote Reference: DJA
Pace Project Manager: Jennifer Anderson
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-150		WT				12/13/16	1430		2		2						✓	✓		001
2	P-152A							1540		2		2						✓	✓		002
3	P-130							1640		2		2						✓	✓		003
4	P-131		WT				12/14/16	0950		2		2						✓	✓		004
5	P-151							1040		2		2						✓	✓		005
6	P-153							1130		2		2						✓	✓		006
7	P-154A							1240		2		2						✓	✓		007
8	P-165							1335		2		2						✓	✓		008
9	P-132							1430		2		2						✓	✓		009
10	P-17							1600		2		2						✓	✓		010
11	P-158							1650		2		2						✓	✓		011
12																					012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
(1) client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson Pace	12/21/16	0900	BL Pace	12/21/16	9:00	6.8 5.9 4.9 6.2 5.8 7.1	N	N	Y

(1) RA-226 EPA 903.1 ORIGINAL
RA-228 EPA 904.0

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 12-14-16

Page 4 of 31

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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

10373901

Page: 2 of 3

2020091

Section A Required Client Information:
Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:
Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 16-1407 Xcel-ShercoCCR
Project Number: Dec. 2016

Section C Invoice Information:
Attention: C.J. Ruikkie
Company Name:
Address:
Pace Quote Reference: DJA
Pace Project Manager: Jennifer Anderson
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER
Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-157	WT				12/15/16	0920		2			2						✓	✓		012
2	P-23						1025		2			2						✓	✓		013
3	P-22						1120		2			2						✓	✓		014
4	P-74-1						1210		2			2						✓	✓		015
5	P-73d-1						1320		2			2						✓	✓		016
6	P-138A						1440		2			2						✓	✓		017
7	P-137A						1530		2			2						✓	✓		018
8	P-117	↓				↓	1630		2			2						✓	✓		019
9	P-98	WT				12/16/16	0855		2			2						✓	✓		020
10	P-75-1						0940		2			2						✓	✓		021
11	P-97	↓				↓	1030		2			2						✓	✓		022
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① client needs to analyze for: Radium 226 + 228 pCi/L combined.	David Anderson / Pace	12/21/16	0900	Pace	12/21/16	9:00	6.8	N	N	Y
							5.9			
							4.9			
							6.2			
							5.8			
							7.1			

① RA-226 EPA 903.1 ORIGINAL
RA-228 EPA 904.0

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 12-16-16

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

1037901

Page: 3 of 3

2020092

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 16-1407 Xcel-Sherco CCR
Project Number: Dec. 2016

Section C Invoice Information:

Attention: C.J. Ruikkie
Company Name:
Address:
Pace Quote Reference: DJA
Pace Project Manager: Jennifer Anderson
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226EPA903.1	RA-228EPA904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-125	WT				12/19/16	1200		2		2							✓	✓		023
2	P-141						1250		2		2							✓	✓		024
3	P-134						1350		2		2							✓	✓		025
4	P-120						1440		2		2							✓	✓		026
5	P-156						1550		2		2							✓	✓		027
6	P-01d-1						1640		2		2							✓	✓		028
7	P-155	WT				12/20/16	0930		2		2							✓	✓		029
8	P-162						1110		2		2							✓	✓		030
9	P-163						1220		2		2							✓	✓		031
10	P-164						1320		2		2							✓	✓		032
11																					
12		DJA		12/20/16																	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
(1) client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson/Pace	12/21/16	0900	[illegible] Pace	12/21/16	9:00	6.8 5.9 4.9 6.7 5.8 7.1	N	N	Y

(1) RA-226EPA 903.1 ORIGINAL
RA-228EPA 904.0

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 12/20/16

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 12Dec2016 Page 1 of 2
	Document No.: F-MN-L-213-rev.19	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Xcel Energy

Project #: WO# : 10373901

10373901

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☒Pace ☐SpeeDee ☐Other:_____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☒No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☒None ☐Other:_____ **Temp Blank?** ☐Yes ☒No

Thermometer Used: ☒151401163 ☐151401164

Type of Ice: ☐Wet ☐Blue ☒None ☐Samples on ice, cooling process has begun

Cooler Temp Read (°C): _____ **Cooler Temp Corrected (°C):** see COC. **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.0 **Date and Initials of Person Examining Contents:** Bm 12/21/16

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒Yes	☐No		1.
Chain of Custody Filled Out?	☒Yes	☐No		2.
Chain of Custody Relinquished?	☒Yes	☐No		3.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time?	☒Yes	☐No		5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No		6.
Rush Turn Around Time Requested?	☐Yes	☒No		7.
Sufficient Volume?	☒Yes	☐No		8.
Correct Containers Used?	☒Yes	☐No		9.
-Pace Containers Used?	☒Yes	☐No		
Containers Intact?	☒Yes	☐No		10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☒Yes	☐No		12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation have been checked?	☒Yes	☐No	☐N/A	13. ☒HNO_3 ☐H_2SO_4 ☐NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	Bm 12/21/16 ☒Yes	☒No	☐N/A	Sample # 2-2 01-32
	☐Yes	☐No	☒N/A	Initial when completed: Bm Lot # of added preservative: 1116060
Headspace in VOA Vials (>6mm)?	☐Yes	☐No	☒N/A	14.
Trip Blank Present?	☐Yes	☐No	☒N/A	15.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: Temp okay for RadChem methods

Project Manager Review: _____ **Date:** 12/21/2016

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

SCUR Exceptions: **Workorder #:** 10373901

Issue	Sample ID	Container Type/#

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH Upon Receipt	Date Preservation Adjusted	Time Preservation Adjusted	Amount of Additional Preservative Added	Lot # of Preservative Added	pH After Adjustment	Initials
P-120	HNO_3	3.5	12/21/16	1000	2mL	1116060	1	BM

Chain of Custody

WO#:30206473

Pace Analytical®
www.pacelabs.com

Workorder: 10373901 **Workorder Name:** 16-1407 Xcel-ShercoCCR Dec2016 **Owner Received Date:** 12/21/2016 **Results Requested By:** 1/20/2017

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-1700	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Requested Analysis: Rad 226/Rad 228 / Combined 226/228	226 by 903.1	228 by 904.0										LAB USE ONLY
1	P-150	PS	12/13/2016 14:30	10373901001	Water	X						X												001
2	P-152a	PS	12/13/2016 15:40	10373901002	Water	X						X												002
3	P-130	PS	12/13/2016 16:40	10373901003	Water	X						X												003
4	P-131	PS	12/14/2016 09:50	10373901004	Water	X						X												004
5	P-151	PS	12/14/2016 10:40	10373901005	Water	X						X												005
6	P-153	PS	12/14/2016 11:30	10373901006	Water	X						X												006
7	P-154a	PS	12/14/2016 12:40	10373901007	Water	X						X												007
8	P-165	PS	12/14/2016 13:35	10373901008	Water	X						X												008
9	P-132	PS	12/14/2016 14:30	10373901009	Water	X						X												009
10	P-17	PS	12/14/2016 16:00	10373901010	Water	X						X												010
11	P-158	PS	12/14/2016 16:50	10373901011	Water	X						X												011
12	P-157	PS	12/15/2016 09:20	10373901012	Water	X						X												012
13	P-23	PS	12/15/2016 10:25	10373901013	Water	X						X												013
14	P-22	PS	12/15/2016 11:20	10373901014	Water	X						X												014
15	P-74-1	PS	12/15/2016 12:10	10373901015	Water	X						X												015
16	P-73a-1	PS	12/15/2016 13:20	10373901016	Water	X						X												016
17	P-138A	PS	12/15/2016 14:40	10373901017	Water	X						X												017
18	P-137A	PS	12/15/2016 15:30	10373901018	Water	X						X												018
19	P-117	PS	12/15/2016 16:30	10373901019	Water	X						X												019

Chain of Custody

30206473

Pace Analytical®
www.pacelabs.com

Workorder: 10373901 **Workorder Name:** 16-1407 Xcel-ShercoCCR Dec2016 **Owner Received Date:** 12/21/2016 **Results Requested By:** 1/20/2017

Report To

Jennifer Anderson
Pace Analytical Minnesota
1700 Elm Street
Suite 200
Minneapolis, MN 55414
Phone (612)607-1700

Subcontract To

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

Requested Analysis

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Rad 226/Rad 228 / Combined 226/228	LAB USE ONLY
20	P-98	PS	12/16/2016 08:55	10373901020	Water	2	X	020
21	P-75-1	PS	12/16/2016 09:40	10373901021	Water	2	X	021
22	P-97	PS	12/16/2016 10:30	10373901022	Water	2	X	022
23	P-125	PS	12/19/2016 12:00	10373901023	Water	2	X	023
24	P-141	PS	12/19/2016 12:50	10373901024	Water	2	X	024
25	P-134	PS	12/19/2016 13:50	10373901025	Water	2	X	025
26	P-120	PS	12/19/2016 14:40	10373901026	Water	2	X	026
27	P-156	PS	12/19/2016 15:50	10373901027	Water	2	X	027
28	P-01a-1	PS	12/19/2016 16:40	10373901028	Water	2	X	028
29	P-155	PS	12/20/2016 09:30	10373901029	Water	2	X	029
30	P-162	PS	12/20/2016 11:10	10373901030	Water	2	X	030
31	P-163	PS	12/20/2016 12:20	10373901031	Water	2	X	031
32	P-164	PS	12/20/2016 13:20	10373901032	Water	2	X	032

Transfers	Released By	Date/Time	Received By	Date/Time
1	AC Pace	12/21/16 1126	Alyna R Muchoney Pace	12/22/16 1300
2				
3				

Comments

Cooler Temperature on Receipt N/A °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

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

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: PaaMN Project # 30206473

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 780920349579

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

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

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

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ARM 12/22/16

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Filtered volume received for Dissolved tests			✓	12.
All containers needing preservation have been checked.	✓			13. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: ARM Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	14.
Trip Blank Present:			✓	15.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: ARM Date: 12/22/16

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

February 2017

Field Datasheets and Laboratory Reports

Xcel Energy – Sherco CCR, Feb. 2017
Field Proj. # 17-0159

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 2/20/17 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value	Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units	ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.97	20.0	0740	DJA
Buffer: 7.0 units	ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.04	20.0	0740	DJA
Buffer: 10.0 units	ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.10	20.0	0740	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value	Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.06	20.0	0750	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value	Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.12	11.5	1730	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 1000

Cond Std: 1000 umhos/cm
Ricca - Lot #: 4606B22
Exp Date: 06/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1001	20.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
106	20.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0755 / 0800
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1735 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1020 Temp (°C) 11.5 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA 2/20/17 Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 2/20/17

Xcel Energy – Sherco CCR, Feb. 2017
Field Proj. # 17-0159

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 2/20/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	238	Secondary Source Std. Value (mV)	238
Mfg.	ORP Std. (Zobells)	Mfg.	ORP Std. (Zobells)
Lot No.	YSI #15G100067	Lot No.	16L100376
Exp Date	07/13/17	Exp. Date	11/14/2021
Meter Result (mV)	238	Meter Result (mV)	240
Temp (°C)	20.0	Temp (°C)	20.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0805 / 0810

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time	1740	Initials	DJA	Std. Value	248
Result (mV)	251	Temp (°C)	11.5	CCV: (Pass) / Fail	

☒ Calibration Standard ☐ Secondary Source Standard *(CCV acceptable if ± 10 mV of standard value)*

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)	DJA 2/20/17	CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard *(CCV acceptable if ± 10 mV of standard value)*

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)		CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard *(CCV acceptable if ± 10 mV of standard value)*

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	20.0 (°C)	Ambient Temp:	20.0 (°C)
Barometric Pressure	28.93 (in. Hg)	Barometric Pressure	28.93 (in. Hg)
Barometric Pressure	734.82 (mm Hg)	Barometric Pressure	734.82 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)	97	ICV Meter Result (%)	96

IC/ICV Time 0730/0735 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster DB-26 GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time	1725	Initials	DJA	Barometric Pressure	727.71	(in. Hg / mm Hg)
Calibration Value	96 (%)	Result	97 (%)	CCV: (Pass) / Fail		*(CCV acceptable if ± 2% of Calibration Value)*

CCV Time		Initials		Barometric Pressure		(in. Hg / mm Hg)
Calibration Value	(%)	Result	DJA 2/20/17 (%)	CCV: Pass / Fail		*(CCV acceptable if ± 2% of Calibration Value)*

CCV Time		Initials		Barometric Pressure		(in. Hg / mm Hg)
Calibration Value	(%)	Result	(%)	CCV: Pass / Fail		*(CCV acceptable if ± 2% of Calibration Value)*

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 2/20/17

Xcel Energy – Sherco CCR, Feb. 2017
Field Proj. # 17-0159

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 2/20/17 Page 3 of 3

Meter Make WTW Meter ID Turb 350 IR

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C582192/C579784 C579786/C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	99	998	IC Time 0820 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.03	9.9	99	997	ICV Time 0825 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.03	9.9	98	997	CCV Time 1745 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 2/20/17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 2/20/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel Energy – Sherco CCR, Feb. 2017
Field proj. # 17-0159

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 2/21/17 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.97	3.0	0710	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.12	3.0	0710	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.30	3.0	0710	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.13	3.0	0720	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.14	10.0	1735	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value: 1000		Low Standard Value: 100	
Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18* Exp. Date		Cond Std: 100 umhos/cm Ricca - Lot #: 4605D87 *Exp Date: 05/31/18* Exp. Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1003	3.0	105	3.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0725 / 0727
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1740 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1022 Temp (°C) 10.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA Initials _____ Std. Value _____ ☐ High Standard ☐ Low Standard
Result (µS/cm) _____ Temp (°C) 2/21/17 CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time _____ Initials _____ Std. Value _____ ☐ High Standard ☐ Low Standard
Result (µS/cm) _____ Temp (°C) _____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 2/21/17

Xcel Energy – Sherco CCR, Feb. 2017
Field Proj. # 17-0159

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 2/21/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)		Meter Make YSI Sonde ID #5
Calibration Std. Value (mV)	260	Secondary Source Std. Value (mV)	260	
Mfg.	ORP Std. (Zobells)	Mfg.	ORP Std. (Zobells)	IC/ICV Time 0730 / 0735
Lot No.	YSI #15G100067	Lot No.	16L100376	Initials DJA
Exp Date	07/13/17	Exp. Date	11/14/2021	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)	ICV: (Pass) / Fail
261	3.0	260	3.0	ICV acceptable if ± 10 mV of standard value.

CCV Time 1745	Initials DJA	Std. Value 250	☑ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 255	Temp (°C) 10.0	CCV: (Pass) / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 2/21/17	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation		IC/ICV Time 0705 Initials DJA
Ambient Temp:	15.0 (°C)	Ambient Temp:	14.0 (°C)	DO Meter ID YSI Sonde #5
Barometric Pressure	28.82 (in. Hg)	Barometric Pressure	28.82 (In. Hg)	Barometer ID Skymaster DB-26 GW
Barometric Pressure	732.03 (mm Hg)	Barometric Pressure	732.03 (mm Hg)	
Calibration Value[1]	96 (%)	Calibration Value[1]	96 (%)	ICV: (Pass) / Fail
IC Meter Result (%)		ICV Meter Result (%)		(ICV/CCV acceptable if ± 2% of Calibration Value)
96		95		

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1730	Initials DJA	Barometric Pressure 728.98 (in. Hg / mm Hg)			
Calibration Value 96 (%)	Result 94 (%)	CCV: (Pass) / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 2/21/17 (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 2/21/17

Xcel Energy - Sherco CCR, Feb. 2017
Field Proj. # 17-0159

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 2/21/17 Page 3 of 3

Meter Make WTW Meter ID Turb 350 IR

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C582192/C579784 C579786/C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	9.8	98	999	IC Time 0740 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.8	97	998	ICV Time 0745 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	98	998	CCV Time 1750 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 2/21/17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 2/21/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel Energy – Sherco CCR, Feb. 2017
Field Proj. # 17-0159

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 2/22/17 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.96	3.0	0710	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.14	3.0	0710	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.28	3.0	0710	DJA

IC Slope (%) N/A (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.16	3.0	0720	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.09	9.0	1740	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 1000

Cond Std: 1000 umhos/cm
Ricca - Lot #: 4606B22
Exp Date: 06/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1001	3.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
110	3.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0725 / 0730
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1745 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1027 Temp (°C) 9.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA Initials 2/22/17 Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 2/22/17

Xcel Energy – Sherco CCR, Feb. 2017
Field Proj. #17-0159

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 2/22/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	260	Secondary Source Std. Value (mV)	260
Mfg.	ORP Std. (Zobells)	Mfg.	ORP Std. (Zobells)
Lot No.	YSI #15G100067	Lot No.	16L100376
Exp Date	07/13/17	Exp. Date	11/14/2021
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
260	3.0	262	3.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0735 / 0737

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1750	Initials DJA	Std. Value 251	☑ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 254	Temp (°C) 9.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 2/22/17	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	10.0 (°C)	Ambient Temp:	9.0 (°C)
Barometric Pressure	28.59 (in. Hg)	Barometric Pressure	28.59 (in. Hg)
Barometric Pressure	726.19 (mm Hg)	Barometric Pressure	726.19 (mm Hg)
Calibration Value[1]	96 (%)	Calibration Value[1]	96 (%)
IC Meter Result (%)		ICV Meter Result (%)	
96		96	

IC/ICV Time 0700 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster DB-26 GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1735	Initials DJA	Barometric Pressure 726.19 (in. Hg / mm Hg)			
Calibration Value 96 (%)	Result 95 (%)	CCV: (Pass) / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 2/22/17 (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		

Form Revised: 02/03/17

Lead Technician Signature: Dan Anderson Date: 2/22/17

Xcel Energy – Sherco CCR, Feb. 2017
Field Proj. # 17-0159

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 2/22/17 Page 3 of 3

Meter Make WTW Meter ID Turb 350 IR

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C582192/C579784 C579786/C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	98	998	IC Time 0745 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.8	98	997	ICV Time 0750 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.8	99	996	CCV Time 1800 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 2/22/17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 2/22/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel Energy – Sherco CCR, Feb. 2017
Field Proj. # 17-0159

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 2/23/17 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.95	3.0	0645	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.16	3.0	0645	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.28	3.0	0645	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.20	3.0	0655	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.20	3.0	1210	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 1000

Cond Std: 1000 umhos/cm
Ricca - Lot #: 4606B22
Exp Date: 06/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1004	3.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
108	3.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0700 / 0705
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1215 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1022 Temp (°C) 3.6 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA Initials 2/23/17 Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 2/23/17

Xcel Energy – Sherco CCR, Feb. 2017
Field Proj. # 17-0159

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 2/23/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	260	Secondary Source Std. Value (mV)	260
Mfg.	ORP Std. (Zobells)	Mfg.	ORP Std. (Zobells)
Lot No.	YSI #15G100067	Lot No.	16L100376
Exp Date	07/13/17	Exp. Date	11/14/2021
Meter Result (mV)	261	Meter Result (mV)	264
Temp (°C)	3.0	Temp (°C)	3.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0710 / 0713

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1220	Initials DJA	Std. Value 260	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 254	Temp (°C) 3.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 2/23/17	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	2.0 (°C)	Ambient Temp:	2.0 (°C)
Barometric Pressure	28.91 (in. Hg)	Barometric Pressure	28.91 (In. Hg)
Barometric Pressure	734.31 (mm Hg)	Barometric Pressure	734.31 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)	97	ICV Meter Result (%)	96

IC/ICV Time 0640 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster DB-26 GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 Inches Hg.

CCV Time 1205	Initials DJA	Barometric Pressure 735.84 (in. Hg / mm Hg)			
Calibration Value 97 (%)	Result 95 (%)	CCV: (Pass) / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 2/23/17 (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 2/23/17

Xcel Energy - Sherco CCR, Feb. 2017
Field Proj. # 17-0159

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 2/23/17 Page 3 of 3

Meter Make WTW Meter ID Turb 350 IR

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C582192/C579784 C579786/C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.8	98	997	IC Time 0720 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.8	97	998	ICV Time 0725 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.8	98	997	CCV Time 1225 Initials DJA CCV: (Pass) / Fail
CCV		DJA 2/23/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 2/23/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Feb. Project No. 17-0159

Monitoring Point ID P-01a-1 Labeled P-01A

Inside Diameter 2 (inches) Key # 2106 ☐ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 80.98 Feet

Static water level measurement before purging 76.52 Feet

Static water level measurement at time of sampling 76.52 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-22-17 Water Column 4.46 Feet

Time Purged 1130-1145 One Casing Volume 0.7 Gallons

Pump Rate 0.15 (GPM)/LPM Volume Purged 2.25 Gallons

Field Sampling Data

Date Sampled 2-22-17

Time Sampled 1200

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 7.9 (mg/l)

Spec. Cond. 570 (µmhos/cm) Turbidity 2.4 (NTU)

Temp. 8.0 (°C) (ORP) Eh 39 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 43° + partly cloudy, wind NE 5-10

Sample Description: clear + odorless

Observations: DJA 2/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp. (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1135	7.6	570	8.0	7.9	NA	38	0.75
1140	7.6	570	8.0	7.9	NA	38	1.50
1145	7.6	570	8.0	7.9	NA	39	2.25

DJA 2/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 2/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client XCel Energy Project Sherco CCR, Feb. Project No. 17-0159

Monitoring Point ID P-17 Labeled P17

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 58.76 Feet

Static water level measurement before purging 35.89 Feet

Static water level measurement at time of sampling 35.89 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-21-17 Water Column 22.87 Feet

Time Purged 1530-1615 One Casing Volume 3.7 Gallons

Pump Rate 0.25 (GPM) / LPM Volume Purged 11.25 Gallons

Field Sampling Data

Date Sampled 2-21-17

Time Sampled 1620

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 8.0 (mg/l)

Spec. Cond. 580 (µmhos/cm) Turbidity 6.3 (NTU)

Temp. 8.0 (°C) (ORP) Eh 46 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 53° + partly cloudy, wind SW 5

Sample Description: clear + odorless

Observations: DJA 2/21/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1545	7.7	590	8.0	8.0	NA	48	3.75
1600	7.7	580	8.0	8.0	NA	47	7.50
1615	7.8	580	8.0	8.0	NA	46	11.25
			DJA	2/21/17			

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 2/21/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Feb. Project No. 17-0159

Monitoring Point ID P-22 Labeled P-22

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 57.85 Feet

Static water level measurement before purging 38.73 Feet

Static water level measurement at time of sampling 38.73 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-21-17 Water Column 19.12 Feet

Time Purged 1145-1233 One Casing Volume 3.1 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 2-21-17

Time Sampled 1240

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 7.2 (mg/l)

Spec. Cond. 880 (µmhos/cm) Turbidity 9.2 (NTU)

Temp. 10.0 (°C) (ORP) Eh 61 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 45°+ sunny, wind S10

Sample Description: clear + odorless

Observations: DJA 2/21/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1201	7.5	870	10.0	7.3	NA	60	3.2
1217	7.5	880	10.0	7.3	NA	61	6.4
1233	7.5	880	10.0	7.2	NA	61	9.6
			DJA	2/21/17			

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 2/21/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Feb. Project No. 17-0159

Monitoring Point ID P-23 Labeled P-23

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 67.34 Feet

Static water level measurement before purging 40.58 Feet

Static water level measurement at time of sampling 40.58 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-21-17 Water Column 26.76 Feet

Time Purged 1250 - 1344 One Casing Volume 4.4 Gallons

Pump Rate 0.25 (GPM) / LPM Volume Purged 13.5 Gallons

Field Sampling Data

Date Sampled 2-21-17

Time Sampled 1350

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 9.7 (mg/l)

Spec. Cond. 720 (µmhos/cm) Turbidity 3.8 (NTU)

Temp. 10.0 (°C) (ORP) Eh 60 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 50°+ sunny, wind S10

Sample Description: clear + odorless

Observations: DJA 2/21/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp °C (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1308	7.6	740	9.5	9.8	NA	57	4.5
1326	7.6	730	10.0	9.8	NA	58	9.0
1344	7.6	720	10.0	9.7	NA	60	13.5

DJA 2/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 2/21/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project SherCoCCR, Feb. Project No. 17-0159

Monitoring Point ID P-152d Labeled 806318

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 42.18 Feet

Static water level measurement before purging 35.62 Feet

Static water level measurement at time of sampling 35.62 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-23-17 Water Column 6.56 Feet

Time Purged 1040-1058 One Casing Volume 1.1 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 3.6 Gallons

Field Sampling Data

Date Sampled 2-23-17

Time Sampled 1110

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 10.0 (mg/l)

Spec. Cond. 770 (µmhos/cm) Turbidity 5.8 (NTU)

Temp. 9.0 (°C) (ORP) Eh 53 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 34° + sunny, wind N10

Sample Description: clear + odorless

Observations: ~~DJA 2/23/17~~

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1046	7.6	780	9.0	10.4	NA	51	1.2
1052	7.6	770	9.0	10.1	NA	52	2.4
1058	7.6	770	9.0	10.0	NA	53	3.6
			DJA 2/23/17				

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 2/23/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client XCel Energy Project SherCo CCR, Feb. Project No. 17-0159

Monitoring Point ID P-155 Labeled 8/2964

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 85.47 Feet

Static water level measurement before purging 76.83 Feet

Static water level measurement at time of sampling 76.83 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-22-17 Water Column 8.64 Feet

Time Purged 1225-1246 One Casing Volume 1.4 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 2-22-17

Time Sampled 1300

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 8.0 (units) D.O 7.4 (mg/l)

Spec. Cond. 640 (µmhos/cm) Turbidity 68.4 (NTU)

Temp. 9.0 (°C) (ORP) Eh 17 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 46° + partly cloudy, wind NE 5-10

Sample Description: clear + odorless

Observations: DJA 2-22-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1232	8.0	650	9.0	7.3	NA	22	1.4
1239	8.0	640	9.0	7.4	NA	19	2.8
1246	8.0	640	9.0	7.4	NA	17	4.2

DJA 2/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 2/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client XCel Energy Project SherCo CCR, Feb. Project No. 17-0159

Monitoring Point ID P-156 Labeled 812965

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 85.53 Feet

Static water level measurement before purging 75.70 Feet

Static water level measurement at time of sampling 75.70 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-22-17 Water Column 9.83 Feet

Time Purged 1040 - 1104 One Casing Volume 1.6 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 2-22-17

Time Sampled 1110

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 9.2 (mg/l)

Spec. Cond. 510 (µmhos/cm) Turbidity 3.8 (NTU)

Temp. 8.0 (°C) (ORP) Eh 36 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 42° + cloudy, wind NE 5

Sample Description: clear + odorless

Observations: DJA 2/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1048	7.7	510	8.0	9.4	NA	36	1.6
1056	7.7	510	8.0	9.3	NA	36	3.2
1104	7.7	510	8.0	9.2	NA	36	4.8

DJA 2/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 2/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Feb. Project No. 17-0159

Monitoring Point ID P-157 Labeled 812966

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	49.06	Feet
Static water level measurement before purging	41.03	Feet
Static water level measurement at time of sampling	41.03	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 2-21-17

Time Purged 1400 - 1421

Pump Rate 0.2 (GPM) / LPM

Water Column 8.03 Feet

One Casing Volume 1.3 Gallons

Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 2-21-17

Time Sampled 1430

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 7.6 (mg/l)

Spec. Cond. 770 (µmhos/cm) Turbidity 141.7 (NTU)

Temp. 9.5 (°C) (ORP) Eh 62 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 52° & sunny, wind 5 10

Sample Description: clear & odorless

Observations:

DJA 2/21/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1407	7.5	790	9.5	7.8	NA	62	1.4
1414	7.4	770	9.5	7.6	NA	62	2.8
1421	7.4	770	9.5	7.6	NA	62	4.2

DJA 2/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 2/21/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Feb. Project No. 17-0159

Monitoring Point ID P-158 Labeled 812967

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 49.16 Feet

Static water level measurement before purging 38.65 Feet

Static water level measurement at time of sampling 38.65 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-21-17

Time Purged 1440 - 1507

Pump Rate 0.2 (GPM) / LPM

Water Column 10.51 Feet

One Casing Volume 1.7 Gallons

Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 2-21-17

Time Sampled 1515

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 10.8 (mg/l)

Spec. Cond. 660 (µmhos/cm) Turbidity 2.0 (NTU)

Temp. 9.0 (°C) (ORP) Eh 57 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 52° & partly cloudy, wind SW 10

Sample Description: clear & odorless

Observations:

DJA 2/21/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1449	7.6	670	9.0	11.0	NA	53	1.8
1458	7.5	660	9.0	10.9	NA	55	3.6
1507	7.5	660	9.0	10.8	NA	57	5.4

DJA 2/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 2/21/17

Amended Report

Original Report ID: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification #MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

11 January 2018

Charles A Donkers

Environmental Services-Water Minneapolis

250 Marquette Plaza

Minneapolis, MN 55401

RE: Sherco CCR

cc: Laboratory report re-created to only include wells in the Bottom Ash Pond CCR Groundwater Monitoring System. HSD 1/11/18

Enclosed are the results of analyses for samples received by the laboratory on 02/23/2017 13:49. If you have any questions concerning this report, please feel free to contact me.

I certify that this analysis report was prepared under my direction or supervision under a system designed to assure that qualified personnel analyzed the submitted samples. All protocols for analysis were followed as required by Minnesota Rules and the Applicable Management Plan.

Sincerely,

Steve Davis

Project Manager

Amended Report

Original Report ID: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Rinse		MCB0211-01	Water	02/20/2017 10:25	02/23/2017 13:49
P-22		MCB0211-14	Water	02/21/2017 12:40	02/23/2017 13:49
P-23		MCB0211-15	Water	02/21/2017 13:50	02/23/2017 13:49
P-157		MCB0211-16	Water	02/21/2017 14:30	02/23/2017 13:49
P-158		MCB0211-17	Water	02/21/2017 15:15	02/23/2017 13:49
P-17		MCB0211-18	Water	02/21/2017 16:20	02/23/2017 13:49
P-156		MCB0211-22	Water	02/22/2017 11:10	02/23/2017 13:49
P-01a-1		MCB0211-23	Water	02/22/2017 12:00	02/23/2017 13:49
P-155		MCB0211-24	Water	02/22/2017 13:00	02/23/2017 13:49
Duplicate		MCB0211-31	Water	02/23/2017 8:10	02/23/2017 13:49
P-152a		MCB0211-33	Water	02/23/2017 11:10	02/23/2017 13:49

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Rinse

MCB0211-01 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCC0006	3/1/17 7:27	3/1/17 14:23	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0006	3/1/17 7:27	3/1/17 14:23	EPA 300.0	CRL
Sulfate	< 1.00	1.00	mg/L		1	BCC0006	3/1/17 7:27	3/1/17 14:23	EPA 300.0	CRL
Wet Chemistry										
pH	6.40		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 9:13	SM 4500-H+ B	CRL
Total Dissolved Solids	< 20.0	20.0	mg/L		1	BCB0452	2/24/17 9:45	2/24/17 9:45	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 10:17	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 10:17	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 10:17	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 10:17	EPA 200.8	CRL
Chromium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 10:17	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 10:17	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 10:17	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 10:17	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 10:17	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 10:17	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 10:29	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 10:28	EPA 200.7	HRD
Calcium	< 0.500	0.500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 10:28	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 10:28	EPA 200.7	HRD

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Amended Report

Original Report ID: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Rinse

MCB0211-01 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0187	3/8/17 14:07	3/9/17 12:57	EPA 245.1, 7470A	HRD

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-22

MCB0211-14 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	23.9	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 11:43	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 11:43	EPA 300.0	CRL
Sulfate	216	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 11:43	EPA 300.0	CRL
Wet Chemistry										
pH	7.80		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 10:56	SM 4500-H+ B	CRL
Total Dissolved Solids	590	20.0	mg/L		1	BCB0468	2/27/17 9:06	2/27/17 9:06	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:42	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:42	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:42	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:42	EPA 200.8	CRL
Chromium	1.23	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:42	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:42	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:42	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:42	EPA 200.8	CRL
Selenium	13.1	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:42	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:42	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.32	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 11:54	EPA 200.7	HRD
Barium	0.0737	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 11:53	EPA 200.7	HRD
Calcium	110	0.500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 11:53	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 11:53	EPA 200.7	HRD

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Amended Report

Original Report ID: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-22

MCB0211-14 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0187	3/8/17 14:07	3/9/17 13:27	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-23

MCB0211-15 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	24.4	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 12:24	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 12:24	EPA 300.0	CRL
Sulfate	87.9	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 12:24	EPA 300.0	CRL
Wet Chemistry										
pH	7.87		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 11:02	SM 4500-H+ B	CRL
Total Dissolved Solids	378	20.0	mg/L		1	BCB0468	2/27/17 9:06	2/27/17 9:06	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.534	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:47	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:47	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:47	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:47	EPA 200.8	CRL
Chromium	1.06	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:47	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:47	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:47	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:47	EPA 200.8	CRL
Selenium	0.949	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:47	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:47	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.354	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 11:59	EPA 200.7	HRD
Barium	0.0541	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 11:58	EPA 200.7	HRD
Calcium	83.0	0.500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 11:58	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 11:58	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-23

MCB0211-15 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0187	3/8/17 14:07	3/9/17 13:29	EPA 245.1, 7470A	HRD

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1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-157

MCB0211-16 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	16.0	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 12:44	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 12:44	EPA 300.0	CRL
Sulfate	101	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 12:44	EPA 300.0	CRL
Wet Chemistry										
pH	7.70		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 11:09	SM 4500-H+ B	CRL
Total Dissolved Solids	452	20.0	mg/L		1	BCB0468	2/27/17 9:06	2/27/17 9:06	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.801	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:52	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:52	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:52	EPA 200.8	CRL
Cobalt	1.29	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:52	EPA 200.8	CRL
Chromium	6.93	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:52	EPA 200.8	CRL
Molybdenum	1.57	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:52	EPA 200.8	CRL
Lead	0.743	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:52	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:52	EPA 200.8	CRL
Selenium	2.22	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:52	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:52	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.273	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:04	EPA 200.7	HRD
Barium	0.0642	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:03	EPA 200.7	HRD
Calcium	94.1	0.500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:03	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:03	EPA 200.7	HRD

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-157

MCB0211-16 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0187	3/8/17 14:07	3/9/17 13:30	EPA 245.1, 7470A	HRD

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-158

MCB0211-17 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	5.55	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 13:05	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 13:05	EPA 300.0	CRL
Sulfate	103	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 13:05	EPA 300.0	CRL
Wet Chemistry										
pH	7.81		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 11:17	SM 4500-H+ B	CRL
Total Dissolved Solids	368	20.0	mg/L		1	BCB0468	2/27/17 9:06	2/27/17 9:06	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:57	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:57	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:57	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:57	EPA 200.8	CRL
Chromium	0.853	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:57	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:57	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:57	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:57	EPA 200.8	CRL
Selenium	1.86	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:57	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 11:57	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.307	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:10	EPA 200.7	HRD
Barium	0.0641	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:08	EPA 200.7	HRD
Calcium	84.6	0.500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:08	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:08	EPA 200.7	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-158

MCB0211-17 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0187	3/8/17 14:07	3/9/17 13:32	EPA 245.1, 7470A	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-17

MCB0211-18 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	26.7	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 13:25	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 13:25	EPA 300.0	CRL
Sulfate	35.5	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 13:25	EPA 300.0	CRL
Wet Chemistry										
pH	7.95		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 11:23	SM 4500-H+ B	CRL
Total Dissolved Solids	306	20.0	mg/L		1	BCB0468	2/27/17 9:06	2/27/17 9:06	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:02	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:02	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:02	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:02	EPA 200.8	CRL
Chromium	1.22	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:02	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:02	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:02	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:02	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:02	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:02	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:15	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:13	EPA 200.7	HRD
Calcium	73.0	0.500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:13	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:13	EPA 200.7	HRD

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-17

MCB0211-18 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0187	3/8/17 14:07	3/9/17 13:34	EPA 245.1, 7470A	HRD

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Minneapolis, MN 55043
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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-156

MCB0211-22 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	3.39	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 14:47	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 14:47	EPA 300.0	CRL
Sulfate	25.2	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 14:47	EPA 300.0	CRL
Wet Chemistry										
pH	7.98		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 11:59	SM 4500-H+ B	CRL
Total Dissolved Solids	232	20.0	mg/L		1	BCB0498	2/28/17 9:08	2/28/17 9:08	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:18	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:18	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:18	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:18	EPA 200.8	CRL
Chromium	0.801	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:18	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:18	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:18	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:18	EPA 200.8	CRL
Selenium	0.840	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:18	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:18	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.177	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:32	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:30	EPA 200.7	HRD
Calcium	57.2	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:30	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:30	EPA 200.7	HRD

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Amended Report

Original Report ID: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-156

MCB0211-22 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0190	3/8/17 14:12	3/9/17 14:02	EPA 245.1, 7470A	HRD

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Amended Report

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Minneapolis Testing Laboratory
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Minneapolis, MN 55043
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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-01a-1

MCB0211-23 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	9.55	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 15:07	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 15:07	EPA 300.0	CRL
Sulfate	90.3	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 15:07	EPA 300.0	CRL
Wet Chemistry										
pH	7.80		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 12:07	SM 4500-H+ B	CRL
Total Dissolved Solids	388	20.0	mg/L		1	BCB0498	2/28/17 9:08	2/28/17 9:08	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:33	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:33	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:33	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:33	EPA 200.8	CRL
Chromium	1.08	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:33	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:33	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:33	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:33	EPA 200.8	CRL
Selenium	5.69	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:33	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:33	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.724	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:46	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:45	EPA 200.7	HRD
Calcium	77.6	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:45	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:45	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-01a-1

MCB0211-23 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0190	3/8/17 14:12	3/9/17 14:07	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-155

MCB0211-24 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	14.6	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 17:11	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 17:11	EPA 300.0	CRL
Sulfate	169	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 17:11	EPA 300.0	CRL
Wet Chemistry										
pH	7.83		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 12:13	SM 4500-H+ B	CRL
Total Dissolved Solids	492	20.0	mg/L		1	BCB0498	2/28/17 9:08	2/28/17 9:08	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:38	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:38	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:38	EPA 200.8	CRL
Cobalt	0.555	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:38	EPA 200.8	CRL
Chromium	1.43	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:38	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:38	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:38	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:38	EPA 200.8	CRL
Selenium	4.49	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:38	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:38	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.84	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:52	EPA 200.7	HRD
Barium	0.0657	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:50	EPA 200.7	HRD
Calcium	90.1	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:50	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:50	EPA 200.7	HRD

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Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-155

MCB0211-24 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0190	3/8/17 14:12	3/9/17 14:09	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Duplicate

MCB0211-31 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 19:34	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 19:34	EPA 300.0	CRL
Sulfate	3.43	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 19:34	EPA 300.0	CRL
Wet Chemistry										
pH	8.19		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 13:05	SM 4500-H+ B	CRL
Total Dissolved Solids	100	20.0	mg/L		1	BCC0002	3/1/17 9:29	3/1/17 9:29	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.630	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:13	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:13	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:13	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:13	EPA 200.8	CRL
Chromium	0.752	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:13	EPA 200.8	CRL
Molybdenum	0.519	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:13	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:13	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:13	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:13	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:13	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:27	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:26	EPA 200.7	HRD
Calcium	25.7	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:26	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:26	EPA 200.7	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Duplicate

MCB0211-31 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0190	3/8/17 14:12	3/9/17 14:21	EPA 245.1, 7470A	HRD

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Amended Report

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1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-152a

MCB0211-33 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 20:14	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 20:14	EPA 300.0	CRL
Sulfate	10.2	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 20:14	EPA 300.0	CRL
Wet Chemistry										
pH	8.01		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 13:19	SM 4500-H+ B	CRL
Total Dissolved Solids	198	20.0	mg/L		1	BCC0002	3/1/17 9:29	3/1/17 9:29	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:33	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:33	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:33	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:33	EPA 200.8	CRL
Chromium	0.685	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:33	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:33	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:33	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:33	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:33	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:33	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:48	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:46	EPA 200.7	HRD
Calcium	52.7	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:46	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:46	EPA 200.7	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

P-152a

MCB0211-33 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0190	3/8/17 14:12	3/9/17 14:28	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0006 - Wet Prep										
Blank (BCC0006-BLK1)				Prepared & Analyzed: 03/01/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCC0006-BLK2)				Prepared & Analyzed: 03/01/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCC0006-BS1)				Prepared & Analyzed: 03/01/2017						
Chloride	24.3	1.00	mg/L	25.000		97.2	90-110			
Fluoride	5.02	0.750	mg/L	5.0000		100	90-110			
Sulfate	101	1.00	mg/L	100.00		101	90-110			
LCS (BCC0006-BS2)				Prepared & Analyzed: 03/01/2017						
Chloride	23.9	1.00	mg/L	25.000		95.7	90-110			
Fluoride	4.87	0.750	mg/L	5.0000		97.5	90-110			
Sulfate	98.9	1.00	mg/L	100.00		98.9	90-110			
LCS (BCC0006-BS3)				Prepared & Analyzed: 03/01/2017						
Chloride	24.5	1.00	mg/L	25.000		97.9	90-110			
Fluoride	5.11	0.750	mg/L	5.0000		102	90-110			
Sulfate	101	1.00	mg/L	100.00		101	90-110			
Duplicate (BCC0006-DUP1)		**Source: MCB0190-01**		Prepared & Analyzed: 03/01/2017						
Chloride	32.5	1.00	mg/L		32.7			0.656	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	80.9	1.00	mg/L		81.0			0.115	20	

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0006 - Wet Prep										
Duplicate (BCC0006-DUP2)		**Source: MCB0190-02**		Prepared & Analyzed: 03/01/2017						
Chloride	32.8	1.00	mg/L		32.8			0.171	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	80.4	1.00	mg/L		81.0			0.761	20	
Matrix Spike (BCC0006-MS1)		**Source: MCB0190-01**		Prepared & Analyzed: 03/01/2017						
Chloride	46.3	1.00	mg/L	12.500	32.7	108	80-120			
Fluoride	2.72	0.750	mg/L	2.5000	<0.750	109	80-120			
Sulfate	131	1.00	mg/L	50.000	81.0	100	80-120			
Matrix Spike (BCC0006-MS2)		**Source: MCB0190-02**		Prepared & Analyzed: 03/01/2017						
Chloride	46.3	1.00	mg/L	12.500	32.8	108	80-120			
Fluoride	2.69	0.750	mg/L	2.5000	<0.750	108	80-120			
Sulfate	129	1.00	mg/L	50.000	81.0	96.2	80-120			
Matrix Spike Dup (BCC0006-MSD1)		**Source: MCB0190-01**		Prepared & Analyzed: 03/01/2017						
Chloride	46.2	1.00	mg/L	12.500	32.7	108	80-120	0.158	20	
Fluoride	2.61	0.750	mg/L	2.5000	<0.750	104	80-120	4.32	20	
Sulfate	130	1.00	mg/L	50.000	81.0	99.0	80-120	0.466	20	
Matrix Spike Dup (BCC0006-MSD2)		**Source: MCB0190-02**		Prepared & Analyzed: 03/01/2017						
Chloride	46.3	1.00	mg/L	12.500	32.8	108	80-120	0.0951	20	
Fluoride	2.60	0.750	mg/L	2.5000	<0.750	104	80-120	3.36	20	
Sulfate	130	1.00	mg/L	50.000	81.0	98.5	80-120	0.892	20	
Batch BCC0035 - Wet Prep										
Blank (BCC0035-BLK1)				Prepared & Analyzed: 03/02/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0035 - Wet Prep										
Blank (BCC0035-BLK2)				Prepared & Analyzed: 03/02/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCC0035-BS1)				Prepared & Analyzed: 03/02/2017						
Chloride	24.1	1.00	mg/L	25.000		96.3	90-110			
Fluoride	4.88	0.750	mg/L	5.0000		97.5	90-110			
Sulfate	109	1.00	mg/L	100.00		109	90-110			
LCS (BCC0035-BS2)				Prepared & Analyzed: 03/02/2017						
Chloride	24.2	1.00	mg/L	25.000		96.9	90-110			
Fluoride	4.83	0.750	mg/L	5.0000		96.5	90-110			
Sulfate	99.4	1.00	mg/L	100.00		99.4	90-110			
LCS (BCC0035-BS3)				Prepared & Analyzed: 03/02/2017						
Chloride	25.5	1.00	mg/L	25.000		102	90-110			
Fluoride	5.05	0.750	mg/L	5.0000		101	90-110			
Sulfate	102	1.00	mg/L	100.00		102	90-110			
Duplicate (BCC0035-DUP1)		**Source: MCB0211-30**		Prepared & Analyzed: 03/02/2017						
Chloride	0.120	1.00	mg/L		0.128			6.45	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	3.39	1.00	mg/L		3.40			0.206	20	
Duplicate (BCC0035-DUP2)		**Source: MCB0211-31**		Prepared & Analyzed: 03/02/2017						
Chloride	0.124	1.00	mg/L		0.131			5.49	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	3.42	1.00	mg/L		3.43			0.292	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0035 - Wet Prep										
Matrix Spike (BCC0035-MS1)		**Source: MCB0211-30**		Prepared & Analyzed: 03/02/2017						
Chloride	13.9	1.00	mg/L	12.500	0.128	110	80-120			
Fluoride	2.67	0.750	mg/L	2.5000	<0.750	107	80-120			
Sulfate	54.5	1.00	mg/L	50.000	3.40	102	80-120			
Matrix Spike (BCC0035-MS2)		**Source: MCB0211-31**		Prepared & Analyzed: 03/02/2017						
Chloride	13.7	1.00	mg/L	12.500	0.131	108	80-120			
Fluoride	2.68	0.750	mg/L	2.5000	<0.750	107	80-120			
Sulfate	54.0	1.00	mg/L	50.000	3.43	101	80-120			
Matrix Spike Dup (BCC0035-MSD1)		**Source: MCB0211-30**		Prepared & Analyzed: 03/02/2017						
Chloride	12.5	1.00	mg/L	12.500	0.128	98.8	80-120	10.9	20	
Fluoride	2.42	0.750	mg/L	2.5000	<0.750	96.9	80-120	9.74	20	
Sulfate	54.8	1.00	mg/L	50.000	3.40	103	80-120	0.546	20	
Matrix Spike Dup (BCC0035-MSD2)		**Source: MCB0211-31**		Prepared & Analyzed: 03/02/2017						
Chloride	14.0	1.00	mg/L	12.500	0.131	111	80-120	2.40	20	
Fluoride	2.64	0.750	mg/L	2.5000	<0.750	105	80-120	1.77	20	
Sulfate	55.1	1.00	mg/L	50.000	3.43	103	80-120	2.05	20	
Batch BCC0087 - Wet Prep										
Blank (BCC0087-BLK1)				Prepared & Analyzed: 03/06/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCC0087-BS1)				Prepared & Analyzed: 03/06/2017						
Chloride	27.1	1.00	mg/L	25.000		109	90-110			
Fluoride	4.83	0.750	mg/L	5.0000		96.7	90-110			
Sulfate	102	1.00	mg/L	100.00		102	90-110			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0087 - Wet Prep										
LCS (BCC0087-BS2)				Prepared & Analyzed: 03/06/2017						
Chloride	27.1	1.00	mg/L	25.000		108	90-110			
Fluoride	5.00	0.750	mg/L	5.0000		99.9	90-110			
Sulfate	99.8	1.00	mg/L	100.00		99.8	90-110			
Duplicate (BCC0087-DUP1)		**Source: MCB0211-34**		Prepared & Analyzed: 03/06/2017						
Chloride	28.3	1.00	mg/L		28.5			0.680	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	24.7	1.00	mg/L		24.5			0.942	20	
Matrix Spike (BCC0087-MS1)		**Source: MCB0211-34**		Prepared & Analyzed: 03/06/2017						
Chloride	42.4	1.00	mg/L	12.500	28.5	112	80-120			
Fluoride	2.52	0.750	mg/L	2.5000	<0.750	101	80-120			
Sulfate	76.1	1.00	mg/L	50.000	24.5	103	80-120			
Matrix Spike Dup (BCC0087-MSD1)		**Source: MCB0211-34**		Prepared & Analyzed: 03/06/2017						
Chloride	42.7	1.00	mg/L	12.500	28.5	113	80-120	0.477	20	
Fluoride	2.44	0.750	mg/L	2.5000	<0.750	97.6	80-120	3.22	20	
Sulfate	77.7	1.00	mg/L	50.000	24.5	106	80-120	1.98	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCB0452 - Wet Prep										
Blank (BCB0452-BLK1)				Prepared & Analyzed: 02/24/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCB0452-DUP1)			**Source: MCB0211-02**	Prepared & Analyzed: 02/24/2017						
Total Dissolved Solids	322	20.0	mg/L		326			1.23	20	
Batch BCB0454 - Wet Prep										
LCS (BCB0454-BS1)				Prepared & Analyzed: 02/24/2017						
pH	7.06		pH Units	7.0000		101	90-110			
LCS (BCB0454-BS2)				Prepared & Analyzed: 02/24/2017						
pH	7.09		pH Units	7.0000		101	90-110			
Duplicate (BCB0454-DUP1)			**Source: MCB0211-02**	Prepared & Analyzed: 02/24/2017						
pH	7.68		pH Units		7.69			0.130	20	
Duplicate (BCB0454-DUP2)			**Source: MCB0211-11**	Prepared & Analyzed: 02/24/2017						
pH	7.75		pH Units		7.76			0.129	20	
Duplicate (BCB0454-DUP3)			**Source: MCB0211-21**	Prepared & Analyzed: 02/24/2017						
pH	8.03		pH Units		8.04			0.124	20	
Duplicate (BCB0454-DUP4)			**Source: MCB0211-31**	Prepared & Analyzed: 02/24/2017						
pH	8.19		pH Units		8.19			0.00	20	
Batch BCB0468 - Wet Prep										
Blank (BCB0468-BLK1)				Prepared & Analyzed: 02/27/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCB0468 - Wet Prep										
Duplicate (BCB0468-DUP1)		**Source: MCB0211-11**		Prepared & Analyzed: 02/27/2017						
Total Dissolved Solids	364	20.0	mg/L		368			1.09	20	
Batch BCB0498 - Wet Prep										
Blank (BCB0498-BLK1)				Prepared & Analyzed: 02/28/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCB0498-DUP1)		**Source: MCB0211-21**		Prepared & Analyzed: 02/28/2017						
Total Dissolved Solids	312	20.0	mg/L		320			2.53	20	
Batch BCC0002 - Wet Prep										
Blank (BCC0002-BLK1)				Prepared & Analyzed: 03/01/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCC0002-DUP1)		**Source: MCB0211-31**		Prepared & Analyzed: 03/01/2017						
Total Dissolved Solids	108	20.0	mg/L		100			7.69	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCB0503 - EPA 200.2, EPA 3005										
Blank (BCB0503-BLK1)				Prepared: 02/28/2017 Analyzed: 03/06/2017						
Arsenic	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
LCS (BCB0503-BS1)				Prepared: 02/28/2017 Analyzed: 03/06/2017						
Chromium	100	0.500	ug/L	100.00		100	85-115			
Cobalt	102	0.500	ug/L	100.00		102	85-115			
Thallium	103	0.500	ug/L	100.00		103	85-115			
Selenium	95.5	0.500	ug/L	100.00		95.5	85-115			
Antimony	98.7	0.500	ug/L	100.00		98.7	85-115			
Molybdenum	101	0.500	ug/L	100.00		101	85-115			
Lead	102	0.500	ug/L	100.00		102	85-115			
Arsenic	97.7	0.500	ug/L	100.00		97.7	85-115			
Beryllium	99.0	0.500	ug/L	100.00		99.0	85-115			
Cadmium	100	0.500	ug/L	100.00		100	85-115			
Duplicate (BCB0503-DUP1)		**Source: MCB0211-04**		Prepared: 02/28/2017 Analyzed: 03/06/2017						
Lead	0.132	0.500	ug/L		0.125			6.16	20	
Molybdenum	0.211	0.500	ug/L		0.167			23.5	20	M_D-RL
Cobalt	0.317	0.500	ug/L		0.292			8.11	20	
Selenium	0.188	0.500	ug/L		0.131			35.4	20	M_D-RL
Arsenic	0.673	0.500	ug/L		0.649			3.63	20	
Chromium	0.734	0.500	ug/L		0.677			8.07	20	
Antimony	0.133	0.500	ug/L		0.0496			91.4	20	M_D-RL
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Beryllium	0.0330	0.500	ug/L		<0.500				20	
Thallium	0.0343	0.500	ug/L		<0.500				20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCB0503 - EPA 200.2, EPA 3005										
Duplicate (BCB0503-DUP2)		**Source: MCB0211-05**		Prepared: 02/28/2017 Analyzed: 03/06/2017						
Arsenic	0.804	0.500	ug/L		0.804			0.00696	20	
Antimony	0.114	0.500	ug/L		0.0809			34.2	20	M_D-RL
Beryllium	0.00724	0.500	ug/L		<0.500				20	
Selenium	0.214	0.500	ug/L		0.187			13.9	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Molybdenum	0.421	0.500	ug/L		0.431			2.50	20	
Lead	0.433	0.500	ug/L		0.344			22.8	20	M_D-RL
Cobalt	0.736	0.500	ug/L		0.743			0.909	20	
Chromium	2.62	0.500	ug/L		2.63			0.345	20	
Thallium	0.00817	0.500	ug/L		<0.500				20	
Matrix Spike (BCB0503-MS1)		**Source: MCB0211-04**		Prepared: 02/28/2017 Analyzed: 03/06/2017						
Chromium	101	0.500	ug/L	100.00	0.677	100	70-130			
Selenium	98.6	0.500	ug/L	100.00	0.131	98.4	70-130			
Beryllium	102	0.500	ug/L	100.00	<0.500	102	70-130			
Cobalt	101	0.500	ug/L	100.00	0.292	101	70-130			
Molybdenum	101	0.500	ug/L	100.00	0.167	101	70-130			
Lead	95.8	0.500	ug/L	100.00	0.125	95.7	70-130			
Thallium	98.4	0.500	ug/L	100.00	<0.500	98.4	70-130			
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130			
Arsenic	103	0.500	ug/L	100.00	0.649	102	70-130			
Antimony	103	0.500	ug/L	100.00	0.0496	103	70-130			
Matrix Spike (BCB0503-MS2)		**Source: MCB0211-05**		Prepared: 02/28/2017 Analyzed: 03/06/2017						
Antimony	102	0.500	ug/L	100.00	0.0809	102	70-130			
Beryllium	102	0.500	ug/L	100.00	<0.500	102	70-130			
Lead	94.2	0.500	ug/L	100.00	0.344	93.8	70-130			
Thallium	96.2	0.500	ug/L	100.00	<0.500	96.2	70-130			
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130			
Arsenic	103	0.500	ug/L	100.00	0.804	103	70-130			
Cobalt	102	0.500	ug/L	100.00	0.743	101	70-130			
Chromium	104	0.500	ug/L	100.00	2.63	101	70-130			
Selenium	98.8	0.500	ug/L	100.00	0.187	98.6	70-130			
Molybdenum	101	0.500	ug/L	100.00	0.431	101	70-130			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCB0503 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCB0503-MSD1)		**Source: MCB0211-04**		Prepared: 02/28/2017 Analyzed: 03/06/2017						
Arsenic	103	0.500	ug/L	100.00	0.649	102	70-130	0.101	20	
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130	0.484	20	
Antimony	102	0.500	ug/L	100.00	0.0496	102	70-130	0.849	20	
Chromium	102	0.500	ug/L	100.00	0.677	101	70-130	0.985	20	
Thallium	97.5	0.500	ug/L	100.00	<0.500	97.5	70-130	0.914	20	
Cobalt	101	0.500	ug/L	100.00	0.292	101	70-130	0.243	20	
Beryllium	103	0.500	ug/L	100.00	<0.500	103	70-130	1.03	20	
Selenium	98.2	0.500	ug/L	100.00	0.131	98.0	70-130	0.386	20	
Lead	95.3	0.500	ug/L	100.00	0.125	95.2	70-130	0.503	20	
Molybdenum	99.4	0.500	ug/L	100.00	0.167	99.2	70-130	1.63	20	
Matrix Spike Dup (BCB0503-MSD2)		**Source: MCB0211-05**		Prepared: 02/28/2017 Analyzed: 03/06/2017						
Chromium	104	0.500	ug/L	100.00	2.63	102	70-130	0.465	20	
Molybdenum	102	0.500	ug/L	100.00	0.431	102	70-130	1.13	20	
Thallium	97.7	0.500	ug/L	100.00	<0.500	97.7	70-130	1.48	20	
Cobalt	103	0.500	ug/L	100.00	0.743	102	70-130	0.867	20	
Lead	95.9	0.500	ug/L	100.00	0.344	95.6	70-130	1.87	20	
Beryllium	101	0.500	ug/L	100.00	<0.500	101	70-130	0.587	20	
Selenium	99.6	0.500	ug/L	100.00	0.187	99.4	70-130	0.760	20	
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130	0.392	20	
Antimony	103	0.500	ug/L	100.00	0.0809	102	70-130	0.611	20	
Arsenic	103	0.500	ug/L	100.00	0.804	102	70-130	0.127	20	
Batch BCC0005 - EPA 200.2, EPA 3005										
Blank (BCC0005-BLK1)				Prepared: 03/01/2017 Analyzed: 03/07/2017						
Cobalt	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0005 - EPA 200.2, EPA 3005										
LCS (BCC0005-BS1)				Prepared: 03/01/2017 Analyzed: 03/07/2017						
Thallium	99.3	0.500	ug/L	100.00		99.3	85-115			
Beryllium	98.0	0.500	ug/L	100.00		98.0	85-115			
Cobalt	101	0.500	ug/L	100.00		101	85-115			
Cadmium	98.7	0.500	ug/L	100.00		98.7	85-115			
Molybdenum	98.1	0.500	ug/L	100.00		98.1	85-115			
Arsenic	98.4	0.500	ug/L	100.00		98.4	85-115			
Antimony	97.7	0.500	ug/L	100.00		97.7	85-115			
Selenium	95.1	0.500	ug/L	100.00		95.1	85-115			
Lead	97.5	0.500	ug/L	100.00		97.5	85-115			
Chromium	100	0.500	ug/L	100.00		100	85-115			
Duplicate (BCC0005-DUP1)		**Source: MCB0211-23**		Prepared: 03/01/2017 Analyzed: 03/07/2017						
Chromium	1.05	0.500	ug/L		1.08			2.26	20	
Selenium	5.93	0.500	ug/L		5.69			4.04	20	
Antimony	0.0837	0.500	ug/L		0.0530			45.0	20	M_D-RL
Arsenic	0.360	0.500	ug/L		0.398			9.95	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Lead	0.0526	0.500	ug/L		0.0183			96.7	20	M_D-RL
Molybdenum	0.199	0.500	ug/L		0.158			22.6	20	M_D-RL
Thallium	0.0412	0.500	ug/L		0.00659			145	20	M_D-RL
Beryllium	0.0381	0.500	ug/L		0.00896			124	20	M_D-RL
Cobalt	0.111	0.500	ug/L		0.100			10.4	20	
Duplicate (BCC0005-DUP2)		**Source: MCB0211-24**		Prepared: 03/01/2017 Analyzed: 03/07/2017						
Selenium	4.60	0.500	ug/L		4.49			2.51	20	
Lead	0.135	0.500	ug/L		0.137			2.18	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Molybdenum	0.263	0.500	ug/L		0.244			7.60	20	
Cobalt	0.573	0.500	ug/L		0.555			3.07	20	
Arsenic	0.451	0.500	ug/L		0.447			0.885	20	
Beryllium	0.0258	0.500	ug/L		0.0212			19.3	20	
Chromium	1.50	0.500	ug/L		1.43			4.90	20	
Thallium	0.0156	0.500	ug/L		0.0126			21.2	20	M_D-RL
Antimony	0.0902	0.500	ug/L		0.0862			4.61	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0005 - EPA 200.2, EPA 3005										
Matrix Spike (BCC0005-MS1)		**Source: MCB0211-23**		Prepared: 03/01/2017 Analyzed: 03/07/2017						
Molybdenum	99.0	0.500	ug/L	100.00	0.158	98.8	70-130			
Thallium	93.7	0.500	ug/L	100.00	0.00659	93.7	70-130			
Chromium	103	0.500	ug/L	100.00	1.08	102	70-130			
Selenium	103	0.500	ug/L	100.00	5.69	97.0	70-130			
Antimony	100	0.500	ug/L	100.00	0.0530	100	70-130			
Lead	90.7	0.500	ug/L	100.00	0.0183	90.7	70-130			
Arsenic	102	0.500	ug/L	100.00	0.398	101	70-130			
Cobalt	96.2	0.500	ug/L	100.00	0.100	96.1	70-130			
Beryllium	97.5	0.500	ug/L	100.00	0.00896	97.5	70-130			
Cadmium	97.1	0.500	ug/L	100.00	<0.500	97.1	70-130			
Matrix Spike (BCC0005-MS2)		**Source: MCB0211-24**		Prepared: 03/01/2017 Analyzed: 03/07/2017						
Selenium	101	0.500	ug/L	100.00	4.49	97.0	70-130			
Arsenic	105	0.500	ug/L	100.00	0.447	104	70-130			
Molybdenum	99.3	0.500	ug/L	100.00	0.244	99.1	70-130			
Antimony	100	0.500	ug/L	100.00	0.0862	100	70-130			
Cadmium	98.3	0.500	ug/L	100.00	<0.500	98.3	70-130			
Thallium	93.6	0.500	ug/L	100.00	0.0126	93.6	70-130			
Lead	91.7	0.500	ug/L	100.00	0.137	91.5	70-130			
Cobalt	97.3	0.500	ug/L	100.00	0.555	96.8	70-130			
Beryllium	95.8	0.500	ug/L	100.00	0.0212	95.7	70-130			
Chromium	103	0.500	ug/L	100.00	1.43	102	70-130			
Matrix Spike Dup (BCC0005-MSD1)		**Source: MCB0211-23**		Prepared: 03/01/2017 Analyzed: 03/07/2017						
Beryllium	98.3	0.500	ug/L	100.00	0.00896	98.3	70-130	0.811	20	
Lead	93.9	0.500	ug/L	100.00	0.0183	93.9	70-130	3.45	20	
Arsenic	105	0.500	ug/L	100.00	0.398	105	70-130	3.33	20	
Selenium	102	0.500	ug/L	100.00	5.69	96.7	70-130	0.271	20	
Cadmium	99.1	0.500	ug/L	100.00	<0.500	99.1	70-130	2.04	20	
Antimony	103	0.500	ug/L	100.00	0.0530	103	70-130	2.31	20	
Chromium	103	0.500	ug/L	100.00	1.08	102	70-130	0.325	20	
Molybdenum	101	0.500	ug/L	100.00	0.158	101	70-130	2.05	20	
Cobalt	98.4	0.500	ug/L	100.00	0.100	98.3	70-130	2.28	20	
Thallium	96.3	0.500	ug/L	100.00	0.00659	96.3	70-130	2.72	20	

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0005 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCC0005-MSD2)		**Source: MCB0211-24**		Prepared: 03/01/2017 Analyzed: 03/07/2017						
Molybdenum	99.8	0.500	ug/L	100.00	0.244	99.6	70-130	0.471	20	
Cadmium	100	0.500	ug/L	100.00	<0.500	100	70-130	1.81	20	
Cobalt	97.7	0.500	ug/L	100.00	0.555	97.2	70-130	0.413	20	
Chromium	102	0.500	ug/L	100.00	1.43	101	70-130	0.773	20	
Antimony	101	0.500	ug/L	100.00	0.0862	101	70-130	0.799	20	
Selenium	101	0.500	ug/L	100.00	4.49	96.5	70-130	0.454	20	
Arsenic	105	0.500	ug/L	100.00	0.447	105	70-130	0.552	20	
Lead	92.1	0.500	ug/L	100.00	0.137	91.9	70-130	0.413	20	
Thallium	94.5	0.500	ug/L	100.00	0.0126	94.5	70-130	0.986	20	
Beryllium	97.1	0.500	ug/L	100.00	0.0212	97.1	70-130	1.43	20	

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Amended Report

Original Report ID: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCB0502 - EPA 200.2, EPA 3005										
Blank (BCB0502-BLK1)				Prepared: 02/28/2017 Analyzed: 03/10/2017						
Lithium	<0.0500	0.0500	mg/L							
Barium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Boron	<0.0500	0.0500	mg/L							
LCS (BCB0502-BS1)				Prepared: 02/28/2017 Analyzed: 03/10/2017						
Lithium	10.6	0.0500	mg/L	10.000		106	85-115			
Barium	1.02	0.0500	mg/L	1.0000		102	85-115			
Boron	0.986	0.0500	mg/L	1.0000		98.6	85-115			
Calcium	102	0.500	mg/L	100.00		102	85-115			
Duplicate (BCB0502-DUP1)		**Source: MCB0211-02**		Prepared: 02/28/2017 Analyzed: 03/10/2017						
Boron	0.128	0.0500	mg/L		0.129			0.396	20	
Calcium	84.6	0.500	mg/L		83.9			0.786	20	
Barium	0.0996	0.0500	mg/L		0.0987			0.887	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Duplicate (BCB0502-DUP2)		**Source: MCB0211-03**		Prepared: 02/28/2017 Analyzed: 03/10/2017						
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Barium	0.0495	0.0500	mg/L		0.0487			1.75	20	
Boron	0.0664	0.0500	mg/L		0.0651			1.96	20	
Calcium	65.8	0.500	mg/L		64.7			1.67	20	
Matrix Spike (BCB0502-MS1)		**Source: MCB0211-02**		Prepared: 02/28/2017 Analyzed: 03/10/2017						
Calcium	186	0.500	mg/L	100.00	83.9	102	70-130			
Boron	1.12	0.0500	mg/L	1.0000	0.129	99.3	70-130			
Barium	1.10	0.0500	mg/L	1.0000	0.0987	100	70-130			
Lithium	10.3	0.0500	mg/L	10.000	<0.0500	103	75-125			

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCB0502 - EPA 200.2, EPA 3005										
Matrix Spike (BCB0502-MS2)		**Source: MCB0211-03**		Prepared: 02/28/2017 Analyzed: 03/10/2017						
Barium	1.06	0.0500	mg/L	1.0000	0.0487	102	70-130			
Lithium	10.5	0.0500	mg/L	10.000	<0.0500	105	75-125			
Calcium	172	0.500	mg/L	100.00	64.7	107	70-130			
Boron	1.07	0.0500	mg/L	1.0000	0.0651	100	70-130			
Matrix Spike Dup (BCB0502-MSD1)		**Source: MCB0211-02**		Prepared: 02/28/2017 Analyzed: 03/10/2017						
Lithium	10.4	0.0500	mg/L	10.000	<0.0500	104	75-125	1.34	20	
Barium	1.11	0.0500	mg/L	1.0000	0.0987	102	70-130	1.12	20	
Boron	1.17	0.0500	mg/L	1.0000	0.129	104	70-130	3.93	20	
Calcium	188	0.500	mg/L	100.00	83.9	104	70-130	1.05	20	
Matrix Spike Dup (BCB0502-MSD2)		**Source: MCB0211-03**		Prepared: 02/28/2017 Analyzed: 03/10/2017						
Lithium	10.4	0.0500	mg/L	10.000	<0.0500	104	75-125	1.02	20	
Calcium	168	0.500	mg/L	100.00	64.7	104	70-130	1.88	20	
Barium	1.07	0.0500	mg/L	1.0000	0.0487	102	70-130	0.149	20	
Boron	1.08	0.0500	mg/L	1.0000	0.0651	102	70-130	1.46	20	
Batch BCC0004 - EPA 200.2, EPA 3005										
Blank (BCC0004-BLK1)				Prepared: 03/01/2017 Analyzed: 03/10/2017						
Boron	<0.0500	0.0500	mg/L							
Barium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
LCS (BCC0004-BS1)				Prepared: 03/01/2017 Analyzed: 03/10/2017						
Boron	0.954	0.0500	mg/L	1.0000		95.4	85-115			
Lithium	10.5	0.0500	mg/L	10.000		105	85-115			
Barium	1.00	0.0500	mg/L	1.0000		100	85-115			
Calcium	101	0.500	mg/L	100.00		101	85-115			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0004 - EPA 200.2, EPA 3005										
Duplicate (BCC0004-DUP1)		**Source: MCB0211-21**		Prepared: 03/01/2017 Analyzed: 03/10/2017						
Calcium	74.7	0.500	mg/L		75.2			0.637	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Barium	0.0364	0.0500	mg/L		0.0368			0.936	20	
Boron	0.0403	0.0500	mg/L		0.0412			2.06	20	
Duplicate (BCC0004-DUP2)		**Source: MCB0211-22**		Prepared: 03/01/2017 Analyzed: 03/10/2017						
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Boron	0.179	0.0500	mg/L		0.177			0.899	20	
Barium	0.0449	0.0500	mg/L		0.0424			5.78	20	
Calcium	58.9	0.500	mg/L		57.2			2.91	20	
Matrix Spike (BCC0004-MS1)		**Source: MCB0211-21**		Prepared: 03/01/2017 Analyzed: 03/10/2017						
Lithium	9.96	0.0500	mg/L	10.000	<0.0500	99.6	75-125			
Calcium	171	0.500	mg/L	100.00	75.2	96.0	70-130			
Boron	0.999	0.0500	mg/L	1.0000	0.0412	95.8	70-130			
Barium	0.997	0.0500	mg/L	1.0000	0.0368	96.0	70-130			
Matrix Spike (BCC0004-MS2)		**Source: MCB0211-22**		Prepared: 03/01/2017 Analyzed: 03/10/2017						
Boron	1.14	0.0500	mg/L	1.0000	0.177	96.3	70-130			
Calcium	158	0.500	mg/L	100.00	57.2	101	70-130			
Barium	1.03	0.0500	mg/L	1.0000	0.0424	98.9	70-130			
Lithium	10.3	0.0500	mg/L	10.000	<0.0500	103	75-125			
Matrix Spike Dup (BCC0004-MSD1)		**Source: MCB0211-21**		Prepared: 03/01/2017 Analyzed: 03/10/2017						
Lithium	10.2	0.0500	mg/L	10.000	<0.0500	102	75-125	2.64	20	
Boron	1.01	0.0500	mg/L	1.0000	0.0412	97.1	70-130	1.33	20	
Calcium	176	0.500	mg/L	100.00	75.2	101	70-130	2.97	20	
Barium	1.03	0.0500	mg/L	1.0000	0.0368	99.1	70-130	3.03	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0004 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCC0004-MSD2)		**Source: MCB0211-22**		Prepared: 03/01/2017 Analyzed: 03/10/2017						
Lithium	10.2	0.0500	mg/L	10.000	<0.0500	102	75-125	0.454	20	
Boron	1.14	0.0500	mg/L	1.0000	0.177	96.3	70-130	0.0217	20	
Barium	1.03	0.0500	mg/L	1.0000	0.0424	98.9	70-130	0.0294	20	
Calcium	158	0.500	mg/L	100.00	57.2	101	70-130	0.120	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0187 - EPA 245.1, EPA 7470A										
Blank (BCC0187-BLK1)				Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCC0187-BS1)				Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	3.04	0.200	ug/L	3.0000		101	85-115			
Duplicate (BCC0187-DUP1)		**Source: MCB0211-06**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCC0187-DUP2)		**Source: MCB0211-07**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCC0187-MS1)		**Source: MCB0211-06**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	2.90	0.200	ug/L	3.0000	<0.200	96.6	70-130			
Matrix Spike (BCC0187-MS2)		**Source: MCB0211-07**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	2.81	0.200	ug/L	3.0000	<0.200	93.8	70-130			
Matrix Spike Dup (BCC0187-MSD1)		**Source: MCB0211-06**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	2.75	0.200	ug/L	3.0000	<0.200	91.8	70-130	5.05	20	
Matrix Spike Dup (BCC0187-MSD2)		**Source: MCB0211-07**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	2.92	0.200	ug/L	3.0000	<0.200	97.3	70-130	3.65	20	
Batch BCC0190 - EPA 245.1, EPA 7470A										
Blank (BCC0190-BLK1)				Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	<0.200	0.200	ug/L							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0190 - EPA 245.1, EPA 7470A										
LCS (BCC0190-BS1)				Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	2.67	0.200	ug/L	3.0000		88.9	85-115			
Duplicate (BCC0190-DUP1)		**Source: MCB0211-25**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCC0190-DUP2)		**Source: MCB0211-26**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCC0190-MS1)		**Source: MCB0211-25**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	2.69	0.200	ug/L	3.0000	<0.200	89.5	70-130			
Matrix Spike (BCC0190-MS2)		**Source: MCB0211-26**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	2.69	0.200	ug/L	3.0000	<0.200	89.7	70-130			
Matrix Spike Dup (BCC0190-MSD1)		**Source: MCB0211-25**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	2.74	0.200	ug/L	3.0000	<0.200	91.4	70-130	2.08	20	
Matrix Spike Dup (BCC0190-MSD2)		**Source: MCB0211-26**		Prepared: 03/08/2017 Analyzed: 03/09/2017						
Mercury	2.69	0.200	ug/L	3.0000	<0.200	89.6	70-130	0.119	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:15

Qualifiers and Definitions

M_TTT	Sample received at the lab outside of required hold time.
M_D-RL	The RPD for the sample duplicate was outside of QC acceptance limits due to<RL.
Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 3

2052858

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, Feb. 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE)

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Rinse	WT				2/20/17	1025		4	1	1	2						✓		
2	P-74-1						1110		4	1	1	2						✓		
3	P-73d-1						1210		4	1	1	2						✓		
4	P-125						1325		4	1	1	2						✓		
5	P-141						1420		4	1	1	2						✓		
6	P-134						1520		4	1	1	2						✓		
7	P-138A						1615		4	1	1	2						✓		
8	P-137A	↓				↓	1710		4	1	1	2						✓		
9	P-117	WT				2/21/17	0820		4	1	1	2						✓		
10	P-75-1						0850		4	1	1	2						✓		
11	P-97						0940		4	1	1	2						✓		
12	P-98	↓				↓	1030		4	1	1	2						✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1) marked HNO3 bottles filtered (dissolved) and unfiltered (total)	David Anderson / Pace	2/23/17	1330	Temp: 3.9°C IR Gun: M400841	2/23/17	13:49	

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 2/23/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

2052859

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkels	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: SherCo CCR, Feb. 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE)

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Analysis Test: CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-120	WT				2/21/17	1120		4	1		1	2						✓		
2	P-22						1240		4	1		1	2						✓		
3	P-23						1350		4	1		1	2						✓		
4	P-157						1430		4	1		1	2						✓		
5	P-158						1515		4	1		1	2						✓		
6	P-17						1620		4	1		1	2						✓		
7	P-130	↓				↓	1720		4	1		1	2						✓		
8	P-163	WT				2/22/17	0900		4	1		1	2						✓		
9	P-164						0950		4	1		1	2						✓		
10	P-156						1110		4	1		1	2						✓		
11	P-01a-1						1200		4	1		1	2						✓		
12	P-155	↓				↓	1300		4	1		1	2						✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1.) marked HNO3 bottles filtered (dissolved) and unfiltered (total)	David Anderson / Pace	2/23/17	1330	[signature]	2/23/17	13:49	
				Temp: 3.9°C DLGun: M400841			

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 2/23/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 3 of 3

2052874

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Bonkers	Attention: Steve Davis
Address: Environmental Services Mp-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, Feb. 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-165	WT				2/22/17	1400		4	1	1	2							✓		
2	P-132						1445		4	1	1	2							✓		
3	P-154 d						1550		4	1	1	2							✓		
4	P-162						1635		4	1	1	2							✓		
5	P-131	↓				↓	1730		4	1	1	2							✓		
6	P-153	WT				2/23/17	0810		4	1	1	2							✓		
7	Duplicate						0810		4	1	1	2							✓		
8	P-150						0950		4	1	1	2							✓		
9	P-152 d						1110		4	1	1	2							✓		
10	P-151	↓				↓	1200		4	1	1	2							✓		
11																					
12																					

DI 2/23/17

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1.) marked #NO3 bottles filtered (dissolved) and unfiltered (total)	David Anderson	2/23/17	1330	Temp: 3.9°C	2/23/17	13:49	FR Gun: M400841

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 2/23/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

March 17, 2017

Dave Anderson
Pace Analytical Services - Field Svcs Division
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

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

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

Sincerely,

Jacquelyn Collins for
Robbin Robl
robbin.robl@pacelabs.com
(724)850-5613
Project Manager

Enclosures

cc: Ciara Ruikkie, Pace Analytical Services - Field Svcs Division

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30211785001	**P-74-1**	Water	02/20/17 11:10	02/24/17 12:25
30211785002	**P-73a-1**	Water	02/20/17 12:10	02/24/17 12:25
30211785003	**P-125**	Water	02/20/17 13:25	02/24/17 12:25
30211785004	**P-141**	Water	02/20/17 14:20	02/24/17 12:25
30211785005	**P-134**	Water	02/20/17 15:20	02/24/17 12:25
30211785006	**P-138A**	Water	02/20/17 16:15	02/24/17 12:25
30211785007	**P-137A**	Water	02/20/17 17:10	02/24/17 12:25
30211785008	**P-117**	Water	02/21/17 08:20	02/24/17 12:25
30211785009	**P-75-1**	Water	02/21/17 08:50	02/24/17 12:25
30211785010	**P-97**	Water	02/21/17 09:40	02/24/17 12:25
30211785011	**P-98**	Water	02/21/17 10:30	02/24/17 12:25
30211785012	**P-120**	Water	02/21/17 11:20	02/24/17 12:25
30211785013	**P-22**	Water	02/21/17 12:40	02/24/17 12:25
30211785014	**P-23**	Water	02/21/17 13:50	02/24/17 12:25
30211785015	**P-157**	Water	02/21/17 14:30	02/24/17 12:25
30211785016	**P-158**	Water	02/21/17 15:15	02/24/17 12:25
30211785017	**P-17**	Water	02/21/17 16:20	02/24/17 12:25
30211785018	**P-130**	Water	02/21/17 17:20	02/24/17 12:25
30211785019	**P-163**	Water	02/22/17 09:00	02/24/17 12:25
30211785020	**P-164**	Water	02/22/17 09:50	02/24/17 12:25
30211785021	**P-156**	Water	02/22/17 11:10	02/24/17 12:25
30211785022	**P-o1a-1**	Water	02/22/17 12:00	02/24/17 12:25
30211785023	**P-155**	Water	02/22/17 13:00	02/24/17 12:25
30211785024	**P-165**	Water	02/22/17 14:00	02/24/17 12:25
30211785025	**P-132**	Water	02/22/17 14:45	02/24/17 12:25
30211785026	**P-154a**	Water	02/22/17 15:50	02/24/17 12:25
30211785027	**P-162**	Water	02/22/17 16:35	02/24/17 12:25
30211785028	**P-131**	Water	02/22/17 17:30	02/24/17 12:25
30211785029	**P-153**	Water	02/23/17 08:10	02/24/17 12:25
30211785030	**P-150**	Water	02/23/17 09:50	02/24/17 12:25
30211785031	**P-152a**	Water	02/23/17 11:10	02/24/17 12:25
30211785032	**P-151**	Water	02/23/17 12:00	02/24/17 12:25

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30211785001	**P-74-1**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785002	**P-73a-1**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785003	**P-125**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785004	**P-141**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785005	**P-134**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785006	**P-138A**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785007	**P-137A**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785008	**P-117**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785009	**P-75-1**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785010	**P-97**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785011	**P-98**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785012	**P-120**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785013	**P-22**	EPA 903.1	KAC	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785014	**P-23**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785015	**P-157**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785016	**P-158**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785017	**P-17**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785018	**P-130**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785019	**P-163**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785020	**P-164**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785021	**P-156**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785022	**P-o1a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785023	**P-155**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785024	**P-165**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785025	**P-132**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Total Radium Calculation	JAL	1	PASI-PA
30211785026	**P-154a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785027	**P-162**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785028	**P-131**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785029	**P-153**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785030	**P-150**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785031	**P-152a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30211785032	**P-151**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

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PROJECT NARRATIVE

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Pace-MN Field Services Division
Date: March 17, 2017

General Information:
32 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Pace-MN Field Services Division
Date: March 17, 2017

General Information:
32 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Pace-MN Field Services Division
Date: March 17, 2017

General Information:
32 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Sample: P-74-1 **Lab ID: 30211785001** Collected: 02/20/17 11:10 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.202 ± 0.350 (0.884) C:NA T:90%**	pCi/L	03/13/17 21:58	13982-63-3	
Radium-228	EPA 904.0	**0.978 ± 0.568 (1.04) C:56% T:81%**	pCi/L	03/15/17 11:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.978 ± 0.918 (1.92)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-73a-1 **Lab ID: 30211785002** Collected: 02/20/17 12:10 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0699 ± 0.319 (0.515) C:NA T:91%**	pCi/L	03/13/17 21:58	13982-63-3	
Radium-228	EPA 904.0	**0.400 ± 0.419 (0.868) C:60% T:89%**	pCi/L	03/15/17 11:42	15262-20-1	
Total Radium	Total Radium Calculation	**0.470 ± 0.738 (1.38)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-125 **Lab ID: 30211785003** Collected: 02/20/17 13:25 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.068 ± 0.311 (0.633) C:NA T:93%**	pCi/L	03/13/17 21:58	13982-63-3	
Radium-228	EPA 904.0	**0.390 ± 0.498 (1.06) C:52% T:84%**	pCi/L	03/15/17 11:43	15262-20-1	
Total Radium	Total Radium Calculation	**0.390 ± 0.809 (1.69)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-141 **Lab ID: 30211785004** Collected: 02/20/17 14:20 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.140 ± 0.320 (0.515) C:NA T:90%**	pCi/L	03/13/17 21:58	13982-63-3	
Radium-228	EPA 904.0	**0.992 ± 0.623 (1.17) C:50% T:80%**	pCi/L	03/15/17 11:43	15262-20-1	
Total Radium	Total Radium Calculation	**1.13 ± 0.943 (1.69)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-134 **Lab ID: 30211785005** Collected: 02/20/17 15:20 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.142 ± 0.394 (0.764) C:NA T:93%**	pCi/L	03/13/17 21:58	13982-63-3	
Radium-228	EPA 904.0	**0.588 ± 0.526 (1.07) C:52% T:86%**	pCi/L	03/15/17 11:44	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Sample: P-134 **Lab ID: 30211785005** Collected: 02/20/17 15:20 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.730 ± 0.920 (1.83)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-138A **Lab ID: 30211785006** Collected: 02/20/17 16:15 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.260 ± 0.298 (0.176) C:NA T:94%**	pCi/L	03/13/17 22:19	13982-63-3	
Radium-228	EPA 904.0	**0.473 ± 0.468 (0.960) C:56% T:80%**	pCi/L	03/15/17 11:44	15262-20-1	
Total Radium	Total Radium Calculation	**0.733 ± 0.766 (1.14)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-137A **Lab ID: 30211785007** Collected: 02/20/17 17:10 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.319 (0.515) C:NA T:90%**	pCi/L	03/13/17 22:19	13982-63-3	
Radium-228	EPA 904.0	**0.601 ± 0.533 (1.07) C:50% T:77%**	pCi/L	03/15/17 11:45	15262-20-1	
Total Radium	Total Radium Calculation	**0.601 ± 0.852 (1.59)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-117 **Lab ID: 30211785008** Collected: 02/21/17 08:20 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.070 ± 0.319 (0.650) C:NA T:93%**	pCi/L	03/13/17 22:19	13982-63-3	
Radium-228	EPA 904.0	**-0.130 ± 0.356 (0.887) C:52% T:80%**	pCi/L	03/15/17 11:45	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.675 (1.54)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-75-1 **Lab ID: 30211785009** Collected: 02/21/17 08:50 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.267 ± 0.322 (0.876) C:NA T:94%**	pCi/L	03/13/17 22:19	13982-63-3	
Radium-228	EPA 904.0	**0.268 ± 0.384 (0.824) C:59% T:76%**	pCi/L	03/15/17 11:46	15262-20-1	
Total Radium	Total Radium Calculation	**0.268 ± 0.706 (1.70)**	pCi/L	03/17/17 16:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Sample: P-97 **Lab ID: 30211785010** Collected: 02/21/17 09:40 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.306 (0.686) C:NA T:96%**	pCi/L	03/13/17 22:19	13982-63-3	
Radium-228	EPA 904.0	**0.262 ± 0.403 (0.871) C:59% T:86%**	pCi/L	03/15/17 11:46	15262-20-1	
Total Radium	Total Radium Calculation	**0.262 ± 0.709 (1.56)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-98 **Lab ID: 30211785011** Collected: 02/21/17 10:30 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.257 ± 0.310 (0.474) C:NA T:93%**	pCi/L	03/13/17 22:19	13982-63-3	
Radium-228	EPA 904.0	**0.558 ± 0.495 (0.988) C:49% T:78%**	pCi/L	03/15/17 11:46	15262-20-1	
Total Radium	Total Radium Calculation	**0.815 ± 0.805 (1.46)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-120 **Lab ID: 30211785012** Collected: 02/21/17 11:20 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.141 ± 0.322 (0.519) C:NA T:94%**	pCi/L	03/13/17 22:44	13982-63-3	
Radium-228	EPA 904.0	**1.20 ± 0.616 (1.05) C:49% T:81%**	pCi/L	03/15/17 11:46	15262-20-1	
Total Radium	Total Radium Calculation	**1.34 ± 0.938 (1.57)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-22 **Lab ID: 30211785013** Collected: 02/21/17 12:40 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.070 ± 0.321 (0.757) C:NA T:88%**	pCi/L	03/13/17 22:44	13982-63-3	
Radium-228	EPA 904.0	**1.28 ± 0.638 (1.10) C:50% T:83%**	pCi/L	03/15/17 11:46	15262-20-1	
Total Radium	Total Radium Calculation	**1.28 ± 0.959 (1.86)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-23 **Lab ID: 30211785014** Collected: 02/21/17 13:50 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.133 ± 0.304 (0.717) C:NA T:92%**	pCi/L	03/13/17 22:44	13982-63-3	
Radium-228	EPA 904.0	**0.0698 ± 0.685 (1.61) C:32% T:73%**	pCi/L	03/15/17 11:47	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Sample: P-23 **Lab ID: 30211785014** Collected: 02/21/17 13:50 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.0698 ± 0.989 (2.33)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-157 **Lab ID: 30211785015** Collected: 02/21/17 14:30 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.273 ± 0.329 (0.503) C:NA T:93%**	pCi/L	03/13/17 22:44	13982-63-3	
Radium-228	EPA 904.0	**0.775 ± 0.604 (1.18) C:48% T:72%**	pCi/L	03/15/17 11:47	15262-20-1	
Total Radium	Total Radium Calculation	**1.05 ± 0.933 (1.68)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-158 **Lab ID: 30211785016** Collected: 02/21/17 15:15 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.198 ± 0.344 (0.867) C:NA T:92%**	pCi/L	03/13/17 22:44	13982-63-3	
Radium-228	EPA 904.0	**0.431 ± 0.440 (0.903) C:58% T:76%**	pCi/L	03/15/17 11:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.431 ± 0.784 (1.77)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-17 **Lab ID: 30211785017** Collected: 02/21/17 16:20 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.089 ± 0.408 (0.830) C:NA T:69%**	pCi/L	03/13/17 22:44	13982-63-3	
Radium-228	EPA 904.0	**0.157 ± 0.486 (1.10) C:51% T:81%**	pCi/L	03/15/17 11:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.157 ± 0.894 (1.93)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-130 **Lab ID: 30211785018** Collected: 02/21/17 17:20 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0663 ± 0.303 (0.616) C:NA T:94%**	pCi/L	03/13/17 23:14	13982-63-3	
Radium-228	EPA 904.0	**0.602 ± 0.633 (1.31) C:41% T:84%**	pCi/L	03/15/17 11:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.668 ± 0.936 (1.93)**	pCi/L	03/17/17 16:59	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Sample: P-163 **Lab ID: 30211785019** Collected: 02/22/17 09:00 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.069 ± 0.315 (0.641) C:NA T:88%**	pCi/L	03/13/17 23:14	13982-63-3	
Radium-228	EPA 904.0	**0.967 ± 0.659 (1.25) C:43% T:80%**	pCi/L	03/15/17 11:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.967 ± 0.974 (1.89)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-164 **Lab ID: 30211785020** Collected: 02/22/17 09:50 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0717 ± 0.327 (0.528) C:NA T:91%**	pCi/L	03/13/17 23:14	13982-63-3	
Radium-228	EPA 904.0	**0.118 ± 0.420 (0.954) C:55% T:82%**	pCi/L	03/15/17 11:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.190 ± 0.747 (1.48)**	pCi/L	03/17/17 16:59	7440-14-4	

Sample: P-156 **Lab ID: 30211785021** Collected: 02/22/17 11:10 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0611 ± 0.317 (0.657) C:NA T:87%**	pCi/L	03/15/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**-0.106 ± 0.472 (1.13) C:50% T:83%**	pCi/L	03/15/17 16:06	15262-20-1	
Total Radium	Total Radium Calculation	**0.0611 ± 0.789 (1.79)**	pCi/L	03/17/17 17:03	7440-14-4	

Sample: P-o1a-1 **Lab ID: 30211785022** Collected: 02/22/17 12:00 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.114 ± 0.354 (0.804) C:NA T:95%**	pCi/L	03/15/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**0.304 ± 0.430 (0.921) C:57% T:79%**	pCi/L	03/15/17 16:06	15262-20-1	
Total Radium	Total Radium Calculation	**0.304 ± 0.784 (1.73)**	pCi/L	03/17/17 17:03	7440-14-4	

Sample: P-155 **Lab ID: 30211785023** Collected: 02/22/17 13:00 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.116 ± 0.394 (0.761) C:NA T:92%**	pCi/L	03/15/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**0.160 ± 0.545 (1.22) C:58% T:79%**	pCi/L	03/15/17 16:06	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Sample: P-155 **Lab ID: 30211785023** Collected: 02/22/17 13:00 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.276 ± 0.939 (1.98)**	pCi/L	03/17/17 17:03	7440-14-4	

Sample: P-165 **Lab ID: 30211785024** Collected: 02/22/17 14:00 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.118 ± 0.269 (0.434) C:NA T:91%**	pCi/L	03/15/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**0.546 ± 0.596 (1.24) C:45% T:80%**	pCi/L	03/15/17 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.664 ± 0.865 (1.67)**	pCi/L	03/17/17 17:03	7440-14-4	

Sample: P-132 **Lab ID: 30211785025** Collected: 02/22/17 14:45 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.130 ± 0.297 (0.699) C:NA T:83%**	pCi/L	03/15/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**-0.0933 ± 0.496 (1.18) C:55% T:78%**	pCi/L	03/15/17 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.793 (1.88)**	pCi/L	03/17/17 17:03	7440-14-4	

Sample: P-154a **Lab ID: 30211785026** Collected: 02/22/17 15:50 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.120 ± 0.274 (0.163) C:NA T:89%**	pCi/L	03/15/17 10:44	13982-63-3	
Radium-228	EPA 904.0	**0.317 ± 0.445 (0.954) C:57% T:80%**	pCi/L	03/15/17 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.437 ± 0.719 (1.12)**	pCi/L	03/17/17 17:03	7440-14-4	

Sample: P-162 **Lab ID: 30211785027** Collected: 02/22/17 16:35 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.131 ± 0.407 (0.788) C:NA T:88%**	pCi/L	03/15/17 10:44	13982-63-3	
Radium-228	EPA 904.0	**-0.212 ± 0.466 (1.14) C:55% T:77%**	pCi/L	03/15/17 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.131 ± 0.873 (1.93)**	pCi/L	03/17/17 17:03	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Sample: P-131 **Lab ID: 30211785028** Collected: 02/22/17 17:30 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.354 ± 0.402 (0.634) C:NA T:87%**	pCi/L	03/15/17 10:44	13982-63-3	
Radium-228	EPA 904.0	**-0.358 ± 0.432 (1.08) C:57% T:88%**	pCi/L	03/15/17 16:05	15262-20-1	
Total Radium	Total Radium Calculation	**0.354 ± 0.834 (1.71)**	pCi/L	03/17/17 17:03	7440-14-4	

Sample: P-153 **Lab ID: 30211785029** Collected: 02/23/17 08:10 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.126 ± 0.287 (0.170) C:NA T:83%**	pCi/L	03/15/17 10:44	13982-63-3	
Radium-228	EPA 904.0	**0.117 ± 0.465 (1.06) C:50% T:81%**	pCi/L	03/15/17 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.243 ± 0.752 (1.23)**	pCi/L	03/17/17 17:03	7440-14-4	

Sample: P-150 **Lab ID: 30211785030** Collected: 02/23/17 09:50 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0619 ± 0.321 (0.666) C:NA T:88%**	pCi/L	03/15/17 10:55	13982-63-3	
Radium-228	EPA 904.0	**-0.115 ± 0.548 (1.31) C:45% T:83%**	pCi/L	03/15/17 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.0619 ± 0.869 (1.98)**	pCi/L	03/17/17 17:03	7440-14-4	

Sample: P-152a **Lab ID: 30211785031** Collected: 02/23/17 11:10 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.059 ± 0.447 (0.935) C:NA T:88%**	pCi/L	03/15/17 10:44	13982-63-3	
Radium-228	EPA 904.0	**0.242 ± 0.568 (1.27) C:42% T:83%**	pCi/L	03/15/17 16:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.242 ± 1.02 (2.21)**	pCi/L	03/17/17 17:03	7440-14-4	

Sample: P-151 **Lab ID: 30211785032** Collected: 02/23/17 12:00 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0630 ± 0.287 (0.585) C:NA T:89%**	pCi/L	03/15/17 11:00	13982-63-3	
Radium-228	EPA 904.0	**0.197 ± 0.553 (1.24) C:44% T:84%**	pCi/L	03/15/17 16:07	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

Sample: P-151 **Lab ID: 30211785032** Collected: 02/23/17 12:00 Received: 02/24/17 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.260 ± 0.840 (1.83)**	pCi/L	03/17/17 17:03	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

QC Batch: 251020 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30211785021, 30211785022, 30211785023, 30211785024, 30211785025, 30211785026, 30211785027, 30211785028, 30211785029, 30211785030, 30211785031, 30211785032

METHOD BLANK: 1235137 Matrix: Water
Associated Lab Samples: 30211785021, 30211785022, 30211785023, 30211785024, 30211785025, 30211785026, 30211785027, 30211785028, 30211785029, 30211785030, 30211785031, 30211785032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.234 ± 0.282 (0.431) C:NA T:88%	pCi/L	03/15/17 10:10	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

QC Batch: 251021 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30211785021, 30211785022, 30211785023, 30211785024, 30211785025, 30211785026, 30211785027, 30211785028, 30211785029, 30211785030, 30211785031, 30211785032

METHOD BLANK: 1235138 Matrix: Water
Associated Lab Samples: 30211785021, 30211785022, 30211785023, 30211785024, 30211785025, 30211785026, 30211785027, 30211785028, 30211785029, 30211785030, 30211785031, 30211785032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.359 ± 0.438 (0.922) C:58% T:81%	pCi/L	03/15/17 16:05	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

QC Batch: 251018 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30211785001, 30211785002, 30211785003, 30211785004, 30211785005, 30211785006, 30211785007, 30211785008, 30211785009, 30211785010, 30211785011, 30211785012, 30211785013, 30211785014, 30211785015, 30211785016, 30211785017, 30211785018, 30211785019, 30211785020

METHOD BLANK: 1235135 Matrix: Water
Associated Lab Samples: 30211785001, 30211785002, 30211785003, 30211785004, 30211785005, 30211785006, 30211785007, 30211785008, 30211785009, 30211785010, 30211785011, 30211785012, 30211785013, 30211785014, 30211785015, 30211785016, 30211785017, 30211785018, 30211785019, 30211785020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.389 (0.871) C:NA T:80%	pCi/L	03/13/17 21:58	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

QC Batch: 251019 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30211785001, 30211785002, 30211785003, 30211785004, 30211785005, 30211785006, 30211785007, 30211785008, 30211785009, 30211785010, 30211785011, 30211785012, 30211785013, 30211785014, 30211785015, 30211785016, 30211785017, 30211785018, 30211785019, 30211785020

METHOD BLANK: 1235136 Matrix: Water
Associated Lab Samples: 30211785001, 30211785002, 30211785003, 30211785004, 30211785005, 30211785006, 30211785007, 30211785008, 30211785009, 30211785010, 30211785011, 30211785012, 30211785013, 30211785014, 30211785015, 30211785016, 30211785017, 30211785018, 30211785019, 30211785020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.567 ± 0.436 (0.843) C:59% T:78%	pCi/L	03/15/17 11:45	

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Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 17-0159, Xcel Energy-ShercoCCR
Pace Project No.: 30211785

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 3

2052857

Section A Required Client Information:

Company: Xcel Energy
Address: C/O Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0159, Xcel Energy - Sherco CCR Feb. 2017
Project Number:

Section C Invoice Information:

Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Robl
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

Requested Analysis Filtered (Y/N)

WO#:30211785

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Cl	Pace Project No./ Lab I.D.
1	P-74-1	WT				2/20/17	1110		2			2						✓	✓		001
2	P-73a-1						1210		2			2						✓	✓		002
3	P-125						1325		2			2						✓	✓		003
4	P-141						1420		2			2						✓	✓		004
5	P-134						1520		2			2						✓	✓		005
6	P-138A						1615		2			2						✓	✓		006
7	P-137A	↓				↓	1710		2			2						✓	✓		007
8	P-117	WT				2/21/17	0820		2			2						✓	✓		008
9	P-75-1						0850		2			2						✓	✓		009
10	P-97						0940		2			2						✓	✓		010
11	P-98						1030		2			2						✓	✓		011
12	P-120	↓				↓	1120		2			2						✓	✓		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1.) client needs to analyze for: Radium 226+228pCi/L combined.	David Anderson / Pace	2/23/17	1445	Kiren Hill	2/24/17	1225	NA	N	Y	Y
(2.) RA-226 EPA 903.1 RA-228 EPA 904.0										

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 2/23/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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30211785

Page: 2 of 3

2052875

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0159, Xcel Energy - Sherco CCR Feb. 2017
Project Number:

Section C Invoice Information:

Attention: Ejola Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Robl
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER
Site Location STATE:

Requested Analysis Filtered (Y/N)

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-22	WT				3/21/17	1240		2			2						✓	✓	✓			013
2	P-23						1350		2			2						✓	✓	✓			014
3	P-157						1430		2			2						✓	✓	✓			015
4	P-158						1515		2			2						✓	✓	✓			016
5	P-17						1620		2			2						✓	✓	✓			017
6	P-130	↓				↓	1720		2			2						✓	✓	✓			018
7	P-163	WT				3/22/17	0900		2			2						✓	✓	✓			019
8	P-164						0950		2			2						✓	✓	✓			020
9	P-156						1110		2			2						✓	✓	✓			021
10	P-019-1						1200		2			2						✓	✓	✓			022
11	P-155						1300		2			2						✓	✓	✓			023
12	P-165	↓				↓	1400		2			2						✓	✓	✓			024

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1.) client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson Xcel	3/23/17	1445	Karen Lin	2/24/17	1225	NA	N	Y	Y

(1) RA-226 EPA 903.1 ORIGINAL
RA-228 EPA 904.0

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 2/23/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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Page: 3 of 3

2052876

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0159, Xcel Energy - Sherco CCR Feb. 2017
Project Number:

Section C Invoice Information:

Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Rabl
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER
Site Location STATE:

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-132		WT				2/23/17	1445		2			2							✓	✓			025
2	P-154a							1550		2			2							✓	✓			026
3	P-162							1635		2			2							✓	✓			027
4	P-131							1730		2			2							✓	✓			028
5	P-153		WT				2/23/17	0810		2			2							✓	✓			029
6	P-150							0950		2			2							✓	✓			030
7	P-152a							1110		2			2							✓	✓			031
8	P-151							1200		2			2							✓	✓			032
9							2/23/17																	
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1.) client needs to analyze for: Radium 226 + 228 pCi/L combined.	David Anderson/Pace	2/23/17	1445	Karen Hill	2/24/17	1225	NA	N	4	4

(2.) RA-226 EPA 903.1 ORIGINAL
RA-228 EPA 904.0

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 2/23/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

KEH

Sample Condition Upon Receipt Pittsburgh 30211785

Pace Analytical

Client Name: Pace MN Field Services Project # _____

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 7060 2533 1638

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

Thermometer Used NA **Type of Ice:** Wet Blue (None)

Cooler Temperature **Observed Temp** NA °C Correction Factor: NA °C Final Temp: NA °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: KH 2/24/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Organic Samples checked for dechlorination:			✓	13.
Filtered volume received for Dissolved tests			✓	14.
All containers have been checked for preservation.	✓			15. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed KH / Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	16.
Trip Blank Present:			✓	17.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: KH / Date: 2/24/17

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

March 2017

Field Datasheets and Laboratory Reports

Xcel Energy – Sherco CCR, March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 3/20/17 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.95	18.0	0800	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.03	18.0	0800	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.08	18.0	0800	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.09	18.0	0810	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ 1 See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.05	13.5	1805	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value: 1000

Cond Std: 1000 umhos/cm
Ricca - Lot #: 4606B22
Exp Date: 06/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1001	18.0

Initial Cal. Verification (ICV)

Low Standard Value: 100

Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
97	18.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0815 / 0820
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1810 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1008 Temp (°C) 13.5 CCV: (Pass) / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time DJA Initials 3/20/17 Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 3/20/17

Xcel Energy - Sherco CCR March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DTA Date 3/20/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)		Meter Make YSI Sonde ID #5
Calibration Std. Value (mV)	240	Secondary Source Std. Value (mV)	240	
Mfg.	Zobells ORP Std.	Mfg.	Zobells ORP Std.	IC/ICV Time 0825 / 0827
Lot No.	YSI #16100667	Lot No.	16L100376	Initials DTA
Exp Date	07/2017	Exp. Date	11/2017	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)	ICV: (Pass) / Fail
240	18.0	241	18.0	ICV acceptable if ± 10 mV of standard value.

CCV Time 1815	Initials DTA	Std. Value 246	[X] Calibration Standard [ ] Secondary Source Standard		
Result (mV) 250	Temp (°C) 13.5	CCV: (Pass) / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	[ ] Calibration Standard [ ] Secondary Source Standard		
Result (mV)	Temp (°C) DTA 3/20/17	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	[ ] Calibration Standard [ ] Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation		IC/ICV Time 0750 Initials DTA
Ambient Temp:	18.0 (°C)	Ambient Temp:	18.0 (°C)	DO Meter ID YSI Sonde #5
Barometric Pressure	29.22 (in. Hg)	Barometric Pressure	29.22 (in. Hg)	Barometer ID Skymaster DB-26 GW
Barometric Pressure	742.19 (mm Hg)	Barometric Pressure	742.19 (mm Hg)	
Calibration Value[1]	98 (%)	Calibration Value[1]	98 (%)	ICV: (Pass) / Fail
IC Meter Result (%)		ICV Meter Result (%)		(ICV/CCV acceptable if ± 2% of Calibration Value)
97		97		

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1800	Initials DTA	Barometric Pressure 739.90 (in. Hg / mm Hg)			
Calibration Value 97 (%)	Result 96 (%)	CCV: (Pass) / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DTA 3/20/17 (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		

Form Revised: 02/03/17

Lead Technician Signature: Dana Anderson Date: 3/20/17

Xcel Energy – Sherco CCR, March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DTA Date 3/20/17 Page 3 of 3

Meter Make WTW Meter ID Turb 350 IR

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C582192 / C579784 C579786 / C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	9.9	99	998	IC Time 0835 Initials DTA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	98	997	ICV Time 0840 Initials DTA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.02	9.9	99	998	CCV Time 1820 Initials DTA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DTA 3/20/17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 3/20/17

Form Revised. 11/14/2013

Attach additional notes if necessary

Xcel Energy – Sherco CCR, March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 3/21/17 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.97	17.0	0730	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.04	17.0	0730	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.09	17.0	0730	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.07	17.0	0740	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☐ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.08	6.0	1805	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 1000

Cond Std: 1000 umhos/cm
Ricca - Lot #: 4606B22
Exp Date: 06/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	17.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
98	17.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0745 / 0747
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1810 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1004 Temp (°C) 6.0 CCV: (Pass) / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time ~~DJA~~ Initials ~~3/21/17~~ Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 3/21/17

Xcel Energy - Sherco CCR March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 3/21/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	241	Secondary Source Std. Value (mV)	241
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI# 56100067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
240	17.0	240	17.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0715 / 0720

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1815	Initials DJA	Std. Value 256	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 260	Temp (°C) 6.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 3/21/17	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	17.0 (°C)	Ambient Temp:	17.0 (°C)
Barometric Pressure	29.35 (in. Hg)	Barometric Pressure	29.35 (in. Hg)
Barometric Pressure	745.49 (mm Hg)	Barometric Pressure	745.49 (mm Hg)
Calibration Value[1]	98 (%)	Calibration Value[1]	98.0 (%)
IC Meter Result (%)		ICV Meter Result (%)	
97		97	

IC/ICV Time 0710 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster DB-26 GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1800	Initials DJA	Barometric Pressure 749.05 (in. Hg / mm Hg)			
Calibration Value 99 (%)	Result 98 (%)	CCV: (Pass) / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 3/21/17 (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		

Form Revised: 02/03/17

Lead Technician Signature: Daniel Anderson Date: 3/21/17

Xcel Energy – Sherco CCR, March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DTA Date 3/21/17 Page 3 of 3

Meter Make WTW Meter ID Turb 350 IR

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C582192 / C579784 C579786 / C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	99	998	IC Time 0750 Initials DTA IC: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	98	998	ICV Time 0755 Initials DTA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	99	998	CCV Time 1820 Initials DTA CCV: (Pass) / Fail
CCV		DTA 3/21/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 3/21/17

Form Revised. 11/14/2013

Attach additional notes if necessary

Xcel Energy – Sherco CCR, March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 3/22/17 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.98	16.0	0715	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.05	16.0	0715	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.10	16.0	0715	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.06	16.0	0725	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.08	5.0	1805	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 1000

Cond Std: 1000 umhos/cm
Ricca - Lot #: 4606B22
Exp Date: 06/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	16.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm
Lot
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
101	16.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0730 / 0733
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1810 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1004 Temp (°C) 5.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA 3-22-17 Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 3-22-17

Xcel Energy - Sherco CCR March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 3/22/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	242	Secondary Source Std. Value (mV)	242
Mfg.	Zobells ORP Std.	Mfg.	Zobells ORP Std.
Lot No.	YSI #15E100067	Lot No.	16L100376
Exp Date	07/2017	Exp Date	11/2017
Meter Result (mV)	242	Meter Result (mV)	241
Temp (°C)	16.0	Temp (°C)	16.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0735 / 0740

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1800 Initials DJA Std. Value 257 ☒ Calibration Standard ☐ Secondary Source Standard

Result (mV) 250 Temp (°C) 5.0 CCV: (Pass) / Fail *(CCV acceptable if ± 10 mV of standard value)*

CCV Time ____ Initials ____ Std. Value ____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

DJA 3/22/17

CCV Time ____ Initials ____ Std. Value ____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	16.0 (°C)	Ambient Temp:	16.0 (°C)
Barometric Pressure	29.49 (in. Hg)	Barometric Pressure	29.49 (in. Hg)
Barometric Pressure	749.05 (mm Hg)	Barometric Pressure	749.05 (mm Hg)
Calibration Value[1]	99 (%)	Calibration Value[1]	99 (%)
IC Meter Result (%)	98	ICV Meter Result (%)	97

IC/ICV Time 0710 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster DB-26 GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1815 Initials DJA Barometric Pressure 744.47 (in. Hg / mm Hg)

Calibration Value 98 (%) Result 97 (%) CCV: (Pass) / Fail *(CCV acceptable if ± 2% of Calibration Value)*

CCV Time ____ Initials ____ Barometric Pressure ____ (in. Hg / mm Hg)

Calibration Value ____ (%) Result ____ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

DJA 3/23/17

CCV Time ____ Initials ____ Barometric Pressure ____ (in. Hg / mm Hg)

Calibration Value ____ (%) Result ____ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

Form Revised: 02/03/17

Lead Technician Signature: Frank Anderson Date: 3/22/17

Xcel Energy – Sherco CCR, March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 3/22/17 Page 3 of 3

Meter Make WTW Meter ID Turb 350 IR

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C582192 / C579784 C579786 / C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	99	998	IC Time 0745 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	98	998	ICV Time 0750 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	98	997	CCV Time 1820 Initials DJA CCV: (Pass) / Fail
CCV		DJA 3/22/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 3/22/17

Form Revised. 11/14/2013

Attach additional notes if necessary

Xcel Energy – Sherco CCR, March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 3/23/17 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.96	16.0	0650	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.03	16.0	0650	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.12	16.0	0650	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.08	16.0	0700	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.09	6.0	1140	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value	1000	Low Standard Value	100
Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18*		Cond Std: 100 umhos/cm Ricca - Lot #: 4605D87 *Exp Date: 05/31/18*	
Exp. Date		Exp. Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1001	16.0	99	16.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0705 / 0710
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1145 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1001 Temp (°C) 6.0 CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ~~DJA~~ 3/23/17 Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 3/23/17

Xcel Energy - Sherco CCR March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 3/23/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	242	Secondary Source Std. Value (mV)	242
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI #16100667	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
242	16.0	241	16.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0715 / 0718

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1150	Initials DJA	Std. Value 256	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 247	Temp (°C) 6.0	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time ____	Initials ____	Std. Value ____	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV) ____	Temp (°C) ____	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time ____	Initials ____	Std. Value ____	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV) ____	Temp (°C) ____	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	16.0 (°C)	Ambient Temp:	16.0 (°C)
Barometric Pressure	29.10 (in. Hg)	Barometric Pressure	29.10 (in. Hg)
Barometric Pressure	739.14 (mm Hg)	Barometric Pressure	739.14 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)		ICV Meter Result (%)	
97		97	

IC/ICV Time 0640 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster DB-26 GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1135	Initials DJA	Barometric Pressure 737.62 (in. Hg / mm Hg)			
Calibration Value 97 (%)	Result 97 (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time ____	Initials ____	Barometric Pressure ____ (in. Hg / mm Hg)			
Calibration Value ____ (%)	Result ____ (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time ____	Initials ____	Barometric Pressure ____ (in. Hg / mm Hg)			
Calibration Value ____ (%)	Result ____ (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		

Form Revised: 02/03/17

Lead Technician Signature: Daniel Anderson Date: 3/23/17

Xcel Energy – Sherco CCR, March 2017
Field Proj. # 17-0260

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DTA Date 3/23/17 Page 3 of 3

Meter Make WTW Meter ID Turb 350 IR

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C582192 / C579784 C579786 / C580573 Exp. Date 12/2016

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	9.9	99	999	IC Time 0720 Initials DTA IC: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	98	998	ICV Time 0730 Initials DTA ICV: Pass / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	98	997	CCV Time 1200 Initials DTA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DTA 3/23/17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Dahlen Date: 3/23/17

Form Revised: 11/14/2013

Attach additional notes if necessary

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Match Project No. 17-0260

Monitoring Point ID P-01A-1 Labeled P-01A

Inside Diameter 2 (inches) Key # 2106 ☐ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 80.98 Feet

Static water level measurement before purging 76.35 Feet

Static water level measurement at time of sampling 76.35 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 3-22-17 Water Column 4.63 Feet

Time Purged 1715 - 1733 One Casing Volume 0.8 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 2.7 Gallons

Field Sampling Data

Date Sampled 3-22-17

Time Sampled 1750

Sampling Equip. above pump

Analyzed by DVA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 9.1 (mg/l)

Spec. Cond. 620 (µmhos/cm) Turbidity 3.0 (NTU)

Temp. 8.0 (°C) (ORP) Eh 262 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 32° + cloudy, wind SE 15

Sample Description: clear + odorless

Observations:

DVA 3/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1721	7.6	620	7.5	10.0	NA	262	0.9
1727	7.6	620	8.0	9.4	NA	262	1.8
1733	7.6	620	8.0	9.1	NA	262	2.7

DVA 3/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 3/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Match Project No. 17-0260

Monitoring Point ID P-17 Labeled P17

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 58.76 Feet

Static water level measurement before purging 36.03 Feet

Static water level measurement at time of sampling 36.03 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 3-21-17 Water Column 22.73 Feet

Time Purged 1600-1645 One Casing Volume 3.7 Gallons

Pump Rate 0.25 (GPM) / LPM Volume Purged 11.25 Gallons

Field Sampling Data

Date Sampled 3-21-17

Time Sampled 1650

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 8.0 (mg/l)

Spec. Cond. 550 (µmhos/cm) Turbidity 6.7 (NTU)

Temp. 9.5 (°C) (ORP) Eh 253 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 30° + sunny, wind NW 15

Sample Description: clear + odorless

Observations: ~~DTA 3/21/17~~

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1615	7.7	560	9.5	8.0	NA	262	3.75
1630	7.6	560	9.5	8.0	NA	257	7.50
1645	7.6	550	9.5	8.0	NA	253	11.25
			~~DTA 3/21/17~~				

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 3/21/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Match Project No. 17-0260

Monitoring Point ID P-22 Labeled P-22

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 57.85 Feet

Static water level measurement before purging 38.66 Feet

Static water level measurement at time of sampling 38.66 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 3-21-17 Water Column 19.19 Feet

Time Purged 1145-1233 One Casing Volume 3.1 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 3-21-17

Time Sampled 1240

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 6.6 (mg/l)

Spec. Cond. 910 (µmhos/cm) Turbidity 3.8 (NTU)

Temp. 11.5 (°C) (ORP) Eh 274 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 28° & sunny, Wind NW 15

Sample Description: clear & odorless

Observations: DTA 3/21/17
Collected Duplicate at this well.

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1201	7.4	910	11.5	6.7	NA	281	3.2
1217	7.4	910	11.5	6.6	NA	277	6.4
1233	7.4	910	11.5	6.6	NA	274	9.6

DTA 3/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 3/21/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Match Project No. 17-0260

Monitoring Point ID P-23 Labeled P-23

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	67.34	Feet
Static water level measurement before purging	40.53	Feet
Static water level measurement at time of sampling	40.53	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 3-22-17 Water Column 26.81 Feet

Time Purged 1240 - 1334 One Casing Volume 4.4 Gallons

Pump Rate 0.25 (GPM) / LPM Volume Purged 13.5 Gallons

Field Sampling Data

Date Sampled 3-22-17

Time Sampled 1340

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 9.2 (mg/l)

Spec. Cond. 560 (µmhos/cm) Turbidity 2.1 (NTU)

Temp. 11.0 (°C) (ORP) Eh 240 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 29° & sunny, wind SE 15

Sample Description: clear & odorless

Observations: DTA 3/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1258	7.6	580	10.5	9.3	NA	242	4.5
1316	7.6	570	11.0	9.2	NA	240	9.0
1334	7.6	560	11.0	9.2	NA	240	13.5

DTA 3/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 3/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Match Project No. 17-0260

Monitoring Point ID P-152d Labeled 806318

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	42.18	Feet
Static water level measurement before purging	35.95	Feet
Static water level measurement at time of sampling	35.95	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 3-22-17 Water Column 6.23 Feet

Time Purged 0905 - 0920 One Casing Volume 1.0 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 3.0 Gallons

Field Sampling Data

Date Sampled 3-22-17

Time Sampled 0930

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 10.4 (mg/l)

Spec. Cond. 380 (µmhos/cm) Turbidity 6.1 (NTU)

Temp. 10.0 (°C) (ORP) Eh 273 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 24° & sunny, wind SE 5-10

Sample Description: clear & odorless

Observations:

DTA 3/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0910	7.7	390	10.5	11.6	NA	273	1.0
0915	7.6	380	10.0	10.8	NA	273	2.0
0920	7.6	380	10.0	10.4	NA	273	3.0

DTA 3/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 3/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Match Project No. 17-0260

Monitoring Point ID P-155 Labeled 8/2964

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 85.47 Feet

Static water level measurement before purging 76.63 Feet

Static water level measurement at time of sampling 76.63 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 3-23-17 Water Column 8.84 Feet

Time Purged 0740 - 0801 One Casing Volume 1.4 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 3-23-17

Time Sampled 0810

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 10.0 (mg/l)

Spec. Cond. 770 (µmhos/cm) Turbidity 8.4 (NTU)

Temp. 10.0 (°C) (ORP) Eh 295 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 27° + cloudy, wind SE 15

Sample Description: clear + odorless

Observations:

DTA 3/23/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0747	7.4	780	10.5	8.7	NA	302	1.4
0754	7.4	770	10.0	9.0	NA	298	2.8
0801	7.4	770	10.0	9.1	NA	295	4.2

DTA 3/23/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 3/23/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Match Project No. 17-0260

Monitoring Point ID P-156 Labeled 8/2965

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	85.53	Feet
Static water level measurement before purging	75.57	Feet
Static water level measurement at time of sampling	75.57	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 3-22-17 Water Column 9.96 Feet

Time Purged 1625 - 1649 One Casing Volume 1.6 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 3-22-17

Time Sampled 1700

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 8.8 (mg/l)

Spec. Cond. 410 (µmhos/cm) Turbidity 15.4 (NTU)

Temp. 9.0 (°C) (ORP) Eh 248 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 32° + cloudy, wind SE 15

Sample Description: clear + odorless

Observations: DJA 3/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1633	7.8	410	9.0	8.9	NA	250	1.6
1641	7.8	410	9.0	8.8	NA	249	3.2
1649	7.8	410	9.0	8.8	NA	248	4.8

DJA 3/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 3/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR March Project No. 17-0260

Monitoring Point ID P-157 Labeled 812966

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	49.06	Feet
Static water level measurement before purging	41.05	Feet
Static water level measurement at time of sampling	41.05	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 3-22-17 Water Column 8.01 Feet

Time Purged 1200 - 1221 One Casing Volume 1.3 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 3-22-17

Time Sampled 1230

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 7.7 (mg/l)

Spec. Cond. 720 (µmhos/cm) Turbidity 9.2 (NTU)

Temp. 10.5 (°C) (ORP) Eh 240 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 27° + sunny, wind ~~NW~~ SE 15

Sample Description: clear + odorless

Observations: DTA 3/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (umhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1207	7.5	720	10.5	7.9	NA	241	1.4
1214	7.4	720	10.5	7.8	NA	240	2.8
1221	7.4	720	10.5	7.7	NA	240	4.2

DTA 3/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 3/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Match Project No. 17-0260

Monitoring Point ID P-158 Labeled 8/2967

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 49.16 Feet

Static water level measurement before purging 38.77 Feet

Static water level measurement at time of sampling 38.77 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 3-22-17 Water Column 10.39 Feet

Time Purged 1100 - 1127 One Casing Volume 1.7 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 3-22-17

Time Sampled 1130

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 10.4 (mg/l)

Spec. Cond. 680 (µmhos/cm) Turbidity 3.2 (NTU)

Temp. 11.0 (°C) (ORP) Eh 240 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 25° + sunny, wind SE 15

Sample Description: clear + odorless

Observations:

DTA 3/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1109	7.6	680	10.5	10.7	NA	239	1.8
1118	7.6	680	10.3	10.5	NA	240	3.6
1127	7.6	680	11.0	10.4	NA	240	5.4

DTA 3/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 3/22/17

Amended Report

Original Report ID: MCC0209 Xcel General Report FINAL 04 20 2017 1324 04 20 2017 0413

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification #MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

11 January 2018

Charles A Donkers

Environmental Services-Water Minneapolis

250 Marquette Plaza

Minneapolis, MN 55401

RE: Sherco CCR

cc: Laboratory report re-created to only include wells in the Bottom Ash Pond CCR Groundwater Monitoring System. HSD 1/11/18

Enclosed are the results of analyses for samples received by the laboratory on 03/23/2017 13:23. If you have any questions concerning this report, please feel free to contact me.

I certify that this analysis report was prepared under my direction or supervision under a system designed to assure that qualified personnel analyzed the submitted samples. All protocols for analysis were followed as required by Minnesota Rules and the Applicable Management Plan.

Sincerely,

Steve Davis

Project Manager

Amended Report

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1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Rinse		MCC0209-01	Water	03/20/2017 10:30	03/23/2017 13:23
P-22		MCC0209-14	Water	03/21/2017 12:40	03/23/2017 13:23
Duplicate		MCC0209-15	Water	03/21/2017 12:40	03/23/2017 13:23
P-17		MCC0209-19	Water	03/21/2017 16:50	03/23/2017 13:23
P-152a		MCC0209-22	Water	03/22/2017 9:30	03/23/2017 13:23
P-158		MCC0209-24	Water	03/22/2017 11:30	03/23/2017 13:23
P-157		MCC0209-25	Water	03/22/2017 12:30	03/23/2017 13:23
P-23		MCC0209-26	Water	03/22/2017 13:40	03/23/2017 13:23
P-156		MCC0209-29	Water	03/22/2017 17:00	03/23/2017 13:23
P-01a-1		MCC0209-30	Water	03/22/2017 17:50	03/23/2017 13:23
P-155		MCC0209-31	Water	03/23/2017 8:10	03/23/2017 13:23

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Rinse

MCC0209-01 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCD0056	4/4/17 9:00	4/4/17 18:41	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0056	4/4/17 9:00	4/4/17 18:41	EPA 300.0	CRL
Sulfate	< 1.00	1.00	mg/L		1	BCD0056	4/4/17 9:00	4/4/17 18:41	EPA 300.0	CRL
Wet Chemistry										
pH	6.28		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 10:43	SM 4500-H+ B	CRL
Total Dissolved Solids	< 20.0	20.0	mg/L		1	BCC0455	3/24/17 10:52	3/24/17 10:52	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 10:16	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 10:16	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 10:16	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 10:16	EPA 200.8	CRL
Chromium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 10:16	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 10:16	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 10:16	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 10:16	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 10:16	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 10:16	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/6/17 17:30	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 18:39	EPA 200.7	HRD
Calcium	< 0.500	0.500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 18:39	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 18:39	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Rinse

MCC0209-01 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0521	3/29/17 7:51	3/29/17 12:03	EPA 245.1, 7470A	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-22

MCC0209-14 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	23.3	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 14:07	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 14:07	EPA 300.0	CRL
Sulfate	210	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 14:07	EPA 300.0	CRL
Wet Chemistry										
pH	7.77		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 12:26	SM 4500-H+ B	CRL
Total Dissolved Solids	592	20.0	mg/L		1	BCC0467	3/25/17 8:28	3/25/17 8:28	SM 2540C	CRL/HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:41	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:41	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:41	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:41	EPA 200.8	CRL
Chromium	1.05	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:41	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:41	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:41	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:41	EPA 200.8	CRL
Selenium	16.0	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:41	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:41	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.19	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/6/17 18:32	EPA 200.7	HRD
Barium	0.0784	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:05	EPA 200.7	HRD
Calcium	121	0.500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:05	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:05	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-22

MCC0209-14 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0521	3/29/17 7:51	3/29/17 12:29	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Duplicate

MCC0209-15 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	23.3	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 14:28	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 14:28	EPA 300.0	CRL
Sulfate	211	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 14:28	EPA 300.0	CRL
Wet Chemistry										
pH	7.79		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 12:33	SM 4500-H+ B	CRL
Total Dissolved Solids	588	20.0	mg/L		1	BCC0467	3/25/17 8:28	3/25/17 8:28	SM 2540C	CRL/HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:46	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:46	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:46	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:46	EPA 200.8	CRL
Chromium	1.05	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:46	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:46	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:46	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:46	EPA 200.8	CRL
Selenium	15.8	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:46	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:46	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.21	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/6/17 18:35	EPA 200.7	HRD
Barium	0.0767	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:10	EPA 200.7	HRD
Calcium	117	0.500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:10	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:10	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Duplicate

MCC0209-15 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0521	3/29/17 7:51	3/29/17 12:31	EPA 245.1, 7470A	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-17

MCC0209-19 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	24.3	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 17:32	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 17:32	EPA 300.0	CRL
Sulfate	33.8	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 17:32	EPA 300.0	CRL
Wet Chemistry										
pH	7.91		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 13:01	SM 4500-H+ B	CRL
Total Dissolved Solids	302	20.0	mg/L		1	BCC0473	3/27/17 9:28	3/27/17 9:28	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.537	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:05	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:05	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:05	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:05	EPA 200.8	CRL
Chromium	1.02	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:05	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:05	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:05	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:05	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:05	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:05	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/6/17 18:50	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:31	EPA 200.7	HRD
Calcium	75.1	0.500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:31	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:31	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-17

MCC0209-19 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCC0521	3/29/17 7:51	3/29/17 12:37	EPA 245.1, 7470A	HRD

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-152a

MCC0209-22 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 18:33	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 18:33	EPA 300.0	CRL
Sulfate	9.57	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 18:33	EPA 300.0	CRL
Wet Chemistry										
pH	7.92		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 13:29	SM 4500-H+ B	CRL
Total Dissolved Solids	214	20.0	mg/L		1	BCC0473	3/27/17 9:28	3/27/17 9:28	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:22	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:22	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:22	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:22	EPA 200.8	CRL
Chromium	0.827	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:22	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:22	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:22	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:22	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:22	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:22	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0632	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 11:56	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 11:55	EPA 200.7	HRD
Calcium	58.4	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 11:55	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 11:55	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-152a

MCC0209-22 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCD0010	4/3/17 8:41	4/3/17 15:03	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCC0209 Xcel General Report FINAL 04 20 2017 1324 04 20 2017 0413

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-158

MCC0209-24 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	5.10	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 19:14	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 19:14	EPA 300.0	CRL
Sulfate	117	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 19:14	EPA 300.0	CRL
Wet Chemistry										
pH	7.80		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 13:43	SM 4500-H+ B	CRL
Total Dissolved Solids	436	20.0	mg/L		1	BCC0473	3/27/17 9:28	3/27/17 9:28	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.541	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:42	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:42	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:42	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:42	EPA 200.8	CRL
Chromium	4.04	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:42	EPA 200.8	CRL
Molybdenum	0.635	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:42	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:42	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:42	EPA 200.8	CRL
Selenium	2.22	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:42	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:42	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.626	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:16	EPA 200.7	HRD
Barium	0.0797	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:15	EPA 200.7	HRD
Calcium	97.6	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:15	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:15	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-158

MCC0209-24 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCD0010	4/3/17 8:41	4/3/17 15:06	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCC0209 Xcel General Report FINAL 04 20 2017 1324 04 20 2017 0413

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-157

MCC0209-25 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	15.5	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 19:34	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 19:34	EPA 300.0	CRL
Sulfate	93.2	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 19:34	EPA 300.0	CRL
Wet Chemistry										
pH	7.73		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 13:51	SM 4500-H+ B	CRL
Total Dissolved Solids	440	20.0	mg/L		1	BCC0473	3/27/17 9:28	3/27/17 9:28	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:47	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:47	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:47	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:47	EPA 200.8	CRL
Chromium	1.51	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:47	EPA 200.8	CRL
Molybdenum	0.768	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:47	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:47	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:47	EPA 200.8	CRL
Selenium	2.28	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:47	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:47	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.277	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:21	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:20	EPA 200.7	HRD
Calcium	90.5	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:20	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:20	EPA 200.7	HRD

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Minneapolis Testing Laboratory
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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-157

MCC0209-25 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCD0010	4/3/17 8:41	4/3/17 15:08	EPA 245.1, 7470A	HRD

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-23

MCC0209-26 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	23.6	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 19:54	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 19:54	EPA 300.0	CRL
Sulfate	98.0	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 19:54	EPA 300.0	CRL
Wet Chemistry										
pH	7.89		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 13:58	SM 4500-H+ B	CRL
Total Dissolved Solids	406	20.0	mg/L		1	BCC0473	3/27/17 9:28	3/27/17 9:28	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.555	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:52	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:52	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:52	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:52	EPA 200.8	CRL
Chromium	0.982	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:52	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:52	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:52	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:52	EPA 200.8	CRL
Selenium	1.08	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:52	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:52	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.348	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:26	EPA 200.7	HRD
Barium	0.0568	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:25	EPA 200.7	HRD
Calcium	85.7	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:25	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:25	EPA 200.7	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-23

MCC0209-26 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCD0010	4/3/17 8:41	4/3/17 15:10	EPA 245.1, 7470A	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-156

MCC0209-29 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	3.07	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 12:08	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 12:08	EPA 300.0	CRL
Sulfate	23.5	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 12:08	EPA 300.0	CRL
Wet Chemistry										
pH	7.96		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 14:17	SM 4500-H+ B	CRL
Total Dissolved Solids	234	20.0	mg/L		1	BCC0501	3/28/17 9:35	3/28/17 9:35	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	1.04	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:07	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:07	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:07	EPA 200.8	CRL
Cobalt	1.45	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:07	EPA 200.8	CRL
Chromium	3.85	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:07	EPA 200.8	CRL
Molybdenum	0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:07	EPA 200.8	CRL
Lead	0.627	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:07	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:07	EPA 200.8	CRL
Selenium	0.863	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:07	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:07	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.170	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:41	EPA 200.7	HRD
Barium	0.0572	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:40	EPA 200.7	HRD
Calcium	60.1	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:40	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:40	EPA 200.7	HRD

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Amended Report

Original Report ID: MCC0209 Xcel General Report FINAL 04 20 2017 1324 04 20 2017 0413

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-156

MCC0209-29 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCD0010	4/3/17 8:41	4/3/17 15:15	EPA 245.1, 7470A	HRD

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-01a-1

MCC0209-30 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	9.06	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 12:28	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 12:28	EPA 300.0	CRL
Sulfate	83.7	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 12:28	EPA 300.0	CRL
Wet Chemistry										
pH	7.81		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 14:25	SM 4500-H+ B	CRL
Total Dissolved Solids	388	20.0	mg/L		1	BCC0501	3/28/17 9:35	3/28/17 9:35	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:12	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:12	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:12	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:12	EPA 200.8	CRL
Chromium	1.14	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:12	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:12	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:12	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:12	EPA 200.8	CRL
Selenium	5.36	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:12	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:12	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.598	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:46	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:45	EPA 200.7	HRD
Calcium	79.8	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:45	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:45	EPA 200.7	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-01a-1

MCC0209-30 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCD0010	4/3/17 8:41	4/3/17 15:16	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-155

MCC0209-31 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	14.2	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 12:49	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 12:49	EPA 300.0	CRL
Sulfate	160	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 12:49	EPA 300.0	CRL
Wet Chemistry										
pH	7.82		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 14:32	SM 4500-H+ B	CRL
Total Dissolved Solids	502	20.0	mg/L		1	BCC0501	3/28/17 9:35	3/28/17 9:35	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:17	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:17	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:17	EPA 200.8	CRL
Cobalt	0.573	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:17	EPA 200.8	CRL
Chromium	1.50	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:17	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:17	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:17	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:17	EPA 200.8	CRL
Selenium	5.30	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:17	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:17	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.83	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:51	EPA 200.7	HRD
Barium	0.0695	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:50	EPA 200.7	HRD
Calcium	90.1	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:50	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:50	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

P-155

MCC0209-31 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCD0010	4/3/17 8:41	4/3/17 15:22	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCD0056 - Wet Prep										
Blank (BCD0056-BLK1)				Prepared & Analyzed: 04/04/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCD0056-BLK2)				Prepared & Analyzed: 04/04/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCD0056-BS1)				Prepared & Analyzed: 04/04/2017						
Chloride	23.8	1.00	mg/L	25.000		95.4	90-110			
Fluoride	4.83	0.750	mg/L	5.0000		96.5	90-110			
Sulfate	96.4	1.00	mg/L	100.00		96.4	90-110			
LCS (BCD0056-BS2)				Prepared & Analyzed: 04/04/2017						
Chloride	24.2	1.00	mg/L	25.000		96.6	90-110			
Fluoride	4.77	0.750	mg/L	5.0000		95.5	90-110			
Sulfate	97.2	1.00	mg/L	100.00		97.2	90-110			
LCS (BCD0056-BS3)				Prepared & Analyzed: 04/04/2017						
Chloride	25.2	1.00	mg/L	25.000		101	90-110			
Fluoride	5.13	0.750	mg/L	5.0000		103	90-110			
Sulfate	102	1.00	mg/L	100.00		102	90-110			
Duplicate (BCD0056-DUP1)		**Source: MCC0187-01**		Prepared & Analyzed: 04/04/2017						
Chloride	14.2	1.00	mg/L		14.3			0.576	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	10.2	1.00	mg/L		10.3			1.40	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCD0056 - Wet Prep										
Duplicate (BCD0056-DUP2)		**Source: MCC0195-01**		Prepared & Analyzed: 04/04/2017						
Chloride	7.84	1.00	mg/L		7.81			0.447	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	4.15	1.00	mg/L		4.12			0.629	20	
Matrix Spike (BCD0056-MS1)		**Source: MCC0187-01**		Prepared & Analyzed: 04/04/2017						
Chloride	26.5	1.00	mg/L	12.500	14.3	97.7	80-120			
Fluoride	2.56	0.750	mg/L	2.5000	<0.750	102	80-120			
Sulfate	59.8	1.00	mg/L	50.000	10.3	99.0	80-120			
Matrix Spike (BCD0056-MS2)		**Source: MCC0195-01**		Prepared & Analyzed: 04/04/2017						
Chloride	20.2	1.00	mg/L	12.500	7.81	98.9	80-120			
Fluoride	2.58	0.750	mg/L	2.5000	<0.750	103	80-120			
Sulfate	54.0	1.00	mg/L	50.000	4.12	99.8	80-120			
Matrix Spike Dup (BCD0056-MSD1)		**Source: MCC0187-01**		Prepared & Analyzed: 04/04/2017						
Chloride	26.5	1.00	mg/L	12.500	14.3	98.2	80-120	0.207	20	
Fluoride	2.49	0.750	mg/L	2.5000	<0.750	99.6	80-120	2.70	20	
Sulfate	59.9	1.00	mg/L	50.000	10.3	99.2	80-120	0.137	20	
Matrix Spike Dup (BCD0056-MSD2)		**Source: MCC0195-01**		Prepared & Analyzed: 04/04/2017						
Chloride	20.4	1.00	mg/L	12.500	7.81	101	80-120	1.11	20	
Fluoride	2.50	0.750	mg/L	2.5000	<0.750	100	80-120	3.03	20	
Sulfate	54.9	1.00	mg/L	50.000	4.12	102	80-120	1.54	20	
Batch BCD0088 - Wet Prep										
Blank (BCD0088-BLK1)				Prepared & Analyzed: 04/05/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCD0088 - Wet Prep										
Blank (BCD0088-BLK2)				Prepared & Analyzed: 04/05/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCD0088-BS1)				Prepared & Analyzed: 04/05/2017						
Chloride	24.1	1.00	mg/L	25.000		96.4	90-110			
Fluoride	4.84	0.750	mg/L	5.0000		96.7	90-110			
Sulfate	97.1	1.00	mg/L	100.00		97.1	90-110			
LCS (BCD0088-BS2)				Prepared & Analyzed: 04/05/2017						
Chloride	24.3	1.00	mg/L	25.000		97.2	90-110			
Fluoride	4.82	0.750	mg/L	5.0000		96.5	90-110			
Sulfate	97.8	1.00	mg/L	100.00		97.8	90-110			
LCS (BCD0088-BS3)				Prepared & Analyzed: 04/05/2017						
Chloride	25.0	1.00	mg/L	25.000		100	90-110			
Fluoride	4.99	0.750	mg/L	5.0000		99.8	90-110			
Sulfate	101	1.00	mg/L	100.00		101	90-110			
Duplicate (BCD0088-DUP1)		**Source: MCC0209-21**		Prepared & Analyzed: 04/05/2017						
Chloride	28.9	1.00	mg/L		29.3			1.17	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	6.07	1.00	mg/L		6.12			0.902	20	
Duplicate (BCD0088-DUP2)		**Source: MCC0209-22**		Prepared & Analyzed: 04/05/2017						
Chloride	0.769	1.00	mg/L		0.772			0.389	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	9.53	1.00	mg/L		9.57			0.387	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCD0088 - Wet Prep										
Matrix Spike (BCD0088-MS1)		**Source: MCC0209-21**		Prepared & Analyzed: 04/05/2017						
Chloride	41.3	1.00	mg/L	12.500	29.3	96.0	80-120			
Fluoride	2.62	0.750	mg/L	2.5000	<0.750	105	80-120			
Sulfate	56.8	1.00	mg/L	50.000	6.12	101	80-120			
Matrix Spike (BCD0088-MS2)		**Source: MCC0209-22**		Prepared & Analyzed: 04/05/2017						
Chloride	12.8	1.00	mg/L	12.500	0.772	96.5	80-120			
Fluoride	2.56	0.750	mg/L	2.5000	<0.750	102	80-120			
Sulfate	59.6	1.00	mg/L	50.000	9.57	100	80-120			
Matrix Spike Dup (BCD0088-MSD1)		**Source: MCC0209-21**		Prepared & Analyzed: 04/05/2017						
Chloride	41.5	1.00	mg/L	12.500	29.3	97.5	80-120	0.454	20	
Fluoride	2.52	0.750	mg/L	2.5000	<0.750	101	80-120	3.97	20	
Sulfate	57.3	1.00	mg/L	50.000	6.12	102	80-120	0.955	20	
Matrix Spike Dup (BCD0088-MSD2)		**Source: MCC0209-22**		Prepared & Analyzed: 04/05/2017						
Chloride	13.1	1.00	mg/L	12.500	0.772	98.7	80-120	2.13	20	
Fluoride	2.46	0.750	mg/L	2.5000	<0.750	98.4	80-120	3.83	20	
Sulfate	60.5	1.00	mg/L	50.000	9.57	102	80-120	1.47	20	
Batch BCD0133 - Wet Prep										
Blank (BCD0133-BLK1)				Prepared & Analyzed: 04/06/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCD0133-BLK2)				Prepared & Analyzed: 04/06/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCD0133 - Wet Prep										
LCS (BCD0133-BS1)				Prepared & Analyzed: 04/06/2017						
Chloride	24.1	1.00	mg/L	25.000		96.4	90-110			
Fluoride	5.13	0.750	mg/L	5.0000		103	90-110			
Sulfate	97.7	1.00	mg/L	100.00		97.7	90-110			
LCS (BCD0133-BS2)				Prepared & Analyzed: 04/06/2017						
Chloride	24.4	1.00	mg/L	25.000		97.6	90-110			
Fluoride	5.07	0.750	mg/L	5.0000		101	90-110			
Sulfate	98.5	1.00	mg/L	100.00		98.5	90-110			
LCS (BCD0133-BS3)				Prepared & Analyzed: 04/06/2017						
Chloride	25.1	1.00	mg/L	25.000		100	90-110			
Fluoride	5.26	0.750	mg/L	5.0000		105	90-110			
Sulfate	101	1.00	mg/L	100.00		101	90-110			
Duplicate (BCD0133-DUP1)		**Source: MCC0209-29**		Prepared & Analyzed: 04/06/2017						
Chloride	3.05	1.00	mg/L		3.07			0.555	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	23.4	1.00	mg/L		23.5			0.453	20	
Duplicate (BCD0133-DUP2)		**Source: MCC0209-34**		Prepared & Analyzed: 04/06/2017						
Chloride	9.63	1.00	mg/L		9.59			0.416	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	46.5	1.00	mg/L		46.6			0.172	20	
Matrix Spike (BCD0133-MS1)		**Source: MCC0209-29**		Prepared & Analyzed: 04/06/2017						
Chloride	15.5	1.00	mg/L	12.500	3.07	99.6	80-120			
Fluoride	2.62	0.750	mg/L	2.5000	<0.750	105	80-120			
Sulfate	74.4	1.00	mg/L	50.000	23.5	102	80-120			

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCD0133 - Wet Prep										
Matrix Spike (BCD0133-MS2)		**Source: MCC0209-34**		Prepared & Analyzed: 04/06/2017						
Chloride	21.9	1.00	mg/L	12.500	9.59	98.4	80-120			
Fluoride	2.56	0.750	mg/L	2.5000	<0.750	102	80-120			
Sulfate	96.1	1.00	mg/L	50.000	46.6	99.0	80-120			
Matrix Spike Dup (BCD0133-MSD1)		**Source: MCC0209-29**		Prepared & Analyzed: 04/06/2017						
Chloride	15.5	1.00	mg/L	12.500	3.07	99.7	80-120	0.135	20	
Fluoride	2.65	0.750	mg/L	2.5000	<0.750	106	80-120	1.33	20	
Sulfate	74.5	1.00	mg/L	50.000	23.5	102	80-120	0.117	20	
Matrix Spike Dup (BCD0133-MSD2)		**Source: MCC0209-34**		Prepared & Analyzed: 04/06/2017						
Chloride	22.2	1.00	mg/L	12.500	9.59	101	80-120	1.35	20	
Fluoride	2.65	0.750	mg/L	2.5000	<0.750	106	80-120	3.42	20	
Sulfate	97.2	1.00	mg/L	50.000	46.6	101	80-120	1.20	20	

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0455 - Wet Prep										
Blank (BCC0455-BLK1)				Prepared & Analyzed: 03/24/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCC0455-DUP1)			**Source: MCC0208-01**	Prepared & Analyzed: 03/24/2017						
Total Dissolved Solids	188	20.0	mg/L		190			1.06	20	
Batch BCC0458 - Wet Prep										
LCS (BCC0458-BS1)				Prepared & Analyzed: 03/24/2017						
pH	7.03		pH Units	7.0000		100	90-110			
LCS (BCC0458-BS2)				Prepared & Analyzed: 03/24/2017						
pH	7.01		pH Units	7.0000		100	90-110			
Duplicate (BCC0458-DUP1)			**Source: MCC0208-01**	Prepared & Analyzed: 03/24/2017						
pH	7.98		pH Units		8.03			0.625	20	
Duplicate (BCC0458-DUP2)			**Source: MCC0209-02**	Prepared & Analyzed: 03/24/2017						
pH	7.65		pH Units		7.67			0.261	20	
Duplicate (BCC0458-DUP3)			**Source: MCC0209-11**	Prepared & Analyzed: 03/24/2017						
pH	7.74		pH Units		7.74			0.00	20	
Duplicate (BCC0458-DUP4)			**Source: MCC0209-21**	Prepared & Analyzed: 03/24/2017						
pH	7.94		pH Units		7.95			0.126	20	
Batch BCC0467 - Wet Prep										
Blank (BCC0467-BLK1)				Prepared & Analyzed: 03/25/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0467 - Wet Prep										
Duplicate (BCC0467-DUP1)		**Source: MCC0209-08**		Prepared & Analyzed: 03/25/2017						
Total Dissolved Solids	456	20.0	mg/L		456			0.00	20	
Batch BCC0473 - Wet Prep										
Blank (BCC0473-BLK1)				Prepared & Analyzed: 03/27/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCC0473-DUP1)		**Source: MCC0209-18**		Prepared & Analyzed: 03/27/2017						
Total Dissolved Solids	294	20.0	mg/L		298			1.35	20	
Batch BCC0501 - Wet Prep										
Blank (BCC0501-BLK1)				Prepared & Analyzed: 03/28/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCC0501-DUP1)		**Source: MCC0209-28**		Prepared & Analyzed: 03/28/2017						
Total Dissolved Solids	242	20.0	mg/L		222			8.62	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0598 - EPA 200.2, EPA 3005										
Blank (BCC0598-BLK1)				Prepared: 03/31/2017 Analyzed: 04/05/2017						
Selenium	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
LCS (BCC0598-BS1)				Prepared: 03/31/2017 Analyzed: 04/05/2017						
Lead	105	0.500	ug/L	100.00		105	85-115			
Selenium	102	0.500	ug/L	100.00		102	85-115			
Arsenic	102	0.500	ug/L	100.00		102	85-115			
Cobalt	102	0.500	ug/L	100.00		102	85-115			
Chromium	101	0.500	ug/L	100.00		101	85-115			
Thallium	105	0.500	ug/L	100.00		105	85-115			
Cadmium	102	0.500	ug/L	100.00		102	85-115			
Antimony	102	0.500	ug/L	100.00		102	85-115			
Molybdenum	106	0.500	ug/L	100.00		106	85-115			
Beryllium	105	0.500	ug/L	100.00		105	85-115			
Duplicate (BCC0598-DUP1)		**Source: MCC0209-04**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Lead	0.0470	0.500	ug/L		0.0260			57.4	20	M_D-RL
Antimony	0.0574	0.500	ug/L		0.0320			56.9	20	M_D-RL
Selenium	0.221	0.500	ug/L		0.221			0.184	20	
Thallium	0.0394	0.500	ug/L		0.00648			143	20	M_D-RL
Beryllium	0.0360	0.500	ug/L		0.00900			120	20	M_D-RL
Arsenic	0.662	0.500	ug/L		0.669			1.02	20	
Cobalt	0.0970	0.500	ug/L		0.0829			15.6	20	
Molybdenum	0.165	0.500	ug/L		0.129			24.1	20	M_D-RL
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Chromium	0.611	0.500	ug/L		0.616			0.801	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0598 - EPA 200.2, EPA 3005										
Duplicate (BCC0598-DUP2)		**Source: MCC0209-05**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Selenium	0.430	0.500	ug/L		0.262			48.5	20	M_D-RL
Lead	0.318	0.500	ug/L		0.320			0.492	20	
Beryllium	0.0163	0.500	ug/L		0.0173			6.42	20	
Antimony	0.0497	0.500	ug/L		0.0552			10.4	20	
Chromium	1.72	0.500	ug/L		1.34			24.8	20	M_D
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Cobalt	0.899	0.500	ug/L		0.913			1.53	20	
Molybdenum	0.255	0.500	ug/L		0.261			2.22	20	
Thallium	0.0129	0.500	ug/L		0.00841			41.9	20	M_D-RL
Arsenic	0.933	0.500	ug/L		0.976			4.48	20	
Matrix Spike (BCC0598-MS1)		**Source: MCC0209-04**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Arsenic	105	0.500	ug/L	100.00	0.669	104	70-130			
Molybdenum	106	0.500	ug/L	100.00	0.129	106	70-130			
Beryllium	102	0.500	ug/L	100.00	0.00900	102	70-130			
Selenium	105	0.500	ug/L	100.00	0.221	105	70-130			
Antimony	102	0.500	ug/L	100.00	0.0320	102	70-130			
Lead	95.7	0.500	ug/L	100.00	0.0260	95.7	70-130			
Chromium	103	0.500	ug/L	100.00	0.616	103	70-130			
Cadmium	104	0.500	ug/L	100.00	<0.500	104	70-130			
Cobalt	105	0.500	ug/L	100.00	0.0829	105	70-130			
Thallium	98.3	0.500	ug/L	100.00	0.00648	98.2	70-130			
Matrix Spike (BCC0598-MS2)		**Source: MCC0209-05**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Selenium	106	0.500	ug/L	100.00	0.262	106	70-130			
Antimony	103	0.500	ug/L	100.00	0.0552	103	70-130			
Molybdenum	107	0.500	ug/L	100.00	0.261	107	70-130			
Cobalt	99.8	0.500	ug/L	100.00	0.913	98.9	70-130			
Cadmium	97.7	0.500	ug/L	100.00	<0.500	97.7	70-130			
Thallium	101	0.500	ug/L	100.00	0.00841	101	70-130			
Lead	97.3	0.500	ug/L	100.00	0.320	97.0	70-130			
Chromium	105	0.500	ug/L	100.00	1.34	104	70-130			
Beryllium	106	0.500	ug/L	100.00	0.0173	106	70-130			
Arsenic	109	0.500	ug/L	100.00	0.976	108	70-130			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0598 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCC0598-MSD1)		**Source: MCC0209-04**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Cobalt	103	0.500	ug/L	100.00	0.0829	103	70-130	1.41	20	
Thallium	97.6	0.500	ug/L	100.00	0.00648	97.6	70-130	0.637	20	
Chromium	105	0.500	ug/L	100.00	0.616	105	70-130	1.97	20	
Selenium	105	0.500	ug/L	100.00	0.221	104	70-130	0.0258	20	
Beryllium	105	0.500	ug/L	100.00	0.00900	105	70-130	2.86	20	
Lead	95.6	0.500	ug/L	100.00	0.0260	95.6	70-130	0.0647	20	
Arsenic	105	0.500	ug/L	100.00	0.669	104	70-130	0.235	20	
Antimony	101	0.500	ug/L	100.00	0.0320	101	70-130	1.47	20	
Molybdenum	104	0.500	ug/L	100.00	0.129	104	70-130	1.92	20	
Cadmium	102	0.500	ug/L	100.00	<0.500	102	70-130	2.00	20	
Matrix Spike Dup (BCC0598-MSD2)		**Source: MCC0209-05**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130	3.38	20	
Lead	95.2	0.500	ug/L	100.00	0.320	94.9	70-130	2.12	20	
Beryllium	106	0.500	ug/L	100.00	0.0173	106	70-130	0.0830	20	
Molybdenum	105	0.500	ug/L	100.00	0.261	105	70-130	2.28	20	
Chromium	106	0.500	ug/L	100.00	1.34	105	70-130	0.918	20	
Antimony	101	0.500	ug/L	100.00	0.0552	101	70-130	2.60	20	
Thallium	97.0	0.500	ug/L	100.00	0.00841	97.0	70-130	3.56	20	
Cobalt	103	0.500	ug/L	100.00	0.913	102	70-130	3.43	20	
Arsenic	106	0.500	ug/L	100.00	0.976	105	70-130	2.60	20	
Selenium	105	0.500	ug/L	100.00	0.262	104	70-130	1.45	20	
Batch BCC0600 - EPA 200.2, EPA 3005										
Blank (BCC0600-BLK1)				Prepared: 03/31/2017 Analyzed: 04/06/2017						
Cadmium	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0600 - EPA 200.2, EPA 3005										
LCS (BCC0600-BS1)				Prepared: 03/31/2017 Analyzed: 04/06/2017						
Selenium	98.2	0.500	ug/L	100.00		98.2	85-115			
Thallium	102	0.500	ug/L	100.00		102	85-115			
Beryllium	102	0.500	ug/L	100.00		102	85-115			
Arsenic	97.3	0.500	ug/L	100.00		97.3	85-115			
Cadmium	98.8	0.500	ug/L	100.00		98.8	85-115			
Cobalt	102	0.500	ug/L	100.00		102	85-115			
Chromium	100	0.500	ug/L	100.00		100	85-115			
Molybdenum	98.6	0.500	ug/L	100.00		98.6	85-115			
Lead	101	0.500	ug/L	100.00		101	85-115			
Antimony	97.5	0.500	ug/L	100.00		97.5	85-115			
Duplicate (BCC0600-DUP1)				**Source: MCC0209-23**	Prepared: 03/31/2017 Analyzed: 04/06/2017					
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Molybdenum	0.138	0.500	ug/L		0.116			17.8	20	
Antimony	0.0673	0.500	ug/L		0.0641			4.87	20	
Beryllium	0.0256	0.500	ug/L		0.00551			129	20	M_D-RL
Selenium	0.169	0.500	ug/L		0.0659			87.6	20	M_D-RL
Thallium	0.0412	0.500	ug/L		0.0100			122	20	M_D-RL
Chromium	0.961	0.500	ug/L		1.07			10.5	20	
Lead	0.0304	0.500	ug/L		0.0411			29.8	20	M_D-RL
Cobalt	0.0521	0.500	ug/L		0.0554			6.21	20	
Arsenic	0.455	0.500	ug/L		0.534			15.9	20	
Duplicate (BCC0600-DUP2)				**Source: MCC0209-24**	Prepared: 03/31/2017 Analyzed: 04/06/2017					
Thallium	0.0121	0.500	ug/L		0.00695			53.8	20	M_D-RL
Beryllium	0.0138	0.500	ug/L		0.0132			4.46	20	
Antimony	0.0650	0.500	ug/L		0.0631			2.92	20	
Cadmium	<0.500	0.500	ug/L		0.0282				20	
Selenium	2.41	0.500	ug/L		2.22			8.37	20	
Arsenic	0.587	0.500	ug/L		0.541			8.15	20	
Lead	0.125	0.500	ug/L		0.111			11.7	20	
Cobalt	0.334	0.500	ug/L		0.348			3.95	20	
Chromium	4.05	0.500	ug/L		4.04			0.167	20	
Molybdenum	0.617	0.500	ug/L		0.635			2.85	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0600 - EPA 200.2, EPA 3005										
Matrix Spike (BCC0600-MS1)	**Source: MCC0209-23**			Prepared: 03/31/2017 Analyzed: 04/06/2017						
Antimony	104	0.500	ug/L	100.00	0.0641	104	70-130			
Beryllium	110	0.500	ug/L	100.00	0.00551	110	70-130			
Thallium	101	0.500	ug/L	100.00	0.0100	101	70-130			
Molybdenum	104	0.500	ug/L	100.00	0.116	104	70-130			
Cobalt	104	0.500	ug/L	100.00	0.0554	104	70-130			
Chromium	105	0.500	ug/L	100.00	1.07	104	70-130			
Lead	96.8	0.500	ug/L	100.00	0.0411	96.8	70-130			
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130			
Selenium	102	0.500	ug/L	100.00	0.0659	102	70-130			
Arsenic	106	0.500	ug/L	100.00	0.534	106	70-130			
Matrix Spike (BCC0600-MS2)	**Source: MCC0209-24**			Prepared: 03/31/2017 Analyzed: 04/06/2017						
Chromium	108	0.500	ug/L	100.00	4.04	104	70-130			
Antimony	101	0.500	ug/L	100.00	0.0631	101	70-130			
Arsenic	105	0.500	ug/L	100.00	0.541	104	70-130			
Selenium	107	0.500	ug/L	100.00	2.22	105	70-130			
Lead	98.0	0.500	ug/L	100.00	0.111	97.9	70-130			
Molybdenum	103	0.500	ug/L	100.00	0.635	102	70-130			
Cobalt	104	0.500	ug/L	100.00	0.348	103	70-130			
Cadmium	101	0.500	ug/L	100.00	0.0282	101	70-130			
Thallium	100	0.500	ug/L	100.00	0.00695	100	70-130			
Beryllium	103	0.500	ug/L	100.00	0.0132	103	70-130			
Matrix Spike Dup (BCC0600-MSD1)	**Source: MCC0209-23**			Prepared: 03/31/2017 Analyzed: 04/06/2017						
Beryllium	104	0.500	ug/L	100.00	0.00551	104	70-130	5.93	20	
Molybdenum	103	0.500	ug/L	100.00	0.116	102	70-130	1.12	20	
Cadmium	102	0.500	ug/L	100.00	<0.500	102	70-130	0.917	20	
Arsenic	106	0.500	ug/L	100.00	0.534	105	70-130	0.459	20	
Chromium	105	0.500	ug/L	100.00	1.07	104	70-130	0.260	20	
Cobalt	103	0.500	ug/L	100.00	0.0554	103	70-130	0.856	20	
Thallium	101	0.500	ug/L	100.00	0.0100	101	70-130	0.0858	20	
Selenium	106	0.500	ug/L	100.00	0.0659	106	70-130	3.69	20	
Antimony	102	0.500	ug/L	100.00	0.0641	102	70-130	1.89	20	
Lead	97.2	0.500	ug/L	100.00	0.0411	97.2	70-130	0.416	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0600 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCC0600-MSD2)		**Source: MCC0209-24**		Prepared: 03/31/2017 Analyzed: 04/06/2017						
Chromium	108	0.500	ug/L	100.00	4.04	104	70-130	0.0227	20	
Molybdenum	102	0.500	ug/L	100.00	0.635	101	70-130	0.534	20	
Beryllium	107	0.500	ug/L	100.00	0.0132	107	70-130	3.94	20	
Antimony	101	0.500	ug/L	100.00	0.0631	101	70-130	0.295	20	
Arsenic	108	0.500	ug/L	100.00	0.541	107	70-130	2.77	20	
Selenium	107	0.500	ug/L	100.00	2.22	104	70-130	0.250	20	
Cadmium	104	0.500	ug/L	100.00	0.0282	104	70-130	3.34	20	
Cobalt	104	0.500	ug/L	100.00	0.348	104	70-130	0.792	20	
Thallium	100	0.500	ug/L	100.00	0.00695	100	70-130	0.227	20	
Lead	97.8	0.500	ug/L	100.00	0.111	97.6	70-130	0.212	20	

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0597 - EPA 200.2, EPA 3005										
Blank (BCC0597-BLK1)				Prepared: 03/31/2017 Analyzed: 04/04/2017						
Barium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
Boron	<0.0500	0.0500	mg/L							
LCS (BCC0597-BS1)				Prepared: 03/31/2017 Analyzed: 04/04/2017						
Lithium	1.02	0.0500	mg/L	1.0000		102	85-115			
Barium	0.991	0.0500	mg/L	1.0000		99.1	85-115			
Boron	1.00	0.0500	mg/L	1.0000		100	85-115			
Calcium	100	0.500	mg/L	100.00		100	85-115			
Duplicate (BCC0597-DUP1)		**Source: MCC0209-02**		Prepared: 03/31/2017 Analyzed: 04/04/2017						
Barium	0.0931	0.0500	mg/L		0.102			8.86	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Boron	0.121	0.0500	mg/L		0.122			1.27	20	
Calcium	83.6	0.500	mg/L		89.3			6.56	20	
Duplicate (BCC0597-DUP2)		**Source: MCC0209-03**		Prepared: 03/31/2017 Analyzed: 04/04/2017						
Barium	0.0514	0.0500	mg/L		0.0542			5.20	20	
Boron	0.0561	0.0500	mg/L		0.0584			4.02	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	67.7	0.500	mg/L		71.1			4.87	20	
Matrix Spike (BCC0597-MS1)		**Source: MCC0209-02**		Prepared: 03/31/2017 Analyzed: 04/06/2017						
Boron	1.13	0.0500	mg/L	1.0000	0.122	101	70-130			
Barium	1.11	0.0500	mg/L	1.0000	0.102	101	70-130			
Calcium	190	0.500	mg/L	100.00	89.3	101	70-130			
Lithium	1.07	0.0500	mg/L	1.0000	<0.0500	107	75-125			

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0597 - EPA 200.2, EPA 3005										
Matrix Spike (BCC0597-MS2)		**Source: MCC0209-03**		Prepared: 03/31/2017 Analyzed: 04/04/2017						
Lithium	1.06	0.0500	mg/L	1.0000	<0.0500	106	75-125			
Barium	1.10	0.0500	mg/L	1.0000	0.0542	104	70-130			
Boron	1.05	0.0500	mg/L	1.0000	0.0584	99.2	70-130			
Calcium	180	0.500	mg/L	100.00	71.1	109	70-130			
Matrix Spike Dup (BCC0597-MSD1)		**Source: MCC0209-02**		Prepared: 03/31/2017 Analyzed: 04/06/2017						
Boron	1.15	0.0500	mg/L	1.0000	0.122	103	70-130	1.93	20	
Barium	1.09	0.0500	mg/L	1.0000	0.102	99.3	70-130	1.52	20	
Calcium	188	0.500	mg/L	100.00	89.3	98.4	70-130	1.39	20	
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125	2.61	20	
Matrix Spike Dup (BCC0597-MSD2)		**Source: MCC0209-03**		Prepared: 03/31/2017 Analyzed: 04/04/2017						
Calcium	182	0.500	mg/L	100.00	71.1	111	70-130	1.02	20	
Boron	1.07	0.0500	mg/L	1.0000	0.0584	101	70-130	1.94	20	
Barium	1.10	0.0500	mg/L	1.0000	0.0542	105	70-130	0.580	20	
Lithium	1.07	0.0500	mg/L	1.0000	<0.0500	107	75-125	0.933	20	
Batch BCC0599 - EPA 200.2, EPA 3005										
Blank (BCC0599-BLK1)				Prepared: 03/31/2017 Analyzed: 04/05/2017						
Barium	<0.0500	0.0500	mg/L							
Boron	<0.0500	0.0500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
LCS (BCC0599-BS1)				Prepared: 03/31/2017 Analyzed: 04/05/2017						
Lithium	1.01	0.0500	mg/L	1.0000		101	85-115			
Barium	0.993	0.0500	mg/L	1.0000		99.3	85-115			
Boron	0.982	0.0500	mg/L	1.0000		98.2	85-115			
Calcium	100	0.500	mg/L	100.00		100	85-115			

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0599 - EPA 200.2, EPA 3005										
Duplicate (BCC0599-DUP1)		**Source: MCC0209-21**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	50.0	0.500	mg/L		52.7			5.30	20	
Barium	0.0478	0.0500	mg/L		0.0506			5.77	20	
Boron	<0.0500	0.0500	mg/L		<0.0500				20	
Duplicate (BCC0599-DUP2)		**Source: MCC0209-22**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Barium	0.0394	0.0500	mg/L		0.0408			3.55	20	
Calcium	57.2	0.500	mg/L		58.4			2.19	20	
Boron	0.0592	0.0500	mg/L		0.0632			6.42	20	
Matrix Spike (BCC0599-MS1)		**Source: MCC0209-21**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Boron	1.02	0.0500	mg/L	1.0000	<0.0500	102	70-130			
Calcium	153	0.500	mg/L	100.00	52.7	101	70-130			
Barium	1.04	0.0500	mg/L	1.0000	0.0506	99.2	70-130			
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125			
Matrix Spike (BCC0599-MS2)		**Source: MCC0209-22**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Calcium	161	0.500	mg/L	100.00	58.4	103	70-130			
Boron	1.06	0.0500	mg/L	1.0000	0.0632	100	70-130			
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125			
Barium	1.04	0.0500	mg/L	1.0000	0.0408	100	70-130			
Matrix Spike Dup (BCC0599-MSD1)		**Source: MCC0209-21**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Calcium	155	0.500	mg/L	100.00	52.7	102	70-130	1.06	20	
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125	1.62	20	
Barium	1.06	0.0500	mg/L	1.0000	0.0506	101	70-130	1.43	20	
Boron	1.02	0.0500	mg/L	1.0000	<0.0500	102	70-130	0.00883	20	

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0599 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCC0599-MSD2)		**Source: MCC0209-22**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Calcium	166	0.500	mg/L	100.00	58.4	108	70-130	2.76	20	
Lithium	1.06	0.0500	mg/L	1.0000	<0.0500	106	75-125	3.07	20	
Barium	1.08	0.0500	mg/L	1.0000	0.0408	103	70-130	2.98	20	
Boron	1.09	0.0500	mg/L	1.0000	0.0632	103	70-130	2.78	20	

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCC0521 - EPA 245.1, EPA 7470A										
Blank (BCC0521-BLK1)				Prepared & Analyzed: 03/29/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCC0521-BS1)				Prepared & Analyzed: 03/29/2017						
Mercury	2.67	0.200	ug/L	3.0000		89.2	85-115			
Duplicate (BCC0521-DUP1)		**Source: MCC0209-04**		Prepared & Analyzed: 03/29/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCC0521-DUP2)		**Source: MCC0209-05**		Prepared & Analyzed: 03/29/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCC0521-MS1)		**Source: MCC0209-04**		Prepared & Analyzed: 03/29/2017						
Mercury	2.75	0.200	ug/L	3.0000	<0.200	91.7	70-130			
Matrix Spike (BCC0521-MS2)		**Source: MCC0209-05**		Prepared & Analyzed: 03/29/2017						
Mercury	2.68	0.200	ug/L	3.0000	<0.200	89.4	70-130			
Matrix Spike Dup (BCC0521-MSD1)		**Source: MCC0209-04**		Prepared & Analyzed: 03/29/2017						
Mercury	2.76	0.200	ug/L	3.0000	<0.200	92.0	70-130	0.410	20	
Matrix Spike Dup (BCC0521-MSD2)		**Source: MCC0209-05**		Prepared & Analyzed: 03/29/2017						
Mercury	2.77	0.200	ug/L	3.0000	<0.200	92.4	70-130	3.34	20	
Batch BCD0010 - EPA 245.1, EPA 7470A										
Blank (BCD0010-BLK1)				Prepared & Analyzed: 04/03/2017						
Mercury	<0.200	0.200	ug/L							

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCD0010 - EPA 245.1, EPA 7470A										
LCS (BCD0010-BS1)				Prepared & Analyzed: 04/03/2017						
Mercury	2.82	0.200	ug/L	3.0000		93.8	85-115			
Duplicate (BCD0010-DUP1)		**Source: MCC0209-20**		Prepared & Analyzed: 04/03/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCD0010-DUP2)		**Source: MCC0209-21**		Prepared & Analyzed: 04/03/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCD0010-MS1)		**Source: MCC0209-20**		Prepared & Analyzed: 04/03/2017						
Mercury	2.82	0.200	ug/L	3.0000	<0.200	93.9	70-130			
Matrix Spike (BCD0010-MS2)		**Source: MCC0209-21**		Prepared & Analyzed: 04/03/2017						
Mercury	2.63	0.200	ug/L	3.0000	<0.200	87.8	70-130			
Matrix Spike Dup (BCD0010-MSD1)		**Source: MCC0209-20**		Prepared & Analyzed: 04/03/2017						
Mercury	2.71	0.200	ug/L	3.0000	<0.200	90.4	70-130	3.79	20	
Matrix Spike Dup (BCD0010-MSD2)		**Source: MCC0209-21**		Prepared & Analyzed: 04/03/2017						
Mercury	2.72	0.200	ug/L	3.0000	<0.200	90.6	70-130	3.22	20	

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:23

Qualifiers and Definitions

M_TTT	Sample received at the lab outside of required hold time.
M_D-RL	The RPD for the sample duplicate was outside of QC acceptance limits due to<RL.
M_D	The RPD for the sample duplicate was outside of QC acceptance limits possibly due to non-homogeneous matrix.
Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 3

2052868

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, March 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes — MATRIX / CODE

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

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	WT				3/20/17	1030		4	1	1	2						✓				
2						1115		4	1	1	2						✓				
3						1265		4	1	1	2						✓				
4						1320		4	1	1	2						✓				
5						1415		4	1	1	2						✓				
6						1520		4	1	1	2						✓				
7						1620		4	1	1	2						✓				
8						1710		4	1	1	2						✓				
9						1740		4	1	1	2						✓				
10	WT				3/21/17	0830		4	1	1	2						✓				
11						0925		4	1	1	2						✓				
12						1020		4	1	1	2						✓				M400841

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① Marked #WO3 bottles filtered (dissolved) and unfiltered (Total).	David Anderson	3/23/17	1316	FedEx	3/23/17	1325	5.0	Y	Y	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 3-21-17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 3

2052871

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Dorkets	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, March 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-98	WT				3/21/17	1120		4	1	1	2						✓	✓		
2	P-22						1240		4	1	1	2							✓		
3	Duplicate						1240		4	1	1	2							✓		
4	P-165						1345		4	1	1	2							✓		
5	P-132						1430		4	1	1	2							✓		
6	P-154a						1540		4	1	1	2							✓		
7	P-17						1650		4	1	1	2							✓		
8	P-131	↓				↓	1750		4	1	1	2							✓		
9	P-150	WT				3/22/17	0820		4	1	1	2							✓		
10	P-152a						0930		4	1	1	2							✓		
11	P-130						1030		4	1	1	2							✓		
12	P-158	↓				↓	1130		4	1	1	2							✓		M488841

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① marked HW03 bottles filtered (dissolved) and unfiltered (total)	David Anderson Pace	3/23/17	1310	HO / XCCL	3/24/17	325	5.0	Y	Y	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 3/22/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

2052872

Section A Required Client Information:

Company: Xcel Energy
Address: Environmental Services MP-7
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Chuck Donkers
Copy To:
Purchase Order No.:
Project Name: Sherco CCR, March 2017
Project Number:

Section C Invoice Information:

Attention: Steve Davis
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes MATRIX / CODE

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-157	WT				3/22/17	1230		4	1	1	2						✓	✓		
2	P-23						1340		4	1	1	2						✓	✓		
3	P-153						1445		4	1	1	2						✓	✓		
4	P-151						1600		4	1	1	2						✓	✓		
5	P-156						1700		4	1	1	2						✓	✓		
6	P-01d-1	↓				↓	1750		4	1	1	2						✓	✓		
7	P-155	WT				3/23/17	0810		4	1	1	2						✓	✓		
8	P-162						0930		4	1	1	2						✓	✓		
9	P-163						1030		4	1	1	2						✓	✓		
10	P-164	↓				↓	1130		4	1	1	2						✓	✓		
11																					
12																					MB00841

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① Marked HNO3 bottles filtered (dissolved) and unfiltered (total)	David Anderson/Pace	3/23/17	1310	[signature]	3/23/17	1325	5.0	Y	Y	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 3/23/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 17, 2017

Dave Anderson
Pace Analytical Services - Field Svcs Division
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Dear Dave Anderson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 27, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Robbin Robl
robbin.robl@pacelabs.com
(724)850-5613
Project Manager

Enclosures

cc: Harry S. Davis III, Xcel Energy
Charles A. Donkers, Xcel Energy
Sylvia Hunter, Pace Analytical Services - Field Svcs Division
Christine M. Keefe, Xcel Energy
Ciara Ruikkie, Pace Analytical Services - Field Svcs Division

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CERTIFICATIONS

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30214254001	**P-74-1**	Water	03/20/17 11:15	03/27/17 09:20
30214254002	**P-73a-1**	Water	03/20/17 12:05	03/27/17 09:20
30214254003	**P-125**	Water	03/20/17 13:20	03/27/17 09:20
30214254004	**P-141**	Water	03/20/17 14:15	03/27/17 09:20
30214254005	**P-134**	Water	03/20/17 15:20	03/27/17 09:20
30214254006	**P-138A**	Water	03/20/17 16:20	03/27/17 09:20
30214254007	**P-137A**	Water	03/20/17 17:10	03/27/17 09:20
30214254008	**P-120**	Water	03/20/17 17:40	03/27/17 09:20
30214254009	**P-117**	Water	03/21/17 08:30	03/27/17 09:20
30214254010	**P-75-1**	Water	03/21/17 09:25	03/27/17 09:20
30214254011	**P-97**	Water	03/21/17 10:20	03/27/17 09:20
30214254012	**P-98**	Water	03/21/17 11:20	03/27/17 09:20
30214254013	**P-22**	Water	03/21/17 12:40	03/27/17 09:20
30214254014	**P-165**	Water	03/21/17 13:45	03/27/17 09:20
30214254015	**P-132**	Water	03/21/17 14:30	03/27/17 09:20
30214254016	**P-154a**	Water	03/21/17 15:40	03/27/17 09:20
30214254017	**P-17**	Water	03/21/17 16:50	03/27/17 09:20
30214254018	**P-131**	Water	03/21/17 17:50	03/27/17 09:20
30214254019	**P-150**	Water	03/22/17 08:20	03/27/17 09:20
30214254020	**P-152a**	Water	03/22/17 09:30	03/27/17 09:20
30214254021	**P-130**	Water	03/22/17 10:30	03/27/17 09:20
30214254022	**P-158**	Water	03/22/17 11:30	03/27/17 09:20
30214254023	**P-157**	Water	03/22/17 12:30	03/27/17 09:20
30214254024	**P-23**	Water	03/22/17 13:40	03/27/17 09:20
30214254025	**P-153**	Water	03/22/17 14:45	03/27/17 09:20
30214254026	**P-151**	Water	03/22/17 16:00	03/27/17 09:20
30214254027	**P-156**	Water	03/22/17 17:00	03/27/17 09:20
30214254028	**P-01a-1**	Water	03/22/17 17:50	03/27/17 09:20
30214254029	**P-155**	Water	03/23/17 08:10	03/27/17 09:20
30214254030	**P-162**	Water	03/23/17 09:30	03/27/17 09:20
30214254031	**P-163**	Water	03/23/17 10:30	03/27/17 09:20
30214254032	**P-164**	Water	03/23/17 11:30	03/27/17 09:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30214254001	**P-74-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254002	**P-73a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254003	**P-125**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254004	**P-141**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254005	**P-134**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254006	**P-138A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254007	**P-137A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254008	**P-120**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254009	**P-117**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254010	**P-75-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254011	**P-97**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254012	**P-98**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254013	**P-22**	EPA 903.1	WRR	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254014	**P-165**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254015	**P-132**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254016	**P-154a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254017	**P-17**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254018	**P-131**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254019	**P-150**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254020	**P-152a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254021	**P-130**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254022	**P-158**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254023	**P-157**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254024	**P-23**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254025	**P-153**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Total Radium Calculation	RMK	1	PASI-PA
30214254026	**P-151**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254027	**P-156**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254028	**P-01a-1**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254029	**P-155**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254030	**P-162**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254031	**P-163**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30214254032	**P-164**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

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PROJECT NARRATIVE

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Pace-MN Field Services Division
Date: April 17, 2017

General Information:
32 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Pace-MN Field Services Division
Date: April 17, 2017

General Information:
32 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Pace-MN Field Services Division
Date: April 17, 2017

General Information:
32 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Sample: P-74-1 **Lab ID: 30214254001** Collected: 03/20/17 11:15 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.210 ± 0.364 (0.917) C:NA T:89%**	pCi/L	04/11/17 20:14	13982-63-3	
Radium-228	EPA 904.0	**0.158 ± 0.372 (0.827) C:79% T:85%**	pCi/L	04/10/17 17:22	15262-20-1	
Total Radium	Total Radium Calculation	**0.158 ± 0.736 (1.74)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-73a-1 **Lab ID: 30214254002** Collected: 03/20/17 12:05 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.462 ± 0.392 (0.486) C:NA T:94%**	pCi/L	04/11/17 20:14	13982-63-3	
Radium-228	EPA 904.0	**0.807 ± 0.404 (0.710) C:85% T:89%**	pCi/L	04/10/17 17:23	15262-20-1	
Total Radium	Total Radium Calculation	**1.27 ± 0.796 (1.20)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-125 **Lab ID: 30214254003** Collected: 03/20/17 13:20 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.072 ± 0.425 (0.946) C:NA T:88%**	pCi/L	04/11/17 20:14	13982-63-3	
Radium-228	EPA 904.0	**0.764 ± 0.429 (0.783) C:78% T:86%**	pCi/L	04/10/17 17:23	15262-20-1	
Total Radium	Total Radium Calculation	**0.764 ± 0.854 (1.73)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-141 **Lab ID: 30214254004** Collected: 03/20/17 14:15 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0687 ± 0.404 (0.825) C:NA T:88%**	pCi/L	04/11/17 20:14	13982-63-3	
Radium-228	EPA 904.0	**0.410 ± 0.324 (0.642) C:84% T:91%**	pCi/L	04/10/17 17:23	15262-20-1	
Total Radium	Total Radium Calculation	**0.479 ± 0.728 (1.47)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-134 **Lab ID: 30214254005** Collected: 03/20/17 15:20 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.141 ± 0.321 (0.190) C:NA T:87%**	pCi/L	04/11/17 20:14	13982-63-3	
Radium-228	EPA 904.0	**0.0724 ± 0.350 (0.796) C:78% T:87%**	pCi/L	04/10/17 17:23	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Sample: P-134 **Lab ID: 30214254005** Collected: 03/20/17 15:20 Received: 03/27/17 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	**0.213 ± 0.671 (0.986)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-138A **Lab ID: 30214254006** Collected: 03/20/17 16:20 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0642 ± 0.378 (0.771) C:NA T:93%**	pCi/L	04/11/17 20:39	13982-63-3	
Radium-228	EPA 904.0	**0.850 ± 0.407 (0.702) C:80% T:86%**	pCi/L	04/11/17 12:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.914 ± 0.785 (1.47)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-137A **Lab ID: 30214254007** Collected: 03/20/17 17:10 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.063 ± 0.286 (0.673) C:NA T:96%**	pCi/L	04/11/17 20:39	13982-63-3	
Radium-228	EPA 904.0	**0.697 ± 0.422 (0.791) C:78% T:78%**	pCi/L	04/11/17 12:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.697 ± 0.708 (1.46)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-120 **Lab ID: 30214254008** Collected: 03/20/17 17:40 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.206 ± 0.405 (0.740) C:NA T:88%**	pCi/L	04/11/17 20:39	13982-63-3	
Radium-228	EPA 904.0	**0.574 ± 0.370 (0.701) C:80% T:81%**	pCi/L	04/11/17 12:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.780 ± 0.775 (1.44)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-117 **Lab ID: 30214254009** Collected: 03/21/17 08:30 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.356 (0.797) C:NA T:84%**	pCi/L	04/11/17 20:39	13982-63-3	
Radium-228	EPA 904.0	**0.0171 ± 0.345 (0.795) C:78% T:81%**	pCi/L	04/11/17 12:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.0171 ± 0.701 (1.59)**	pCi/L	04/17/17 10:54	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Sample: P-75-1 **Lab ID: 30214254010** Collected: 03/21/17 09:25 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.216 ± 0.329 (0.863) C:NA T:87%**	pCi/L	04/11/17 20:39	13982-63-3	
Radium-228	EPA 904.0	**0.323 ± 0.332 (0.689) C:82% T:82%**	pCi/L	04/11/17 12:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.323 ± 0.661 (1.55)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-97 **Lab ID: 30214254011** Collected: 03/21/17 10:20 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0669 ± 0.347 (0.720) C:NA T:92%**	pCi/L	04/11/17 20:39	13982-63-3	
Radium-228	EPA 904.0	**0.251 ± 0.309 (0.654) C:80% T:88%**	pCi/L	04/11/17 12:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.318 ± 0.656 (1.37)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-98 **Lab ID: 30214254012** Collected: 03/21/17 11:20 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0628 ± 0.286 (0.170) C:NA T:95%**	pCi/L	04/11/17 21:01	13982-63-3	
Radium-228	EPA 904.0	**0.330 ± 0.352 (0.736) C:79% T:86%**	pCi/L	04/11/17 12:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.393 ± 0.638 (0.906)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-22 **Lab ID: 30214254013** Collected: 03/21/17 12:40 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.229 ± 0.349 (0.562) C:NA T:75%**	pCi/L	04/11/17 21:01	13982-63-3	
Radium-228	EPA 904.0	**0.888 ± 0.432 (0.752) C:76% T:86%**	pCi/L	04/11/17 12:04	15262-20-1	
Total Radium	Total Radium Calculation	**1.12 ± 0.781 (1.31)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-165 **Lab ID: 30214254014** Collected: 03/21/17 13:45 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.276 ± 0.333 (0.508) C:NA T:86%**	pCi/L	04/11/17 21:12	13982-63-3	
Radium-228	EPA 904.0	**0.544 ± 0.418 (0.828) C:79% T:82%**	pCi/L	04/11/17 17:17	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Sample: P-165 **Lab ID: 30214254014** Collected: 03/21/17 13:45 Received: 03/27/17 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	**0.820 ± 0.751 (1.34)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-132 **Lab ID: 30214254015** Collected: 03/21/17 14:30 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.409 ± 0.381 (1.02) C:NA T:90%**	pCi/L	04/11/17 21:01	13982-63-3	
Radium-228	EPA 904.0	**0.797 ± 0.427 (0.770) C:81% T:87%**	pCi/L	04/11/17 17:17	15262-20-1	
Total Radium	Total Radium Calculation	**0.797 ± 0.808 (1.79)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-154a **Lab ID: 30214254016** Collected: 03/21/17 15:40 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.070 ± 0.317 (0.749) C:NA T:89%**	pCi/L	04/11/17 21:01	13982-63-3	
Radium-228	EPA 904.0	**0.108 ± 0.341 (0.767) C:80% T:82%**	pCi/L	04/11/17 17:17	15262-20-1	
Total Radium	Total Radium Calculation	**0.108 ± 0.658 (1.52)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-17 **Lab ID: 30214254017** Collected: 03/21/17 16:50 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.146 ± 0.351 (0.678) C:NA T:85%**	pCi/L	04/11/17 21:01	13982-63-3	
Radium-228	EPA 904.0	**0.512 ± 0.428 (0.864) C:77% T:83%**	pCi/L	04/11/17 17:17	15262-20-1	
Total Radium	Total Radium Calculation	**0.658 ± 0.779 (1.54)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-131 **Lab ID: 30214254018** Collected: 03/21/17 17:50 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.128 ± 0.307 (0.768) C:NA T:94%**	pCi/L	04/11/17 21:27	13982-63-3	
Radium-228	EPA 904.0	**0.872 ± 0.472 (0.849) C:75% T:81%**	pCi/L	04/11/17 17:17	15262-20-1	
Total Radium	Total Radium Calculation	**0.872 ± 0.779 (1.62)**	pCi/L	04/17/17 10:54	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Sample: P-150 **Lab ID: 30214254019** Collected: 03/22/17 08:20 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.268 ± 0.323 (0.493) C:NA T:95%**	pCi/L	04/11/17 21:27	13982-63-3	
Radium-228	EPA 904.0	**0.229 ± 0.364 (0.790) C:80% T:80%**	pCi/L	04/11/17 17:17	15262-20-1	
Total Radium	Total Radium Calculation	**0.497 ± 0.687 (1.28)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-152a **Lab ID: 30214254020** Collected: 03/22/17 09:30 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0723 ± 0.330 (0.532) C:NA T:88%**	pCi/L	04/11/17 21:27	13982-63-3	
Radium-228	EPA 904.0	**-0.114 ± 0.363 (0.867) C:81% T:78%**	pCi/L	04/11/17 17:17	15262-20-1	
Total Radium	Total Radium Calculation	**0.0723 ± 0.693 (1.40)**	pCi/L	04/17/17 10:54	7440-14-4	

Sample: P-130 **Lab ID: 30214254021** Collected: 03/22/17 10:30 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.210 ± 0.533 (0.988) C:NA T:91%**	pCi/L	04/11/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**0.0651 ± 0.375 (0.848) C:82% T:91%**	pCi/L	04/11/17 11:15	15262-20-1	
Total Radium	Total Radium Calculation	**0.275 ± 0.908 (1.84)**	pCi/L	04/17/17 10:56	7440-14-4	

Sample: P-158 **Lab ID: 30214254022** Collected: 03/22/17 11:30 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.270 ± 0.376 (0.628) C:NA T:95%**	pCi/L	04/11/17 10:41	13982-63-3	
Radium-228	EPA 904.0	**0.640 ± 0.398 (0.744) C:75% T:80%**	pCi/L	04/11/17 10:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.910 ± 0.774 (1.37)**	pCi/L	04/17/17 10:56	7440-14-4	

Sample: P-157 **Lab ID: 30214254023** Collected: 03/22/17 12:30 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.210 ± 0.363 (0.649) C:NA T:91%**	pCi/L	04/11/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**0.633 ± 0.394 (0.743) C:78% T:86%**	pCi/L	04/11/17 11:15	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Sample: P-157 **Lab ID: 30214254023** Collected: 03/22/17 12:30 Received: 03/27/17 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	**0.843 ± 0.757 (1.39)**	pCi/L	04/17/17 10:56	7440-14-4	

Sample: P-23 **Lab ID: 30214254024** Collected: 03/22/17 13:40 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.357 ± 0.373 (1.01) C:NA T:90%**	pCi/L	04/11/17 10:44	13982-63-3	
Radium-228	EPA 904.0	**-0.0471 ± 0.303 (0.720) C:76% T:82%**	pCi/L	04/11/17 11:15	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.676 (1.73)**	pCi/L	04/17/17 10:56	7440-14-4	

Sample: P-153 **Lab ID: 30214254025** Collected: 03/22/17 14:45 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.367 ± 0.434 (1.10) C:NA T:84%**	pCi/L	04/11/17 10:44	13982-63-3	
Radium-228	EPA 904.0	**-0.0885 ± 0.257 (0.631) C:78% T:82%**	pCi/L	04/11/17 11:15	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.691 (1.73)**	pCi/L	04/17/17 10:56	7440-14-4	

Sample: P-151 **Lab ID: 30214254026** Collected: 03/22/17 16:00 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.472 ± 0.441 (0.626) C:NA T:98%**	pCi/L	04/11/17 10:44	13982-63-3	
Radium-228	EPA 904.0	**0.549 ± 0.429 (0.857) C:76% T:81%**	pCi/L	04/11/17 10:57	15262-20-1	
Total Radium	Total Radium Calculation	**1.02 ± 0.870 (1.48)**	pCi/L	04/17/17 10:56	7440-14-4	

Sample: P-156 **Lab ID: 30214254027** Collected: 03/22/17 17:00 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.331 (0.742) C:NA T:94%**	pCi/L	04/11/17 10:44	13982-63-3	
Radium-228	EPA 904.0	**0.387 ± 0.311 (0.613) C:78% T:86%**	pCi/L	04/11/17 10:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.387 ± 0.642 (1.36)**	pCi/L	04/17/17 10:56	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Sample: P-01a-1 **Lab ID: 30214254028** Collected: 03/22/17 17:50 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.209 ± 0.319 (0.513) C:NA T:90%**	pCi/L	04/11/17 10:47	13982-63-3	
Radium-228	EPA 904.0	**0.0784 ± 0.344 (0.783) C:72% T:80%**	pCi/L	04/11/17 10:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.287 ± 0.663 (1.30)**	pCi/L	04/17/17 10:56	7440-14-4	

Sample: P-155 **Lab ID: 30214254029** Collected: 03/23/17 08:10 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.182 ± 0.504 (0.979) C:NA T:76%**	pCi/L	04/11/17 10:58	13982-63-3	
Radium-228	EPA 904.0	**0.515 ± 0.350 (0.665) C:74% T:84%**	pCi/L	04/11/17 10:58	15262-20-1	
Total Radium	Total Radium Calculation	**0.697 ± 0.854 (1.64)**	pCi/L	04/17/17 10:56	7440-14-4	

Sample: P-162 **Lab ID: 30214254030** Collected: 03/23/17 09:30 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.067 ± 0.470 (0.999) C:NA T:94%**	pCi/L	04/11/17 10:58	13982-63-3	
Radium-228	EPA 904.0	**-0.0684 ± 0.287 (0.687) C:78% T:81%**	pCi/L	04/11/17 10:58	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.757 (1.69)**	pCi/L	04/17/17 10:56	7440-14-4	

Sample: P-163 **Lab ID: 30214254031** Collected: 03/23/17 10:30 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.260 ± 0.404 (0.699) C:NA T:95%**	pCi/L	04/11/17 10:58	13982-63-3	
Radium-228	EPA 904.0	**0.479 ± 0.344 (0.668) C:78% T:85%**	pCi/L	04/11/17 10:58	15262-20-1	
Total Radium	Total Radium Calculation	**0.739 ± 0.748 (1.37)**	pCi/L	04/17/17 10:56	7440-14-4	

Sample: P-164 **Lab ID: 30214254032** Collected: 03/23/17 11:30 Received: 03/27/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0719 ± 0.328 (0.529) C:NA T:90%**	pCi/L	04/11/17 11:00	13982-63-3	
Radium-228	EPA 904.0	**0.301 ± 0.305 (0.628) C:81% T:84%**	pCi/L	04/11/17 11:15	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

Sample: P-164 **Lab ID: 30214254032** Collected: 03/23/17 11:30 Received: 03/27/17 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	**0.373 ± 0.633 (1.16)**	pCi/L	04/17/17 10:56	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

QC Batch: 253824 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30214254021, 30214254022, 30214254023, 30214254024, 30214254025, 30214254026, 30214254027, 30214254028, 30214254029, 30214254030, 30214254031, 30214254032

METHOD BLANK: 1249458 Matrix: Water
Associated Lab Samples: 30214254021, 30214254022, 30214254023, 30214254024, 30214254025, 30214254026, 30214254027, 30214254028, 30214254029, 30214254030, 30214254031, 30214254032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0407 ± 0.293 (0.693) C:78% T:85%	pCi/L	04/11/17 11:14	

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

This report shall not be reproduced, except in full,
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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

QC Batch: 253580 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30214254001, 30214254002, 30214254003, 30214254004, 30214254005, 30214254006, 30214254007, 30214254008, 30214254009, 30214254010, 30214254011, 30214254012, 30214254013, 30214254014, 30214254015, 30214254016, 30214254017, 30214254018, 30214254019, 30214254020

METHOD BLANK: 1248217 Matrix: Water
Associated Lab Samples: 30214254001, 30214254002, 30214254003, 30214254004, 30214254005, 30214254006, 30214254007, 30214254008, 30214254009, 30214254010, 30214254011, 30214254012, 30214254013, 30214254014, 30214254015, 30214254016, 30214254017, 30214254018, 30214254019, 30214254020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.368 (0.593) C:NA T:88%	pCi/L	04/11/17 20:14	

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

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

QC Batch: 253822 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30214254021, 30214254022, 30214254023, 30214254024, 30214254025, 30214254026, 30214254027, 30214254028, 30214254029, 30214254030, 30214254031, 30214254032

METHOD BLANK: 1249450 Matrix: Water
Associated Lab Samples: 30214254021, 30214254022, 30214254023, 30214254024, 30214254025, 30214254026, 30214254027, 30214254028, 30214254029, 30214254030, 30214254031, 30214254032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.386 ± 0.402 (0.598) C:NA T:96%	pCi/L	04/11/17 10:30	

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

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

QC Batch: 253581 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30214254001, 30214254002, 30214254003, 30214254004, 30214254005, 30214254006, 30214254007, 30214254008, 30214254009, 30214254010, 30214254011, 30214254012, 30214254013, 30214254014, 30214254015, 30214254016, 30214254017, 30214254018, 30214254019, 30214254020

METHOD BLANK: 1248218 Matrix: Water
Associated Lab Samples: 30214254001, 30214254002, 30214254003, 30214254004, 30214254005, 30214254006, 30214254007, 30214254008, 30214254009, 30214254010, 30214254011, 30214254012, 30214254013, 30214254014, 30214254015, 30214254016, 30214254017, 30214254018, 30214254019, 30214254020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.146 ± 0.271 (0.594) C:81% T:86%	pCi/L	04/10/17 17:23	

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

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Do

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

WO#: 30214254

30214254

2052869

Section A Required Client Information:

Company:	Xcel Energy
Address:	c/o Pace MN Field
Email To:	
Phone:	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	David Anderson
Copy To:	
Purchase Order No.:	
Project Name:	17-0260, Xcel Energy -
Project Number:	Sherco CCR March 2017

Section C Invoice Information:

Attention:	Ciara Ruikkie
Company Name:	Pace MN Field Services
Address:	
Pace Quote Reference:	Tom Halverson
Pace Project Manager:	Robbin Robl
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-74-1	WT				3/20/17	1115		2			2							✓	✓		001
2	P-73a-1						1205		2			2							✓	✓		002
3	P-125						1320		2			2							✓	✓		003
4	P-141						1415		2			2							✓	✓		004
5	P-134						1520		2			2							✓	✓		005
6	P-138A						1620		2			2							✓	✓		006
7	P-137A						1710		2			2							✓	✓		007
8	P-120						1740		2			2							✓	✓		008
9	P-117	WT				3/21/17	0830		2			2							✓	✓		009
10	P-75-1						0925		2			2							✓	✓		010
11	P-97						1020		2			2							✓	✓		011
12	P-98						1120		2			2										012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson / Pace	3/23/17	1630	Ashleshan / Pace	3-27-17	0920	N/A	N	N	Y

② RA-226 EPA 903.1
RA-228 EPA 904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 3-21-17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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

30214254

2052870

Section A Required Client Information:

Company: Xcel Energy
Address: C/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0260, XcelEnergy - Sherco CCR March 2017
Project Number:

Section C Invoice Information:

Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Rabl
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER
Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA903.1	RA-228 EPA904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-22	WT				3/21/17	1240		2			2						✓	✓		013
2	P-165						1345		2			2						✓	✓		014
3	P-132						1430		2			2						✓	✓		015
4	P-154a						1540		2			2						✓	✓		016
5	P-17						1650		2			2						✓	✓		017
6	P-131	↓				↓	1750		2			2						✓	✓		018
7	P-150	WT				3/22/17	0820		2			2						✓	✓		019
8	P-152a						0930		2			2						✓	✓		020
9	P-130						1030		2			2						✓	✓		021
10	P-158						1130		2			2						✓	✓		022
11	P-157						1230		2			2						✓	✓		023
12	P-23	↓				↓	1340		2			2						✓	✓		024

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
① client needs to analyze for: Radium 226 + 228 pCi/L combined.	David Anderson/Pace	3/23/17	1630	Ashley Read/Pace	3-24-17	0920	N/A	N	N	4

① RA-226 EPA 903.1
RA-228 EPA 904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 3/22/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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30214254

Page: 3 of 3

2052873

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0260, Xcel Energy - Sherco CCR March 2017
Project Number:

Section C Invoice Information:

Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halvelson
Pace Project Manager: Robbin Rabl
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-153	WT				3/22/17	1445		2			2						✓	✓		025
2	P-151	↓				↓	1600		2			2						✓	✓		026
3	P-156	↓				↓	1700		2			2						✓	✓		027
4	P-01a-1	↓				↓	1750		2			2						✓	✓		028
5	P-155	WT				3/23/17	0810		2			2						✓	✓		029
6	P-162	↓				↓	0930		2			2						✓	✓		030
7	P-163	↓				↓	1030		2			2						✓	✓		031
8	P-164	↓				↓	1130		2			2						✓	✓		032
9																					
10																					
11																					
12																					

DTA 3/23/17

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
① client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson Pace	3/23/17	1630	Ashley Hart/Pace	3-27-17	0920	N/A	N	N	Y

① RA-226 EPA 903.1
RA-228 EPA 904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 3/23/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

ANL

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: Xcel Energy Project # 30214254

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 7180 9265 6983

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

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

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

Temp should be above freezing to 6°C

Date and Initials of person examining contents: QNR 3-27-16

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:	X			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	X			5.
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used: -Pace Containers Used:	X			10.
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Organic Samples checked for dechlorination:			X	13.
Filtered volume received for Dissolved tests			X	14.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	X			15. pH<2 Initial when completed QNR Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	16.
Trip Blank Present:		X		17.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr		X		Initial when completed: QNR Date: 3-27-16

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

April 2017

Field Datasheets and Laboratory Reports

Xcel - Sherco CCR, April 2017
Field Proj # 17-0438

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 4-24-17 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.96	20.5	0910	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.05	20.5	0910	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.10	20.5	0910	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.08	20.5	0920	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.09	18.0	1805	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value: 1000

Cond Std: 1000 umhos/cm
Ricca - Lot #: 4606B22
Exp Date: 06/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	20.0

Initial Cal. Verification (ICV)

Low Standard Value: 100

Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
97	20.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0925 / 0930
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1810 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1014 Temp (°C) 18.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 4-24-17

Sherco CCR – April 2017

Pace Analytical® Field Services Division

Field Proj # 17-0438

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 4-24-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)		Meter Make YSI Sonde ID #5
Calibration Std. Value (mV)	238	Secondary Source Std. Value (mV)	238	
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.	IC/ICV Time 0935 / 0940
Lot No.	YSI #15610067	Lot No.	16L100376	Initials DJA
Exp Date	07/2017	Exp Date	11/2017	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)	ICV: (Pass) / Fail
239	20.0	237	20.8	ICV acceptable if ± 10 mV of standard value.

CCV Time 1815	Initials DJA	Std. Value 240	☑ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 235	Temp (°C) 18.0	CCV: (Pass) / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 4/24/17	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation		IC/ICV Time 0900 Initials DJA
Ambient Temp: 20.0 (°C)		Ambient Temp: 20.0 (°C)		DO Meter ID YSI Sonde #5
Barometric Pressure 28.91 (in. Hg)		Barometric Pressure 28.91 (in. Hg)		Barometer ID Skymaster-DB-266W
Barometric Pressure 734.31 (mm Hg)		Barometric Pressure 734.31 (mm Hg)		ICV: (Pass) / Fail
Calibration Value[1] 97 (%)		Calibration Value[1] 97 (%)		(ICV/CCV acceptable if ± 2% of Calibration Value)
IC Meter Result (%)		ICV Meter Result (%)		
97		96		

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1800	Initials DJA	Barometric Pressure 726.44 (in. Hg / mm Hg)			
Calibration Value 96 (%)	Result 98 (%)	CCV: (Pass) / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time DJA	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result 4/24/17 (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 4/24/17

Xcel - Sherco CCR, April 2017
Field Proj.# 17-0438

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 4-24-17 Page 3 of 3

Meter Make WTW Tuvb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	9.9	99	999	IC Time 0945 Initials DJA IC: (Pass) / Fail
ICV	0.01	9.9	98	997	ICV Time 0955 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	99	997	CCV Time 1820 Initials DJA CCV: (Pass) / Fail
CCV		DJA 4/24/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 4/24/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel - Sherco CCR, April 2017
Field Proj # 17-0438

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 4-25-17 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value	Manufacturer	Lot No	Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units	ERA - Lot #: 060915		Exp Date: 09/30/17	3.97	15.0	0700	DJA
Buffer: 7.0 units	ERA - Lot #: 100715		Exp Date: 07/31/17	7.05	15.0	0700	DJA
Buffer: 10.0 units	ERA - Lot #: 241015		Exp Date: 11/30/17	10.14	15.0	0700	DJA

IC Slope (%) NA Pass / Fail (Acceptable Slope: 92-102%)

Initial Calibration Verification (ICV)

Buffer Value	Manufacturer	Lot No	Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	Ricca - Lot #: 4508D35		Exp Date: 08/30/17	7.08	15.0	0710	DJA

(Pass) / Fail (ICV acceptable if ± 0.1 s.u. of buffer value)

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value	Manufacturer	Lot No	Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	ERA - Lot #: 100715		Exp Date: 07/31/17	7.10	18.0	1810	DJA

(Pass) / Fail (CCV acceptable if ± 0.1 s.u. of buffer value)

Conductivity

Initial Calibration (IC)

High Standard Value 1000

Cond Std: 1000 umhos/cm — Ricca - Lot #: 4606B22 — Exp Date: 06/31/18 — Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	15.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm — Ricca - Lot #: 4605D87 — Exp Date: 05/31/18 — Exp. Date

Meter Result (µS/cm)	Temp (°C)
98	15.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0715 / 0718

Initials DJA

ICV: (Pass) / Fail

(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1815 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard

Result (µS/cm) 1009 Temp (°C) 18.0 CCV: (Pass) / Fail (CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time ____ Initials DJA 4/25/17 Std. Value ____ ☐ High Standard ☐ Low Standard

Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail (CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard

Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail (CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 4/25/17

Sherco CCR – April 2017

Pace Analytical® Field Services Division

Field Proj # 17-0438

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 4/25/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	244	Secondary Source Std. Value (mV)	244
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI #15610067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
244	15.0	242	15.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0720 / 0725

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1820	Initials DJA	Std. Value 240	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 241	Temp (°C) 18.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials DJA 4/25/17	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	14.0 (°C)	Ambient Temp:	14.0 (°C)
Barometric Pressure	28.50 (in. Hg)	Barometric Pressure	28.50 (in. Hg)
Barometric Pressure	723.90 (mm Hg)	Barometric Pressure	723.90 (mm Hg)
Calibration Value[1]	95 (%)	Calibration Value[1]	95 (%)
IC Meter Result (%)		ICV Meter Result (%)	
96		96	

IC/ICV Time 0643 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster NB-266W

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1805	Initials DJA	Barometric Pressure 725.93 (in. Hg / mm Hg)			
Calibration Value 96 (%)	Result 95 (%)	CCV: (Pass) / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials DJA 4/25/17	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		

Revised: 02/03/17

Lead Technician Signature: Dan Anderson Date: 4/25/17

Xcel - Sherco CCR, April 2017
Field Proj.# 17-0438

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 4/25/17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	9.9	98	998	IC Time 0730 Initials DJA IC: (Pass) / Fail
ICV	0.01	9.9	98	998	ICV Time 0740 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	97	997	CCV Time 1825 Initials DJA CCV: (Pass) / Fail
CCV		DJA 4/25/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 4/25/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel - Sherco CCR, April 2017
Field Proj. # 17-0438

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 4-26-17 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.96	15.0	0705	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.06	15.0	0705	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.15	15.0	0705	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.08	15.0	0715	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.06	20.0	1235	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value: 1000

Cond Std: 1000 umhos/cm —
Ricca - Lot #: 4606B22 —
Exp Date: 06/31/18 —
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	15.0

Initial Cal. Verification (ICV)

Low Standard Value: 100

Cond Std: 100 umhos/cm —
Ricca - Lot #: 4605D87 —
Exp Date: 05/31/18 —
Exp. Date

Meter Result (µS/cm)	Temp (°C)
97	15.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0720 / 0723
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1240 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1007 Temp (°C) 20.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA 4/26/17 Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 4/26/17

Sherco CCR – April 2017

Pace Analytical® Field Services Division

Field Proj # 17-0438

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 4-26-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)		Meter Make YSI Sonde ID #5
Calibration Std. Value (mV)	244	Secondary Source Std. Value (mV)	244	
Mfg.	Zobell's ORP std.	Mfg.	Zobell's ORP std.	IC/ICV Time 0725 / 0727
Lot No.	YSI #16100067	Lot No.	16L100376	Initials DJA
Exp Date	07/2017	Exp. Date	11/2017	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)	ICV: (Pass) / Fail
244	15.0	242	15.0	ICV acceptable if ± 10 mV of standard value.

CCV Time 1245	Initials DJA	Std. Value 238	☑ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 235	Temp (°C) 20.0	CCV: (Pass) / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 4/26/17	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation		IC/ICV Time 0700 Initials DJA
Ambient Temp:	13.0 (°C)	Ambient Temp:	13.0 (°C)	DO Meter ID YSI Sonde #5
Barometric Pressure	28.54 (in. Hg)	Barometric Pressure	28.54 (in. Hg)	Barometer ID Skymaster-DB-266W
Barometric Pressure	724.92 (mm Hg)	Barometric Pressure	724.92 (mm Hg)	
Calibration Value[1]	95 (%)	Calibration Value[1]	95 (%)	ICV: (Pass) / Fail
IC Meter Result (%)		ICV Meter Result (%)		(ICV/CCV acceptable if ± 2% of Calibration Value)
95		95		

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1230	Initials DJA	Barometric Pressure 725.93 (in. Hg / mm Hg)			
Calibration Value 96 (%)	Result 95 (%)	CCV: (Pass) / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 4/26/17 (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 4-26-17

Xcel - Sherco CCR, April 2017
Field Proj.# 17-0438

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 4-26-17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C689664 / C686359 / C686358 / C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	99	997	IC Time 0730 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	98	997	ICV Time 0740 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	98	997	CCV Time 1250 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 4/26/17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 4/26/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project ShercoCCRAppII Project No. 17-0438

Monitoring Point ID P-01a-1 Labeled P-01A

Inside Diameter 2 (inches) Key # 2106 ☐ Locked ☒ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel will not close

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	80.98	Feet
Static water level measurement before purging	76.33	Feet
Static water level measurement at time of sampling	76.33	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 4-25-17 Water Column 4.65 Feet

Time Purged 1330-1348 One Casing Volume 0.8 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 2.7 Gallons

Field Sampling Data

Date Sampled 4-25-17

Time Sampled 1400

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 8.4 (mg/l)

Spec. Cond. 630 (µmhos/cm) Turbidity 2.6 (NTU)

Temp. 11.5 (°C) (ORP) Eh 202 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 53°+ cloudy, wind NW10

Sample Description: clear + odorless

Observations:

DTA 4/25/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1336	7.8	630	11.0	9.0	NA	220	0.9
1342	7.7	630	11.0	8.6	NA	214	1.8
1348	7.7	630	11.5	8.4	NA	202	2.7

DTA 4/25/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 4/25/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project ShercoCCRApril Project No. 17-0438

Monitoring Point ID P-17 Labeled P17

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	58.76	Feet
Static water level measurement before purging	36.02	Feet
Static water level measurement at time of sampling	36.02	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 4-24-17 Water Column 22.74 Feet

Time Purged 1605-1702 One Casing Volume 3.7 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 11.4 Gallons

Field Sampling Data

Date Sampled 4-24-17

Time Sampled 1710

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 11.5 (mg/l)

Spec. Cond. 550 (µmhos/cm) Turbidity 3.9 (NTU)

Temp. 10.5 (°C) (ORP) Eh 164 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 55° + cloudy, wind SE 20

Sample Description: clear + odorless

Observations: ~~DTA 4/24/17~~

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1624	7.8	560	10.5	12.0	NA	170	3.8
1643	7.7	550	10.5	11.7	NA	166	7.6
1702	7.7	550	10.5	11.5	NA	164	11.4

~~DTA 4/24/17~~

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 4/24/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project ShercoCCRAPH1 Project No. 17-0438

Monitoring Point ID P-22 Labeled P-22

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	57.85	Feet
Static water level measurement before purging	38.46	Feet
Static water level measurement at time of sampling	38.46	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 4-25-17 Water Column 19.39 Feet

Time Purged 1105-1153 One Casing Volume 3.2 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 4-25-17

Time Sampled 1200

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 8.1 (mg/l)

Spec. Cond. 920 (µmhos/cm) Turbidity 7.0 (NTU)

Temp. 12.0 (°C) (ORP) Eh 196 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 50° + partly cloudy, wind NW 10

Sample Description: clear + odorless

Observations: collected Duplicate at this well.

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1121	7.4	930	12.0	7.7	NA	198	3.2
1137	7.5	920	12.0	8.1	NA	197	6.4
1153	7.5	920	12.0	8.1	NA	196	9.6

DJA 4/25/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 4/25/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Ph I Project No. 17-0438

Monitoring Point ID P-23 Labeled P-23

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 67.34 Feet

Static water level measurement before purging 40.43 Feet

Static water level measurement at time of sampling 40.43 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 4-25-17 Water Column 26.91 Feet

Time Purged 0945 - 1039 One Casing Volume 4.4 Gallons

Pump Rate 0.25 (GPM) / LPM Volume Purged 13.5 Gallons

Field Sampling Data

Date Sampled 4-25-17

Time Sampled 1050

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 8.8 (mg/l)

Spec. Cond. 670 (µmhos/cm) Turbidity 2.4 (NTU)

Temp. 12.0 (°C) (ORP) Eh 204 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 50° + partly cloudy, wind NW 10

Sample Description: clear + odorless

Observations:

DTA 4/25/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1003	7.5	680	12.0	8.8	NA	205	4.5
1021	7.5	670	12.0	8.7	NA	204	9.0
1039	7.5	670	12.0	8.8	NA	204	13.5

DTA 4/25/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 4/25/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project ShercoCCRApril Project No. 17-0438

Monitoring Point ID P-152a Labeled 806318

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 42.18 Feet

Static water level measurement before purging 36.09 Feet

Static water level measurement at time of sampling 36.09 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 4-24-17 Water Column 6.09 Feet

Time Purged 1215-1230 One Casing Volume 0.99 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 3.0 Gallons

Field Sampling Data

Date Sampled 4-24-17

Time Sampled 1240

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 12.3 (mg/l)

Spec. Cond. 380 (µmhos/cm) Turbidity 3.3 (NTU)

Temp. 11.5 (°C) (ORP) Eh 179 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 53°+ cloudy, wind SE 20

Sample Description: clear + odorless

Observations: collected RinseBlank at this well

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1220	7.4	390	11.5	13.0	NA	201	1.0
1225	7.5	390	11.5	12.5	NA	180	2.0
1230	7.5	380	11.5	12.3	NA	179	3.0
			DTA	4/24/17			

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 4/24/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project ShercoCCRApril Project No. 17-0438

Monitoring Point ID P-155 Labeled 812964

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	85.47	Feet
Static water level measurement before purging	76.58	Feet
Static water level measurement at time of sampling	76.58	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 4-25-17 Water Column 8.89 Feet

Time Purged 1220-1244 One Casing Volume 1.5 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 4-25-17

Time Sampled 1300

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 8.3 (mg/l)

Spec. Cond. 770 (µmhos/cm) Turbidity 6.8 (NTU)

Temp. 12.0 (°C) (ORP) Eh 170 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 52°+ cloudy, wind NW10

Sample Description: clear + odorless

Observations: DTA 4/25/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1228	7.5	770	12.0	8.1	NA	172	1.6
1236	7.5	770	12.0	8.2	NA	170	3.2
1244	7.5	770	12.0	8.3	NA	170	4.8

DTA 4/25/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 4/25/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project ShercoCCRAPHI Project No. 17-0438

Monitoring Point ID P-156 Labeled 812965

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 85.53 Feet

Static water level measurement before purging 75.54 Feet

Static water level measurement at time of sampling 75.54 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 4-25-17 Water Column 9.99 Feet

Time Purged 1425-1449 One Casing Volume 1.6 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 4-25-17

Time Sampled 1500

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 8.1 (mg/l)

Spec. Cond. 410 (µmhos/cm) Turbidity 15.7 (NTU)

Temp. 12.0 (°C) (ORP) Eh 203 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 54° + cloudy, wind NW 10

Sample Description: clear + odorless

Observations:

DJA 4-25-17

Stabilization Test

Time	pH (Units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1433	7.8	410	11.5	8.6	NA	219	1.6
1441	7.8	410	12.0	8.2	NA	212	3.2
1449	7.8	410	12.0	8.1	NA	203	4.8

DJA 4/25/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 4/25/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client: Xcel Energy Project: Sherco CCR April Project No.: 17-0438

Monitoring Point ID: P-157 Labeled: 812966

Inside Diameter: 2 (inches) Key #: 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation: NA Feet

Well depth: 49.06 Feet

Static water level measurement before purging: 40.95 Feet

Static water level measurement at time of sampling: 40.95 Feet

Static Water Level Elevation Before Purging: NA Feet

Purge Method: dedicated bladder pump

Date Purged: 4-25-17 Water Column: 8.11 Feet

Time Purged: 0905-0926 One Casing Volume: 1.3 Gallons

Pump Rate: 0.2 GPM / LPM Volume Purged: 4.2 Gallons

Field Sampling Data

Date Sampled: 4-25-17

Time Sampled: 0935

Sampling Equip.: above pump

Analyzed by: DJA

Field Parameter Measurements of Sample

pH: 7.2 (units) D.O: 7.1 (mg/l)

Spec. Cond.: 720 (µmhos/cm) Turbidity: 1.0 (NTU)

Temp.: 11.5 (°C) (ORP) Eh: 182 (mV)

Other: NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 48° + partly cloudy wind NW 10

Sample Description: clear + odorless

Observations: DJA 4/25/17

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0912	7.2	710	11.0	6.6	NA	185	1.4
0919	7.2	720	11.0	7.0	NA	183	2.8
0926	7.2	720	11.5	7.1	NA	182	4.2

DJA 4/25/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 4/25/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project SherCoCCRApril Project No. 17-0438

Monitoring Point ID P-158 Labeled 812967

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 49.16 Feet

Static water level measurement before purging 38.65 Feet

Static water level measurement at time of sampling 38.65 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 4-24-17 Water Column 10.51 Feet

Time Purged 1720-1747 One Casing Volume 1.7 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 4-24-17

Time Sampled 1755

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 11.6 (mg/l)

Spec. Cond. 710 (µmhos/cm) Turbidity 3.0 (NTU)

Temp. 10.5 (°C) (ORP) Eh 185 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 53°F cloudy, wind SE20

Sample Description: clear & odorless

Observations:

DJA 4/24/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1729	7.6	710	11.0	12.2	NA	188	1.8
1738	7.5	710	11.0	11.9	NA	187	3.6
1747	7.5	710	10.5	11.6	NA	185	5.4

DJA 4/24/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 4/24/17

Amended Report

Original Report ID: MCD0271 Xcel General Report FINAL 05 24 2017 0918 05 24 2017 0509

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification #MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

11 January 2018

Charles A Donkers

Environmental Services-Water Minneapolis

250 Marquette Plaza

Minneapolis, MN 55401

RE: Sherco CCR

cc: Laboratory report re-created to only include wells in the Bottom Ash Pond CCR Groundwater Monitoring System. HSD 1/11/18

Enclosed are the results of analyses for samples received by the laboratory on 04/26/2017 14:00. If you have any questions concerning this report, please feel free to contact me.

I certify that this analysis report was prepared under my direction or supervision under a system designed to assure that qualified personnel analyzed the submitted samples. All protocols for analysis were followed as required by Minnesota Rules and the Applicable Management Plan.

Sincerely,

Steve Davis

Project Manager

Amended Report

Original Report ID: MCD0271 Xcel General Report FINAL 05 24 2017 0918 05 24 2017 0509

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Rinse		MCD0271-01	Water	04/24/2017 12:00	04/26/2017 14:00
P-152a		MCD0271-02	Water	04/24/2017 12:40	04/26/2017 14:00
P-17		MCD0271-06	Water	04/24/2017 17:10	04/26/2017 14:00
P-158		MCD0271-07	Water	04/24/2017 17:55	04/26/2017 14:00
P-157		MCD0271-09	Water	04/25/2017 9:35	04/26/2017 14:00
P-23		MCD0271-10	Water	04/25/2017 10:50	04/26/2017 14:00
P-22		MCD0271-11	Water	04/25/2017 12:00	04/26/2017 14:00
Duplicate		MCD0271-12	Water	04/25/2017 12:00	04/26/2017 14:00
P-155		MCD0271-13	Water	04/25/2017 13:00	04/26/2017 14:00
P-01a-1		MCD0271-14	Water	04/25/2017 14:00	04/26/2017 14:00
P-156		MCD0271-15	Water	04/25/2017 15:00	04/26/2017 14:00

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Rinse

MCD0271-01 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 17:08	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 17:08	EPA 300.0	CRL
Sulfate	< 1.00	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 17:08	EPA 300.0	CRL
Wet Chemistry										
pH	6.83		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:01	SM 4500-H+ B	CRL
Total Dissolved Solids	< 20.0	20.0	mg/L		1	BCD0591	4/27/17 9:24	4/27/17 9:24	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:20	EPA 200.8	CRL
Barium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:20	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:20	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:20	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:20	EPA 200.8	CRL
Chromium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:20	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:20	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:20	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:20	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:20	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:20	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:25	EPA 200.7	HRD
Calcium	< 0.500	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:24	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:24	EPA 200.7	HRD

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Amended Report

Original Report ID: MCD0271 Xcel General Report FINAL 05 24 2017 0918 05 24 2017 0509

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Rinse

MCD0271-01 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0115	5/4/17 9:09	5/4/17 14:38	EPA 245.1, 7470A	HRD

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Amended Report

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-152a

MCD0271-02 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 17:29	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 17:29	EPA 300.0	CRL
Sulfate	9.17	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 17:29	EPA 300.0	CRL
Wet Chemistry										
pH	7.76		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:08	SM 4500-H+ B	CRL
Total Dissolved Solids	212	20.0	mg/L		1	BCD0591	4/27/17 9:24	4/27/17 9:24	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:24	EPA 200.8	CRL
Barium	39.5	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:24	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:24	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:24	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:24	EPA 200.8	CRL
Chromium	0.716	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:24	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:24	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:24	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:24	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:24	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:24	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0578	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:30	EPA 200.7	HRD
Calcium	57.1	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:29	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:29	EPA 200.7	HRD

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Amended Report

Original Report ID: MCD0271 Xcel General Report FINAL 05 24 2017 0918 05 24 2017 0509

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-152a

MCD0271-02 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0115	5/4/17 9:09	5/4/17 14:40	EPA 245.1, 7470A	HRD

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-17

MCD0271-06 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	24.2	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 18:50	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 18:50	EPA 300.0	CRL
Sulfate	32.8	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 18:50	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:22	SM 4500-H+ B	CRL
Total Dissolved Solids	300	20.0	mg/L		1	BCD0591	4/27/17 9:24	4/27/17 9:24	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:48	EPA 200.8	CRL
Barium	41.9	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:48	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:48	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:48	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:48	EPA 200.8	CRL
Chromium	1.05	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:48	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:48	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:48	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:48	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:48	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:48	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:01	EPA 200.7	HRD
Calcium	74.0	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:59	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:59	EPA 200.7	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-17

MCD0271-06 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0115	5/4/17 9:09	5/4/17 14:47	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCD0271 Xcel General Report FINAL 05 24 2017 0918 05 24 2017 0509

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-158

MCD0271-07 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	5.74	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 20:53	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 20:53	EPA 300.0	CRL
Sulfate	121	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 20:53	EPA 300.0	CRL
Wet Chemistry										
pH	7.65		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:26	SM 4500-H+ B	CRL
Total Dissolved Solids	466	20.0	mg/L		1	BCD0591	4/27/17 9:24	4/27/17 9:24	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:52	EPA 200.8	CRL
Barium	84.2	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:52	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:52	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:52	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:52	EPA 200.8	CRL
Chromium	0.862	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:52	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:52	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:52	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:52	EPA 200.8	CRL
Selenium	2.30	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:52	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:52	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.814	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:06	EPA 200.7	HRD
Calcium	101	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:04	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:04	EPA 200.7	HRD

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Minneapolis Testing Laboratory
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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-158

MCD0271-07 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0115	5/4/17 9:09	5/4/17 14:48	EPA 245.1, 7470A	HRD

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Amended Report

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Minneapolis Testing Laboratory
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Minneapolis, MN 55043
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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-157

MCD0271-09 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	15.8	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 21:34	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 21:34	EPA 300.0	CRL
Sulfate	90.2	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 21:34	EPA 300.0	CRL
Wet Chemistry										
pH	7.59		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:33	SM 4500-H+ B	CRL
Total Dissolved Solids	438	20.0	mg/L		1	BCD0591	4/27/17 9:24	4/27/17 9:24	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:00	EPA 200.8	CRL
Barium	50.2	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:00	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:00	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:00	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:00	EPA 200.8	CRL
Chromium	1.33	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:00	EPA 200.8	CRL
Molybdenum	0.629	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:00	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:00	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:00	EPA 200.8	CRL
Selenium	2.23	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:00	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:00	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.259	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:16	EPA 200.7	HRD
Calcium	87.2	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:14	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:14	EPA 200.7	HRD

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Amended Report

Original Report ID: MCD0271 Xcel General Report FINAL 05 24 2017 0918 05 24 2017 0509

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-157

MCD0271-09 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0115	5/4/17 9:09	5/4/17 14:55	EPA 245.1, 7470A	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-23

MCD0271-10 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	23.3	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 21:54	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 21:54	EPA 300.0	CRL
Sulfate	121	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 21:54	EPA 300.0	CRL
Wet Chemistry										
pH	7.76		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:37	SM 4500-H+ B	CRL
Total Dissolved Solids	426	20.0	mg/L		1	BCD0591	4/27/17 9:24	4/27/17 9:24	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:04	EPA 200.8	CRL
Barium	63.8	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:04	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:04	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:04	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:04	EPA 200.8	CRL
Chromium	0.965	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:04	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:04	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:04	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:04	EPA 200.8	CRL
Selenium	1.19	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:04	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:04	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.334	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:21	EPA 200.7	HRD
Calcium	90.8	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:19	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:19	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-23

MCD0271-10 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0115	5/4/17 9:09	5/4/17 14:57	EPA 245.1, 7470A	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-22

MCD0271-11 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	23.6	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 22:15	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 22:15	EPA 300.0	CRL
Sulfate	215	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 22:15	EPA 300.0	CRL
Wet Chemistry										
pH	7.71		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:44	SM 4500-H+ B	CRL
Total Dissolved Solids	628	20.0	mg/L		1	BCD0617	4/28/17 9:16	4/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:08	EPA 200.8	CRL
Barium	83.7	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:08	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:08	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:08	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:08	EPA 200.8	CRL
Chromium	1.19	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:08	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:08	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:08	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:08	EPA 200.8	CRL
Selenium	15.2	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:08	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:08	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.16	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:26	EPA 200.7	HRD
Calcium	120	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:25	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:25	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-22

MCD0271-11 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0115	5/4/17 9:09	5/4/17 14:59	EPA 245.1, 7470A	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Duplicate

MCD0271-12 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	23.7	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 22:35	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 22:35	EPA 300.0	CRL
Sulfate	216	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 22:35	EPA 300.0	CRL
Wet Chemistry										
pH	7.72		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:48	SM 4500-H+ B	CRL
Total Dissolved Solids	630	20.0	mg/L		1	BCD0617	4/28/17 9:16	4/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:12	EPA 200.8	CRL
Barium	83.0	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:12	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:12	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:12	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:12	EPA 200.8	CRL
Chromium	1.10	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:12	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:12	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:12	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:12	EPA 200.8	CRL
Selenium	15.0	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:12	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:12	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.17	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:31	EPA 200.7	HRD
Calcium	121	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:30	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:30	EPA 200.7	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Duplicate

MCD0271-12 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0115	5/4/17 9:09	5/4/17 15:00	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCD0271 Xcel General Report FINAL 05 24 2017 0918 05 24 2017 0509

Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-155

MCD0271-13 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	13.8	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 22:55	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 22:55	EPA 300.0	CRL
Sulfate	160	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 22:55	EPA 300.0	CRL
Wet Chemistry										
pH	7.69		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:51	SM 4500-H+ B	CRL
Total Dissolved Solids	508	20.0	mg/L		1	BCD0617	4/28/17 9:16	4/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:25	EPA 200.8	CRL
Barium	68.8	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:25	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:25	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:25	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:25	EPA 200.8	CRL
Chromium	1.14	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:25	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:25	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:25	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:25	EPA 200.8	CRL
Selenium	4.79	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:25	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:25	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.80	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:46	EPA 200.7	HRD
Calcium	86.4	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:45	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:45	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-155

MCD0271-13 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0115	5/4/17 9:09	5/4/17 15:02	EPA 245.1, 7470A	HRD

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Amended Report

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-01a-1

MCD0271-14 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	9.21	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 23:16	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 23:16	EPA 300.0	CRL
Sulfate	87.9	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 23:16	EPA 300.0	CRL
Wet Chemistry										
pH	7.67		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:55	SM 4500-H+ B	CRL
Total Dissolved Solids	414	20.0	mg/L		1	BCD0617	4/28/17 9:16	4/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:29	EPA 200.8	CRL
Barium	36.1	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:29	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:29	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:29	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:29	EPA 200.8	CRL
Chromium	1.12	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:29	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:29	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:29	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:29	EPA 200.8	CRL
Selenium	5.67	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:29	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:29	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.725	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:51	EPA 200.7	HRD
Calcium	78.2	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:50	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:50	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-01a-1

MCD0271-14 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0115	5/4/17 9:09	5/4/17 15:04	EPA 245.1, 7470A	HRD

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Amended Report

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

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MCD0271-15 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	2.20	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 23:36	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 23:36	EPA 300.0	CRL
Sulfate	19.2	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 23:36	EPA 300.0	CRL
Wet Chemistry										
pH	7.89		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:58	SM 4500-H+ B	CRL
Total Dissolved Solids	234	20.0	mg/L		1	BCD0617	4/28/17 9:16	4/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.619	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:33	EPA 200.8	CRL
Barium	52.7	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:33	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:33	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:33	EPA 200.8	CRL
Cobalt	0.870	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:33	EPA 200.8	CRL
Chromium	2.37	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:33	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:33	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:33	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:33	EPA 200.8	CRL
Selenium	0.781	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:33	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:33	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.160	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:56	EPA 200.7	HRD
Calcium	55.9	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:55	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 13:55	EPA 200.7	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

P-156

MCD0271-15 (Water) - Chain of Custody Number: 2125415/2125414

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0115	5/4/17 9:09	5/4/17 15:05	EPA 245.1, 7470A	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0217 - Wet Prep										
Blank (BCE0217-BLK1)				Prepared & Analyzed: 05/10/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCE0217-BLK2)				Prepared & Analyzed: 05/10/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCE0217-BS1)				Prepared & Analyzed: 05/10/2017						
Chloride	23.8	1.00	mg/L	25.000		95.3	90-110			
Fluoride	4.83	0.750	mg/L	5.0000		96.5	90-110			
Sulfate	95.9	1.00	mg/L	100.00		95.9	90-110			
LCS (BCE0217-BS2)				Prepared & Analyzed: 05/10/2017						
Chloride	24.2	1.00	mg/L	25.000		96.9	90-110			
Fluoride	4.85	0.750	mg/L	5.0000		97.0	90-110			
Sulfate	96.8	1.00	mg/L	100.00		96.8	90-110			
LCS (BCE0217-BS3)				Prepared: 05/10/2017 Analyzed: 05/11/2017						
Chloride	24.9	1.00	mg/L	25.000		99.7	90-110			
Fluoride	5.01	0.750	mg/L	5.0000		100	90-110			
Sulfate	99.7	1.00	mg/L	100.00		99.7	90-110			
Duplicate (BCE0217-DUP1)		**Source: MCD0199-19**		Prepared & Analyzed: 05/10/2017						
Chloride	28.0	1.00	mg/L		28.1			0.271	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	30.5	1.00	mg/L		30.6			0.258	20	

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0217 - Wet Prep										
Duplicate (BCE0217-DUP2)		**Source: MCD0199-20**		Prepared & Analyzed: 05/10/2017						
Chloride	28.2	1.00	mg/L		28.1			0.427	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	16.0	1.00	mg/L		15.9			0.583	20	
Matrix Spike (BCE0217-MS1)		**Source: MCD0199-19**		Prepared & Analyzed: 05/10/2017						
Chloride	40.2	1.00	mg/L	12.500	28.1	97.1	80-120			
Fluoride	2.51	0.750	mg/L	2.5000	<0.750	100	80-120			
Sulfate	80.1	1.00	mg/L	50.000	30.6	98.9	80-120			
Matrix Spike (BCE0217-MS2)		**Source: MCD0199-20**		Prepared & Analyzed: 05/10/2017						
Chloride	40.3	1.00	mg/L	12.500	28.1	98.0	80-120			
Fluoride	2.50	0.750	mg/L	2.5000	<0.750	99.8	80-120			
Sulfate	65.7	1.00	mg/L	50.000	15.9	99.6	80-120			
Matrix Spike Dup (BCE0217-MSD1)		**Source: MCD0199-19**		Prepared & Analyzed: 05/10/2017						
Chloride	40.5	1.00	mg/L	12.500	28.1	99.1	80-120	0.605	20	
Fluoride	2.56	0.750	mg/L	2.5000	<0.750	103	80-120	2.09	20	
Sulfate	80.8	1.00	mg/L	50.000	30.6	100	80-120	0.939	20	
Matrix Spike Dup (BCE0217-MSD2)		**Source: MCD0199-20**		Prepared & Analyzed: 05/10/2017						
Chloride	40.5	1.00	mg/L	12.500	28.1	99.8	80-120	0.559	20	
Fluoride	2.56	0.750	mg/L	2.5000	<0.750	103	80-120	2.73	20	
Sulfate	66.4	1.00	mg/L	50.000	15.9	101	80-120	1.15	20	
Batch BCE0264 - Wet Prep										
Blank (BCE0264-BLK1)				Prepared & Analyzed: 05/11/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0264 - Wet Prep										
Blank (BCE0264-BLK2)				Prepared & Analyzed: 05/11/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCE0264-BS1)				Prepared & Analyzed: 05/11/2017						
Chloride	24.5	1.00	mg/L	25.000		98.0	90-110			
Fluoride	5.07	0.750	mg/L	5.0000		101	90-110			
Sulfate	98.9	1.00	mg/L	100.00		98.9	90-110			
LCS (BCE0264-BS2)				Prepared & Analyzed: 05/11/2017						
Chloride	25.0	1.00	mg/L	25.000		100	90-110			
Fluoride	5.06	0.750	mg/L	5.0000		101	90-110			
Sulfate	100	1.00	mg/L	100.00		100	90-110			
LCS (BCE0264-BS3)				Prepared & Analyzed: 05/11/2017						
Chloride	25.7	1.00	mg/L	25.000		103	90-110			
Fluoride	5.39	0.750	mg/L	5.0000		108	90-110			
Sulfate	104	1.00	mg/L	100.00		104	90-110			
Duplicate (BCE0264-DUP1)		**Source: MCD0271-19**		Prepared & Analyzed: 05/11/2017						
Chloride	0.352	1.00	mg/L		0.350			0.570	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	2.49	1.00	mg/L		2.56			2.73	20	
Duplicate (BCE0264-DUP2)		**Source: MCD0271-20**		Prepared & Analyzed: 05/11/2017						
Chloride	11.7	1.00	mg/L		11.7			0.565	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	12.5	1.00	mg/L		12.4			0.805	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0264 - Wet Prep										
Matrix Spike (BCE0264-MS1)	**Source: MCD0271-19**			Prepared & Analyzed: 05/11/2017						
Chloride	13.0	1.00	mg/L	12.500	0.350	101	80-120			
Fluoride	2.72	0.750	mg/L	2.5000	<0.750	109	80-120			
Sulfate	54.3	1.00	mg/L	50.000	2.56	104	80-120			
Matrix Spike (BCE0264-MS2)	**Source: MCD0271-20**			Prepared & Analyzed: 05/11/2017						
Chloride	24.3	1.00	mg/L	12.500	11.7	101	80-120			
Fluoride	2.64	0.750	mg/L	2.5000	<0.750	106	80-120			
Sulfate	63.8	1.00	mg/L	50.000	12.4	103	80-120			
Matrix Spike Dup (BCE0264-MSD1)	**Source: MCD0271-19**			Prepared & Analyzed: 05/11/2017						
Chloride	13.0	1.00	mg/L	12.500	0.350	101	80-120	0.0231	20	
Fluoride	2.73	0.750	mg/L	2.5000	<0.750	109	80-120	0.624	20	
Sulfate	54.4	1.00	mg/L	50.000	2.56	104	80-120	0.0938	20	
Matrix Spike Dup (BCE0264-MSD2)	**Source: MCD0271-20**			Prepared & Analyzed: 05/11/2017						
Chloride	24.6	1.00	mg/L	12.500	11.7	103	80-120	1.10	20	
Fluoride	2.70	0.750	mg/L	2.5000	<0.750	108	80-120	2.17	20	
Sulfate	64.7	1.00	mg/L	50.000	12.4	105	80-120	1.54	20	

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCD0591 - Wet Prep										
Blank (BCD0591-BLK1)				Prepared & Analyzed: 04/27/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCD0591-DUP1)			**Source: MCD0271-02**	Prepared & Analyzed: 04/27/2017						
Total Dissolved Solids	208	20.0	mg/L		212			1.90	20	
Batch BCD0593 - Wet Prep										
LCS (BCD0593-BS1)				Prepared & Analyzed: 04/27/2017						
pH	7.03		pH Units	7.0000		100	90-110			
LCS (BCD0593-BS2)				Prepared & Analyzed: 04/27/2017						
pH	7.06		pH Units	7.0000		101	90-110			
Duplicate (BCD0593-DUP1)			**Source: MCD0271-02**	Prepared & Analyzed: 04/27/2017						
pH	7.71		pH Units		7.76			0.646	20	
Duplicate (BCD0593-DUP2)			**Source: MCD0271-11**	Prepared & Analyzed: 04/27/2017						
pH	7.69		pH Units		7.71			0.260	20	
Duplicate (BCD0593-DUP3)			**Source: MCD0271-21**	Prepared & Analyzed: 04/27/2017						
pH	8.00		pH Units		8.01			0.125	20	
Batch BCD0617 - Wet Prep										
Blank (BCD0617-BLK1)				Prepared & Analyzed: 04/28/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCD0617 - Wet Prep										
Duplicate (BCD0617-DUP1)		**Source: MCD0271-11**		Prepared & Analyzed: 04/28/2017						
Total Dissolved Solids	628	20.0	mg/L		628			0.00	20	
Batch BCE0002 - Wet Prep										
Blank (BCE0002-BLK1)				Prepared & Analyzed: 05/01/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCE0002-DUP1)		**Source: MCD0271-21**		Prepared & Analyzed: 05/01/2017						
Total Dissolved Solids	422	20.0	mg/L		426			0.943	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0004 - EPA 200.2, EPA 3005										
Blank (BCE0004-BLK1)				Prepared: 05/01/2017 Analyzed: 05/22/2017						
Arsenic	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
LCS (BCE0004-BS1)				Prepared: 05/01/2017 Analyzed: 05/22/2017						
Chromium	94.1	0.500	ug/L	100.00		94.1	85-115			
Barium	95.9	0.500	ug/L	100.00		95.9	85-115			
Selenium	101	0.500	ug/L	100.00		101	85-115			
Cobalt	93.9	0.500	ug/L	100.00		93.9	85-115			
Arsenic	95.9	0.500	ug/L	100.00		95.9	85-115			
Antimony	94.3	0.500	ug/L	100.00		94.3	85-115			
Beryllium	103	0.500	ug/L	100.00		103	85-115			
Cadmium	99.1	0.500	ug/L	100.00		99.1	85-115			
Lead	93.3	0.500	ug/L	100.00		93.3	85-115			
Molybdenum	94.4	0.500	ug/L	100.00		94.4	85-115			
Thallium	94.9	0.500	ug/L	100.00		94.9	85-115			
Duplicate (BCE0004-DUP1)		**Source: MCD0271-04**		Prepared: 05/01/2017 Analyzed: 05/22/2017						
Thallium	0.0531	0.500	ug/L		<0.500				20	
Antimony	0.0443	0.500	ug/L		<0.500				20	
Lead	0.0642	0.500	ug/L		0.0564			12.9	20	
Molybdenum	1.12	0.500	ug/L		1.12			0.431	20	
Selenium	0.164	0.500	ug/L		0.0725			77.6	20	M_D-RL
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Arsenic	0.972	0.500	ug/L		0.945			2.82	20	
Cobalt	0.163	0.500	ug/L		0.150			8.45	20	
Beryllium	0.0660	0.500	ug/L		<0.500				20	
Barium	50.5	0.500	ug/L		50.8			0.643	20	
Chromium	0.830	0.500	ug/L		0.958			14.4	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0004 - EPA 200.2, EPA 3005										
Duplicate (BCE0004-DUP2)		**Source: MCD0271-05**		Prepared: 05/01/2017 Analyzed: 05/22/2017						
Thallium	<0.500	0.500	ug/L		<0.500				20	
Antimony	<0.500	0.500	ug/L		<0.500				20	
Chromium	0.978	0.500	ug/L		0.964			1.43	20	
Lead	0.0146	0.500	ug/L		<0.500				20	
Molybdenum	0.109	0.500	ug/L		0.103			5.39	20	
Selenium	<0.500	0.500	ug/L		<0.500				20	
Cobalt	0.0524	0.500	ug/L		0.0454			14.4	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Barium	103	0.500	ug/L		101			1.29	20	
Arsenic	0.360	0.500	ug/L		0.282			24.4	20	M_D-RL
Beryllium	<0.500	0.500	ug/L		<0.500				20	
Matrix Spike (BCE0004-MS1)		**Source: MCD0271-04**		Prepared: 05/01/2017 Analyzed: 05/22/2017						
Thallium	94.6	0.500	ug/L	100.00	<0.500	94.6	70-130			
Antimony	100	0.500	ug/L	100.00	<0.500	100	70-130			
Molybdenum	105	0.500	ug/L	100.00	1.12	103	70-130			
Cadmium	98.0	0.500	ug/L	100.00	<0.500	98.0	70-130			
Arsenic	105	0.500	ug/L	100.00	0.945	104	70-130			
Selenium	103	0.500	ug/L	100.00	0.0725	103	70-130			
Chromium	100	0.500	ug/L	100.00	0.958	99.3	70-130			
Barium	151	0.500	ug/L	100.00	50.8	100	70-130			
Beryllium	96.1	0.500	ug/L	100.00	<0.500	96.1	70-130			
Lead	91.8	0.500	ug/L	100.00	0.0564	91.7	70-130			
Cobalt	102	0.500	ug/L	100.00	0.150	102	70-130			
Matrix Spike (BCE0004-MS2)		**Source: MCD0271-05**		Prepared: 05/01/2017 Analyzed: 05/22/2017						
Cobalt	99.7	0.500	ug/L	100.00	0.0454	99.6	70-130			
Selenium	101	0.500	ug/L	100.00	<0.500	101	70-130			
Thallium	93.8	0.500	ug/L	100.00	<0.500	93.8	70-130			
Chromium	103	0.500	ug/L	100.00	0.964	102	70-130			
Molybdenum	103	0.500	ug/L	100.00	0.103	102	70-130			
Antimony	102	0.500	ug/L	100.00	<0.500	102	70-130			
Lead	90.6	0.500	ug/L	100.00	<0.500	90.6	70-130			
Cadmium	102	0.500	ug/L	100.00	<0.500	102	70-130			
Barium	206	0.500	ug/L	100.00	101	105	70-130			
Arsenic	104	0.500	ug/L	100.00	0.282	103	70-130			
Beryllium	97.5	0.500	ug/L	100.00	<0.500	97.5	70-130			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0004 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCE0004-MSD1)		**Source: MCD0271-04**		Prepared: 05/01/2017 Analyzed: 05/22/2017						
Antimony	99.6	0.500	ug/L	100.00	<0.500	99.6	70-130	0.889	20	
Barium	149	0.500	ug/L	100.00	50.8	98.2	70-130	1.23	20	
Arsenic	107	0.500	ug/L	100.00	0.945	106	70-130	1.70	20	
Selenium	101	0.500	ug/L	100.00	0.0725	101	70-130	1.68	20	
Cadmium	98.3	0.500	ug/L	100.00	<0.500	98.3	70-130	0.235	20	
Thallium	95.9	0.500	ug/L	100.00	<0.500	95.9	70-130	1.34	20	
Cobalt	101	0.500	ug/L	100.00	0.150	101	70-130	1.21	20	
Beryllium	94.9	0.500	ug/L	100.00	<0.500	94.9	70-130	1.27	20	
Chromium	102	0.500	ug/L	100.00	0.958	101	70-130	1.97	20	
Molybdenum	103	0.500	ug/L	100.00	1.12	102	70-130	1.76	20	
Lead	93.5	0.500	ug/L	100.00	0.0564	93.4	70-130	1.80	20	
Matrix Spike Dup (BCE0004-MSD2)		**Source: MCD0271-05**		Prepared: 05/01/2017 Analyzed: 05/22/2017						
Beryllium	95.8	0.500	ug/L	100.00	<0.500	95.8	70-130	1.83	20	
Molybdenum	107	0.500	ug/L	100.00	0.103	107	70-130	4.25	20	
Arsenic	105	0.500	ug/L	100.00	0.282	104	70-130	0.921	20	
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130	0.911	20	
Barium	209	0.500	ug/L	100.00	101	107	70-130	1.33	20	
Lead	91.0	0.500	ug/L	100.00	<0.500	91.0	70-130	0.488	20	
Cobalt	100	0.500	ug/L	100.00	0.0454	100	70-130	0.791	20	
Selenium	97.9	0.500	ug/L	100.00	<0.500	97.9	70-130	2.99	20	
Thallium	95.3	0.500	ug/L	100.00	<0.500	95.3	70-130	1.54	20	
Antimony	101	0.500	ug/L	100.00	<0.500	101	70-130	0.413	20	
Chromium	103	0.500	ug/L	100.00	0.964	102	70-130	0.00194	20	
Batch BCE0056 - EPA 200.2, EPA 3005										
Blank (BCE0056-BLK1)				Prepared: 05/02/2017 Analyzed: 05/17/2017						
Selenium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0056 - EPA 200.2, EPA 3005										
LCS (BCE0056-BS1)				Prepared: 05/02/2017 Analyzed: 05/17/2017						
Cadmium	97.5	0.500	ug/L	100.00		97.5	85-115			
Barium	95.0	0.500	ug/L	100.00		95.0	85-115			
Beryllium	99.9	0.500	ug/L	100.00		99.9	85-115			
Chromium	99.8	0.500	ug/L	100.00		99.8	85-115			
Molybdenum	96.3	0.500	ug/L	100.00		96.3	85-115			
Arsenic	98.3	0.500	ug/L	100.00		98.3	85-115			
Selenium	96.6	0.500	ug/L	100.00		96.6	85-115			
Lead	96.8	0.500	ug/L	100.00		96.8	85-115			
Cobalt	96.5	0.500	ug/L	100.00		96.5	85-115			
Antimony	97.5	0.500	ug/L	100.00		97.5	85-115			
Thallium	97.4	0.500	ug/L	100.00		97.4	85-115			
Duplicate (BCE0056-DUP1)		**Source: MCD0271-22**		Prepared: 05/02/2017 Analyzed: 05/17/2017						
Selenium	30.5	0.500	ug/L		30.9			1.59	20	
Thallium	0.124	0.500	ug/L		0.0249			133	20	M_D-RL
Barium	101	0.500	ug/L		103			1.64	20	
Molybdenum	0.767	0.500	ug/L		0.698			9.32	20	
Chromium	6.70	0.500	ug/L		6.86			2.34	20	
Cobalt	0.238	0.500	ug/L		0.238			0.381	20	
Cadmium	0.0603	0.500	ug/L		0.0366			48.8	20	M_D-RL
Beryllium	0.208	0.500	ug/L		0.0101			182	20	M_D-RL
Antimony	0.0880	0.500	ug/L		0.0334			90.0	20	M_D-RL
Arsenic	0.486	0.500	ug/L		0.462			4.96	20	
Lead	0.0606	0.500	ug/L		0.0148			121	20	M_D-RL
Matrix Spike (BCE0056-MS1)		**Source: MCD0271-22**		Prepared: 05/02/2017 Analyzed: 05/17/2017						
Cobalt	97.7	0.500	ug/L	100.00	0.238	97.5	70-130			
Chromium	109	0.500	ug/L	100.00	6.86	102	70-130			
Lead	85.6	0.500	ug/L	100.00	0.0148	85.6	70-130			
Selenium	130	0.500	ug/L	100.00	30.9	98.8	70-130			
Antimony	98.7	0.500	ug/L	100.00	0.0334	98.6	70-130			
Molybdenum	98.2	0.500	ug/L	100.00	0.698	97.5	70-130			
Cadmium	94.8	0.500	ug/L	100.00	0.0366	94.8	70-130			
Barium	199	0.500	ug/L	100.00	103	96.5	70-130			
Beryllium	92.7	0.500	ug/L	100.00	0.0101	92.7	70-130			
Arsenic	106	0.500	ug/L	100.00	0.462	105	70-130			
Thallium	88.8	0.500	ug/L	100.00	0.0249	88.7	70-130			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0056 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCE0056-MSD1)		**Source: MCD0271-22**		Prepared: 05/02/2017 Analyzed: 05/17/2017						
Thallium	94.3	0.500	ug/L	100.00	0.0249	94.3	70-130	6.04	20	
Antimony	102	0.500	ug/L	100.00	0.0334	102	70-130	3.78	20	
Selenium	130	0.500	ug/L	100.00	30.9	98.7	70-130	0.0595	20	
Cadmium	95.3	0.500	ug/L	100.00	0.0366	95.2	70-130	0.490	20	
Lead	90.7	0.500	ug/L	100.00	0.0148	90.7	70-130	5.73	20	
Cobalt	98.7	0.500	ug/L	100.00	0.238	98.5	70-130	0.960	20	
Chromium	110	0.500	ug/L	100.00	6.86	103	70-130	1.27	20	
Beryllium	97.9	0.500	ug/L	100.00	0.0101	97.9	70-130	5.51	20	
Arsenic	108	0.500	ug/L	100.00	0.462	107	70-130	2.07	20	
Barium	205	0.500	ug/L	100.00	103	102	70-130	2.92	20	
Molybdenum	104	0.500	ug/L	100.00	0.698	104	70-130	6.03	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0003 - EPA 200.2, EPA 3005										
Blank (BCE0003-BLK1)				Prepared: 05/01/2017 Analyzed: 05/04/2017						
Calcium	<0.500	0.500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
Boron	<0.0500	0.0500	mg/L							
LCS (BCE0003-BS1)				Prepared: 05/01/2017 Analyzed: 05/04/2017						
Calcium	102	0.500	mg/L	100.00		102	85-115			
Lithium	0.988	0.0500	mg/L	1.0000		98.8	85-115			
Boron	1.01	0.0500	mg/L	1.0000		101	85-115			
Duplicate (BCE0003-DUP1)		**Source: MCD0271-02**		Prepared: 05/01/2017 Analyzed: 05/04/2017						
Boron	0.0579	0.0500	mg/L		0.0578			0.136	20	
Calcium	56.7	0.500	mg/L		57.1			0.779	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Duplicate (BCE0003-DUP2)		**Source: MCD0271-03**		Prepared: 05/01/2017 Analyzed: 05/04/2017						
Calcium	214	0.500	mg/L		212			1.20	20	
Boron	0.0366	0.0500	mg/L		0.0368			0.744	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Matrix Spike (BCE0003-MS1)		**Source: MCD0271-02**		Prepared: 05/01/2017 Analyzed: 05/04/2017						
Lithium	1.00	0.0500	mg/L	1.0000	<0.0500	100	75-125			
Boron	1.03	0.0500	mg/L	1.0000	0.0578	96.7	70-130			
Calcium	163	0.500	mg/L	100.00	57.1	106	70-130			
Matrix Spike (BCE0003-MS2)		**Source: MCD0271-03**		Prepared: 05/01/2017 Analyzed: 05/04/2017						
Lithium	0.959	0.0500	mg/L	1.0000	<0.0500	95.9	75-125			
Boron	0.964	0.0500	mg/L	1.0000	0.0368	92.7	70-130			
Calcium	318	0.500	mg/L	100.00	212	106	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0003 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCE0003-MSD1)		**Source: MCD0271-02**		Prepared: 05/01/2017 Analyzed: 05/04/2017						
Lithium	0.984	0.0500	mg/L	1.0000	<0.0500	98.4	75-125	1.69	20	
Calcium	160	0.500	mg/L	100.00	57.1	103	70-130	2.02	20	
Boron	1.07	0.0500	mg/L	1.0000	0.0578	101	70-130	3.97	20	
Matrix Spike Dup (BCE0003-MSD2)		**Source: MCD0271-03**		Prepared: 05/01/2017 Analyzed: 05/04/2017						
Boron	0.960	0.0500	mg/L	1.0000	0.0368	92.3	70-130	0.461	20	
Lithium	0.964	0.0500	mg/L	1.0000	<0.0500	96.4	75-125	0.550	20	
Calcium	315	0.500	mg/L	100.00	212	103	70-130	0.949	20	
Batch BCE0055 - EPA 200.2, EPA 3005										
Blank (BCE0055-BLK1)				Prepared: 05/02/2017 Analyzed: 05/03/2017						
Boron	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
LCS (BCE0055-BS1)				Prepared: 05/02/2017 Analyzed: 05/03/2017						
Lithium	0.992	0.0500	mg/L	1.0000		99.2	85-115			
Calcium	103	0.500	mg/L	100.00		103	85-115			
Boron	0.994	0.0500	mg/L	1.0000		99.4	85-115			
Duplicate (BCE0055-DUP1)		**Source: MCD0271-23**		Prepared: 05/02/2017 Analyzed: 05/03/2017						
Calcium	78.2	0.500	mg/L		76.6			2.12	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Boron	0.0406	0.0500	mg/L		0.0373			8.56	20	
Matrix Spike (BCE0055-MS1)		**Source: MCD0271-23**		Prepared: 05/02/2017 Analyzed: 05/03/2017						
Boron	1.05	0.0500	mg/L	1.0000	0.0373	101	70-130			
Calcium	185	0.500	mg/L	100.00	76.6	109	70-130			
Lithium	1.00	0.0500	mg/L	1.0000	<0.0500	100	75-125			

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0055 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCE0055-MSD1)		**Source: MCD0271-23**		Prepared: 05/02/2017 Analyzed: 05/03/2017						
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125	1.25	20	
Boron	1.07	0.0500	mg/L	1.0000	0.0373	103	70-130	1.69	20	
Calcium	187	0.500	mg/L	100.00	76.6	111	70-130	1.11	20	

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0115 - EPA 245.1, EPA 7470A										
Blank (BCE0115-BLK1)				Prepared & Analyzed: 05/04/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCE0115-BS1)				Prepared & Analyzed: 05/04/2017						
Mercury	2.86	0.200	ug/L	3.0000		95.5	85-115			
Duplicate (BCE0115-DUP1)		**Source: MCD0199-15**		Prepared & Analyzed: 05/04/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCE0115-DUP2)		**Source: MCD0199-20**		Prepared & Analyzed: 05/04/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCE0115-MS1)		**Source: MCD0199-15**		Prepared & Analyzed: 05/04/2017						
Mercury	2.84	0.200	ug/L	3.0000	<0.200	94.7	70-130			
Matrix Spike (BCE0115-MS2)		**Source: MCD0199-20**		Prepared & Analyzed: 05/04/2017						
Mercury	2.81	0.200	ug/L	3.0000	<0.200	93.8	70-130			
Matrix Spike Dup (BCE0115-MSD1)		**Source: MCD0199-15**		Prepared & Analyzed: 05/04/2017						
Mercury	2.68	0.200	ug/L	3.0000	<0.200	89.4	70-130	5.72	20	
Matrix Spike Dup (BCE0115-MSD2)		**Source: MCD0199-20**		Prepared & Analyzed: 05/04/2017						
Mercury	2.78	0.200	ug/L	3.0000	<0.200	92.7	70-130	1.18	20	
Batch BCE0163 - EPA 245.1, EPA 7470A										
Blank (BCE0163-BLK1)				Prepared & Analyzed: 05/08/2017						
Mercury	<0.200	0.200	ug/L							

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0163 - EPA 245.1, EPA 7470A										
LCS (BCE0163-BS1)				Prepared & Analyzed: 05/08/2017						
Mercury	2.64	0.210	ug/L	3.0000		88.0	85-115			
Duplicate (BCE0163-DUP1)		**Source: MCD0271-18**		Prepared & Analyzed: 05/08/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCE0163-MS1)		**Source: MCD0271-18**		Prepared & Analyzed: 05/08/2017						
Mercury	2.64	0.200	ug/L	3.0000	<0.200	87.8	70-130			
Matrix Spike Dup (BCE0163-MSD1)		**Source: MCD0271-18**		Prepared & Analyzed: 05/08/2017						
Mercury	2.59	0.200	ug/L	3.0000	<0.200	86.4	70-130	1.64	20	

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1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 10:29

Qualifiers and Definitions

M_TTT	Sample received at the lab outside of required hold time.
M_D-RL	The RPD for the sample duplicate was outside of QC acceptance limits due to<RL.
Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 2

2125415

Section A Required Client Information:
Company: Xcel Energy
Address: Environmental Services MP-7
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:
Report To: Chuck Denkers
Copy To:
Purchase Order No.:
Project Name: Sherco CCR, April 2017
Project Number:

Section C Invoice Information:
Attention: Steve Davis
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER
Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test ↓ Y/N	CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Rinse	WT				4/24/17	1200		4	1	1	2						✓			
2	P-152d						1240		4	1	1	2						✓			
3	P-150						1350		4	1	1	2						✓			
4	P-154d						1500		4	1	1	2						✓			
5	P-130						1550		4	1	1	2						✓			
6	P-17						1710		4	1	1	2						✓			
7	P-158	↓				↓	1755		4	1	1	2						✓			
8	P-141	WT				4/25/17	0835		4	1	1	2						✓			
9	P-157						0935		4	1	1	2						✓			
10	P-23						1050		4	1	1	2						✓			
11	P-22						1200		4	1	1	2						✓			
12	Duplicate	↓				↓	1200		4	1	1	2						✓			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① marked HNO3 bottles filtered, and unfiltered.	David Anderson	4/26/17	1400	Fed Ex	4/26/17	1405	3.1	Y	Y	Y

Clint Daley
pH Strips: MB00508

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 4/25/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 2

2125414

Section A Required Client Information:

Company: Xcel Energy
Address: Environmental Services MP-7
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Chuck Donkers
Copy To:
Purchase Order No.:
Project Name: Sherco CCR, April 2017
Project Number:

Section C Invoice Information:

Attention: Steve Davis
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes MATRIX / CODE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-155	WT				4/25/17	1300		4	1	1	2						✓			
2	P-014-1						1400		4	1	1	2						✓			
3	P-156						1500		4	1	1	2						✓			
4	P-165						1600		4	1	1	2						✓			
5	P-132						1650		4	1	1	2						✓			
6	P-131						1800		4	1	1	2						✓			
7	P-153	WT				4/26/17	0820		4	1	1	2						✓			
8	P-151						0920		4	1	1	2						✓			
9	P-162						1030		4	1	1	2						✓			
10	P-163						1130		4	1	1	2						✓			
11	P-164						1220		4	1	1	2						✓			
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① marked HNO3 bottles filtered and unfiltered.	David Anderson/Pace	4/26/17	1400	FED EX	4/26/17	1405	3.1	Y	Y	Y

Client Deliv/ ORIGINAL
pH Strips: MB005DB

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 4/26/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

May 18, 2017

Dave Anderson
Pace Analytical Services - Field Svcs Division
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Dear Dave Anderson:
Enclosed are the analytical results for sample(s) received by the laboratory on May 01, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Robbin Robl
robbin.robl@pacelabs.com
(724)850-5613
Project Manager

Enclosures

cc: Harry S. Davis III, Xcel Energy
Charles A. Donkers, Xcel Energy
Sylvia Hunter, Pace Analytical Services - Field Svcs Division
Christine M. Keefe, Xcel Energy
Ciara Ruikkie, Pace Analytical Services - Field Svcs Division

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Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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Greensburg, PA 15601
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SAMPLE SUMMARY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30217613001	**P-74-1**	Water	04/19/17 11:50	05/01/17 09:45
30217613002	**P-73a-1**	Water	04/19/17 12:40	05/01/17 09:45
30217613003	**P-125**	Water	04/19/17 14:20	05/01/17 09:45
30217613004	**P-134**	Water	04/19/17 15:15	05/01/17 09:45
30217613005	**P-138A**	Water	04/19/17 16:10	05/01/17 09:45
30217613006	**P-137A**	Water	04/19/17 17:40	05/01/17 09:45
30217613007	**P-117**	Water	04/20/17 08:30	05/01/17 09:45
30217613008	**P-75-1**	Water	04/20/17 09:15	05/01/17 09:45
30217613009	**P-97**	Water	04/20/17 10:10	05/01/17 09:45
30217613010	**P-98**	Water	04/20/17 12:50	05/01/17 09:45
30217613011	**P-120**	Water	04/20/17 13:30	05/01/17 09:45
30217613012	**P-152a**	Water	04/24/17 12:40	05/01/17 09:45
30217613013	**P-150**	Water	04/24/17 13:50	05/01/17 09:45
30217613014	**P-154a**	Water	04/24/17 15:00	05/01/17 09:45
30217613015	**P-130**	Water	04/24/17 15:50	05/01/17 09:45
30217613016	**P-17**	Water	04/24/17 17:10	05/01/17 09:45
30217613017	**P-158**	Water	04/24/17 17:55	05/01/17 09:45
30217613018	**P-141**	Water	04/25/17 08:35	05/01/17 09:45
30217613019	**P-157**	Water	04/25/17 09:35	05/01/17 09:45
30217613020	**P-23**	Water	04/25/17 10:50	05/01/17 09:45
30217613021	**P-22**	Water	04/25/17 12:00	05/01/17 09:45
30217613022	**P-155**	Water	04/25/17 13:00	05/01/17 09:45
30217613023	**P-01a-1**	Water	04/25/17 14:00	05/01/17 09:45
30217613024	**P-156**	Water	04/25/17 15:00	05/01/17 09:45
30217613025	**P-165**	Water	04/25/17 16:00	05/01/17 09:45
30217613026	**P-132**	Water	04/25/17 16:50	05/01/17 09:45
30217613027	**P-131**	Water	04/25/17 18:00	05/01/17 09:45
30217613028	**P-153**	Water	04/26/17 08:20	05/01/17 09:45
30217613029	**P-151**	Water	04/26/17 09:20	05/01/17 09:45
30217613030	**P-162**	Water	04/26/17 10:30	05/01/17 09:45
30217613031	**P-163**	Water	04/26/17 11:30	05/01/17 09:45
30217613032	**P-164**	Water	04/26/17 12:20	05/01/17 09:45

REPORT OF LABORATORY ANALYSIS

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30217613001	**P-74-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613002	**P-73a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613003	**P-125**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613004	**P-134**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613005	**P-138A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613006	**P-137A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613007	**P-117**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613008	**P-75-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613009	**P-97**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613010	**P-98**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613011	**P-120**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613012	**P-152a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613013	**P-150**	EPA 903.1	WRR	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613014	**P-154a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613015	**P-130**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613016	**P-17**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613017	**P-158**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613018	**P-141**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613019	**P-157**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613020	**P-23**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613021	**P-22**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613022	**P-155**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613023	**P-01a-1**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613024	**P-156**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613025	**P-165**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Total Radium Calculation	RMK	1	PASI-PA
30217613026	**P-132**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613027	**P-131**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613028	**P-153**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613029	**P-151**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613030	**P-162**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613031	**P-163**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30217613032	**P-164**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

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PROJECT NARRATIVE

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Pace-MN Field Services Division
Date: May 18, 2017

General Information:
32 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Pace-MN Field Services Division
Date: May 18, 2017

General Information:
32 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Pace-MN Field Services Division
Date: May 18, 2017

General Information:
32 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Sample: P-74-1 **Lab ID: 30217613001** Collected: 04/19/17 11:50 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.093 ± 0.751 (1.55) C:NA T:83%**	pCi/L	05/12/17 10:20	13982-63-3	
Radium-228	EPA 904.0	**-0.0683 ± 0.263 (0.634) C:82% T:82%**	pCi/L	05/12/17 15:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 1.01 (2.18)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-73a-1 **Lab ID: 30217613002** Collected: 04/19/17 12:40 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.230 ± 0.499 (0.921) C:NA T:98%**	pCi/L	05/12/17 10:20	13982-63-3	
Radium-228	EPA 904.0	**0.270 ± 0.291 (0.603) C:78% T:86%**	pCi/L	05/12/17 15:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.500 ± 0.790 (1.52)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-125 **Lab ID: 30217613003** Collected: 04/19/17 14:20 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.079 ± 0.362 (0.737) C:NA T:98%**	pCi/L	05/12/17 10:20	13982-63-3	
Radium-228	EPA 904.0	**0.602 ± 0.334 (0.600) C:80% T:91%**	pCi/L	05/12/17 15:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.602 ± 0.696 (1.34)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-134 **Lab ID: 30217613004** Collected: 04/19/17 15:15 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.154 ± 0.353 (0.568) C:NA T:99%**	pCi/L	05/12/17 10:20	13982-63-3	
Radium-228	EPA 904.0	**-0.0797 ± 0.261 (0.631) C:77% T:86%**	pCi/L	05/12/17 15:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.154 ± 0.614 (1.20)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-138A **Lab ID: 30217613005** Collected: 04/19/17 16:10 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.084 ± 0.385 (0.909) C:NA T:92%**	pCi/L	05/12/17 10:20	13982-63-3	
Radium-228	EPA 904.0	**0.216 ± 0.284 (0.604) C:78% T:82%**	pCi/L	05/12/17 15:58	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Sample: P-138A **Lab ID: 30217613005** Collected: 04/19/17 16:10 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.216 ± 0.669 (1.51)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-137A **Lab ID: 30217613006** Collected: 04/19/17 17:40 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.361 (0.734) C:NA T:94%**	pCi/L	05/12/17 10:31	13982-63-3	
Radium-228	EPA 904.0	**0.0358 ± 0.283 (0.653) C:79% T:85%**	pCi/L	05/12/17 15:58	15262-20-1	
Total Radium	Total Radium Calculation	**0.0358 ± 0.644 (1.39)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-117 **Lab ID: 30217613007** Collected: 04/20/17 08:30 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.382 (0.777) C:NA T:92%**	pCi/L	05/12/17 10:31	13982-63-3	
Radium-228	EPA 904.0	**0.107 ± 0.286 (0.639) C:78% T:95%**	pCi/L	05/12/17 15:58	15262-20-1	
Total Radium	Total Radium Calculation	**0.107 ± 0.668 (1.42)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-75-1 **Lab ID: 30217613008** Collected: 04/20/17 09:15 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.157 ± 0.436 (0.846) C:NA T:98%**	pCi/L	05/12/17 10:35	13982-63-3	
Radium-228	EPA 904.0	**0.0321 ± 0.278 (0.641) C:75% T:90%**	pCi/L	05/12/17 15:58	15262-20-1	
Total Radium	Total Radium Calculation	**0.189 ± 0.714 (1.49)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-97 **Lab ID: 30217613009** Collected: 04/20/17 10:10 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.086 ± 0.698 (1.44) C:NA T:85%**	pCi/L	05/12/17 10:35	13982-63-3	
Radium-228	EPA 904.0	**0.300 ± 0.301 (0.617) C:77% T:84%**	pCi/L	05/12/17 15:58	15262-20-1	
Total Radium	Total Radium Calculation	**0.300 ± 0.999 (2.06)**	pCi/L	05/18/17 17:01	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Sample: P-98 **Lab ID: 30217613010** Collected: 04/20/17 12:50 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.249 ± 0.379 (0.225) C:NA T:94%**	pCi/L	05/12/17 10:35	13982-63-3	
Radium-228	EPA 904.0	**0.614 ± 0.340 (0.605) C:77% T:85%**	pCi/L	05/12/17 15:58	15262-20-1	
Total Radium	Total Radium Calculation	**0.863 ± 0.719 (0.830)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-120 **Lab ID: 30217613011** Collected: 04/20/17 13:30 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.35 ± 0.861 (1.08) C:NA T:87%**	pCi/L	05/12/17 10:35	13982-63-3	
Radium-228	EPA 904.0	**3.90 ± 0.887 (0.639) C:79% T:89%**	pCi/L	05/12/17 15:58	15262-20-1	
Total Radium	Total Radium Calculation	**5.25 ± 1.75 (1.72)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-152a **Lab ID: 30217613012** Collected: 04/24/17 12:40 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.161 ± 0.368 (0.593) C:NA T:93%**	pCi/L	05/12/17 10:57	13982-63-3	
Radium-228	EPA 904.0	**0.0147 ± 0.293 (0.679) C:77% T:87%**	pCi/L	05/12/17 15:58	15262-20-1	
Total Radium	Total Radium Calculation	**0.176 ± 0.661 (1.27)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-150 **Lab ID: 30217613013** Collected: 04/24/17 13:50 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.661 ± 0.496 (0.256) C:NA T:86%**	pCi/L	05/12/17 10:57	13982-63-3	
Radium-228	EPA 904.0	**2.08 ± 0.594 (0.668) C:80% T:81%**	pCi/L	05/12/17 15:58	15262-20-1	
Total Radium	Total Radium Calculation	**2.74 ± 1.09 (0.924)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-154a **Lab ID: 30217613014** Collected: 04/24/17 15:00 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.071 ± 0.326 (0.663) C:NA T:105%**	pCi/L	05/12/17 10:57	13982-63-3	
Radium-228	EPA 904.0	**0.158 ± 0.275 (0.600) C:81% T:88%**	pCi/L	05/12/17 15:58	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Sample: P-154a **Lab ID: 30217613014** Collected: 04/24/17 15:00 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.158 ± 0.601 (1.26)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-130 **Lab ID: 30217613015** Collected: 04/24/17 15:50 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.362 ± 0.503 (0.840) C:NA T:84%**	pCi/L	05/12/17 10:57	13982-63-3	
Radium-228	EPA 904.0	**0.383 ± 0.355 (0.727) C:76% T:89%**	pCi/L	05/12/17 15:58	15262-20-1	
Total Radium	Total Radium Calculation	**0.745 ± 0.858 (1.57)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-17 **Lab ID: 30217613016** Collected: 04/24/17 17:10 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.162 ± 0.371 (0.873) C:NA T:98%**	pCi/L	05/12/17 10:57	13982-63-3	
Radium-228	EPA 904.0	**0.260 ± 0.310 (0.654) C:82% T:92%**	pCi/L	05/12/17 15:56	15262-20-1	
Total Radium	Total Radium Calculation	**0.260 ± 0.681 (1.53)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-158 **Lab ID: 30217613017** Collected: 04/24/17 17:55 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.428 ± 0.651 (1.49) C:NA T:88%**	pCi/L	05/12/17 10:57	13982-63-3	
Radium-228	EPA 904.0	**1.26 ± 0.481 (0.744) C:79% T:83%**	pCi/L	05/12/17 15:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.26 ± 1.13 (2.23)**	pCi/L	05/18/17 17:01	7440-14-4	

Sample: P-141 **Lab ID: 30217613018** Collected: 04/25/17 08:35 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.374 (0.761) C:NA T:97%**	pCi/L	05/12/17 11:13	13982-63-3	
Radium-228	EPA 904.0	**0.354 ± 0.344 (0.708) C:78% T:88%**	pCi/L	05/12/17 15:56	15262-20-1	
Total Radium	Total Radium Calculation	**0.354 ± 0.718 (1.47)**	pCi/L	05/18/17 17:33	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Sample: P-157 **Lab ID: 30217613019** Collected: 04/25/17 09:35 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.243 ± 0.371 (0.220) C:NA T:93%**	pCi/L	05/12/17 11:13	13982-63-3	
Radium-228	EPA 904.0	**0.508 ± 0.394 (0.780) C:76% T:80%**	pCi/L	05/12/17 15:56	15262-20-1	
Total Radium	Total Radium Calculation	**0.751 ± 0.765 (1.000)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-23 **Lab ID: 30217613020** Collected: 04/25/17 10:50 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.439 (0.894) C:NA T:86%**	pCi/L	05/12/17 11:13	13982-63-3	
Radium-228	EPA 904.0	**0.220 ± 0.354 (0.768) C:76% T:83%**	pCi/L	05/12/17 15:56	15262-20-1	
Total Radium	Total Radium Calculation	**0.220 ± 0.793 (1.66)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-22 **Lab ID: 30217613021** Collected: 04/25/17 12:00 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0861 ± 0.654 (1.29) C:NA T:87%**	pCi/L	05/12/17 11:30	13982-63-3	
Radium-228	EPA 904.0	**1.13 ± 0.484 (0.804) C:77% T:85%**	pCi/L	05/12/17 11:59	15262-20-1	
Total Radium	Total Radium Calculation	**1.22 ± 1.14 (2.09)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-155 **Lab ID: 30217613022** Collected: 04/25/17 13:00 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.090 ± 0.469 (1.09) C:NA T:88%**	pCi/L	05/12/17 11:45	13982-63-3	
Radium-228	EPA 904.0	**0.520 ± 0.379 (0.746) C:77% T:88%**	pCi/L	05/12/17 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.520 ± 0.848 (1.84)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-01a-1 **Lab ID: 30217613023** Collected: 04/25/17 14:00 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.384 (0.861) C:NA T:93%**	pCi/L	05/12/17 11:45	13982-63-3	
Radium-228	EPA 904.0	**0.327 ± 0.346 (0.720) C:79% T:86%**	pCi/L	05/12/17 12:00	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Sample: P-01a-1 **Lab ID: 30217613023** Collected: 04/25/17 14:00 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.327 ± 0.730 (1.58)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-156 **Lab ID: 30217613024** Collected: 04/25/17 15:00 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.348 ± 0.484 (0.808) C:NA T:94%**	pCi/L	05/12/17 11:45	13982-63-3	
Radium-228	EPA 904.0	**0.661 ± 0.441 (0.855) C:77% T:82%**	pCi/L	05/12/17 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**1.01 ± 0.925 (1.66)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-165 **Lab ID: 30217613025** Collected: 04/25/17 16:00 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.081 ± 0.696 (1.42) C:NA T:89%**	pCi/L	05/12/17 11:45	13982-63-3	
Radium-228	EPA 904.0	**0.853 ± 0.391 (0.658) C:79% T:90%**	pCi/L	05/12/17 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.853 ± 1.09 (2.08)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-132 **Lab ID: 30217613026** Collected: 04/25/17 16:50 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.265 ± 0.459 (0.820) C:NA T:84%**	pCi/L	05/12/17 11:45	13982-63-3	
Radium-228	EPA 904.0	**0.0678 ± 0.332 (0.755) C:78% T:87%**	pCi/L	05/12/17 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.333 ± 0.791 (1.58)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-131 **Lab ID: 30217613027** Collected: 04/25/17 18:00 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0938 ± 0.428 (0.254) C:NA T:91%**	pCi/L	05/12/17 11:45	13982-63-3	
Radium-228	EPA 904.0	**0.0851 ± 0.294 (0.665) C:77% T:85%**	pCi/L	05/12/17 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.179 ± 0.722 (0.919)**	pCi/L	05/18/17 17:33	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Sample: P-153 **Lab ID: 30217613028** Collected: 04/26/17 08:20 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.082 ± 0.375 (0.884) C:NA T:94%**	pCi/L	05/12/17 12:00	13982-63-3	
Radium-228	EPA 904.0	**0.577 ± 0.426 (0.834) C:71% T:75%**	pCi/L	05/12/17 15:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.577 ± 0.801 (1.72)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-151 **Lab ID: 30217613029** Collected: 04/26/17 09:20 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.262 ± 0.400 (0.237) C:NA T:87%**	pCi/L	05/12/17 12:00	13982-63-3	
Radium-228	EPA 904.0	**-0.190 ± 0.321 (0.781) C:78% T:83%**	pCi/L	05/12/17 15:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.262 ± 0.721 (1.02)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-162 **Lab ID: 30217613030** Collected: 04/26/17 10:30 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.248 ± 0.430 (0.769) C:NA T:88%**	pCi/L	05/12/17 12:00	13982-63-3	
Radium-228	EPA 904.0	**0.454 ± 0.370 (0.742) C:75% T:86%**	pCi/L	05/12/17 15:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.702 ± 0.800 (1.51)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-163 **Lab ID: 30217613031** Collected: 04/26/17 11:30 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.080 ± 0.367 (0.865) C:NA T:93%**	pCi/L	05/12/17 12:00	13982-63-3	
Radium-228	EPA 904.0	**0.168 ± 0.304 (0.666) C:77% T:90%**	pCi/L	05/12/17 15:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.168 ± 0.671 (1.53)**	pCi/L	05/18/17 17:33	7440-14-4	

Sample: P-164 **Lab ID: 30217613032** Collected: 04/26/17 12:20 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.383 (0.779) C:NA T:95%**	pCi/L	05/12/17 12:00	13982-63-3	
Radium-228	EPA 904.0	**0.200 ± 0.370 (0.811) C:74% T:86%**	pCi/L	05/12/17 15:57	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

Sample: P-164 **Lab ID: 30217613032** Collected: 04/26/17 12:20 Received: 05/01/17 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.200 ± 0.753 (1.59)**	pCi/L	05/18/17 17:33	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

QC Batch: 257739 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30217613001, 30217613002, 30217613003, 30217613004, 30217613005, 30217613006, 30217613007, 30217613008, 30217613009, 30217613010, 30217613011, 30217613012, 30217613013, 30217613014, 30217613015, 30217613016, 30217613017, 30217613018, 30217613019, 30217613020

METHOD BLANK: 1269718 Matrix: Water
Associated Lab Samples: 30217613001, 30217613002, 30217613003, 30217613004, 30217613005, 30217613006, 30217613007, 30217613008, 30217613009, 30217613010, 30217613011, 30217613012, 30217613013, 30217613014, 30217613015, 30217613016, 30217613017, 30217613018, 30217613019, 30217613020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.288 ± 0.332 (0.696) C:74% T:83%	pCi/L	05/12/17 15:57	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

QC Batch: 257741 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30217613021, 30217613022, 30217613023, 30217613024, 30217613025, 30217613026, 30217613027, 30217613028, 30217613029, 30217613030, 30217613031, 30217613032

METHOD BLANK: 1269719 Matrix: Water
Associated Lab Samples: 30217613021, 30217613022, 30217613023, 30217613024, 30217613025, 30217613026, 30217613027, 30217613028, 30217613029, 30217613030, 30217613031, 30217613032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.120 ± 0.304 (0.678) C:77% T:94%	pCi/L	05/12/17 10:55	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

QC Batch: 257589 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30217613021, 30217613022, 30217613023, 30217613024, 30217613025, 30217613026, 30217613027, 30217613028, 30217613029, 30217613030, 30217613031, 30217613032

METHOD BLANK: 1268850 Matrix: Water
Associated Lab Samples: 30217613021, 30217613022, 30217613023, 30217613024, 30217613025, 30217613026, 30217613027, 30217613028, 30217613029, 30217613030, 30217613031, 30217613032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.084 ± 0.384 (0.906) C:NA T:91%	pCi/L	05/12/17 11:30	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

QC Batch: 257588 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30217613001, 30217613002, 30217613003, 30217613004, 30217613005, 30217613006, 30217613007, 30217613008, 30217613009, 30217613010, 30217613011, 30217613012, 30217613013, 30217613014, 30217613015, 30217613016, 30217613017, 30217613018, 30217613019, 30217613020

METHOD BLANK: 1268849 Matrix: Water
Associated Lab Samples: 30217613001, 30217613002, 30217613003, 30217613004, 30217613005, 30217613006, 30217613007, 30217613008, 30217613009, 30217613010, 30217613011, 30217613012, 30217613013, 30217613014, 30217613015, 30217613016, 30217613017, 30217613018, 30217613019, 30217613020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.187 ± 0.519 (1.01) C:NA T:83%	pCi/L	05/12/17 10:20	

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QUALIFIERS

Project: 17-0438, xcel Energy-Sherco CC
Pace Project No.: 30217613

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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CHAIN-OF-CU

The Chain-of-Custody is a

WO#:30217613



Page: 1 of 3

2125410

Section A
Required Client Information:

Company: Xcel Energy	
Address: c/o Pace MN Field	
Email To:	
Phone:	Fax:
Requested Due Date/TAT:	

Section B
Required Project Information:

Report To: David Anderson	
Copy To:	
Purchase Order No.:	
Project Name: 17-0438, Xcel Energy -	
Project Number: Sherco CCR April 2017	

Attention: Ciara Ruikkie	
Company Name: Pace MN Field Services	
Address:	
Pace Quote Reference:	Tom Halverson
Pace Project Manager:	Robbin Robl
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D
Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes
MATRIX / CODE

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-74-1	WT				4/19/17	1650		2			2							✓	✓		001
2	P-73d-1						1240		2			2							✓	✓		002
3	P-125						1420		2			2							✓	✓		003
4	P-134						1515		2			2							✓	✓		004
5	P-138A						1610		2			2							✓	✓		005
6	P-137A	↓				↓	1740		2			2							✓	✓		006
7	P-117	WT				4/20/17	0830		2			2							✓	✓		007
8	P-75-1						0915		2			2							✓	✓		008
9	P-97						1010		2			2							✓	✓		009
10	P-98						1250		2			2							✓	✓		010
11	P-120	↓				↓	1330		2			2							✓	✓		011
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1.) client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson / Pace	4/27/17	0920	Michael Fh	5-1-17	945	N/A	N	N	Y

(2) RA-226 EPA 903.1
RA-228 EPA 904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 4/20/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

30217613

2125412

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0438, Xcel Energy - Sherco CCR April 2017
Project Number:

Section C Invoice Information:

Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Robl
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER
Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-132a	WT				4/24/17	1240		2			2						✓	✓		012
2	P-150						1350		2			2						✓	✓		013
3	P-154a						1500		2			2						✓	✓		014
4	P-130						1550		2			2						✓	✓		015
5	P-17						1710		2			2						✓	✓		016
6	P-158	↓				↓	1755		2			2						✓	✓		017
7	P-141	WT				4/25/17	0835		2			2						✓	✓		018
8	P-157						0935		2			2						✓	✓		019
9	P-23						1050		2			2						✓	✓		020
10	P-22						1200		2			2						✓	✓		021
11	P-155						1300		2			2						✓	✓		022
12	P-01a-1	↓				↓	1400		2			2						✓	✓		023

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1) Client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson Pace	4/27/17	0920	Michael Lee	5-1-17	945	N/A	n	n	y

(1) RA-226 EPA 903.1
RA-228 EPA 904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 4/25/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

30217613

Page: 3 of 3

2125413

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0438, Xcel Energy-
Project Number: Sherco CCR April 2017

Section C Invoice Information:

Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: ~~Tom Halverson~~
Pace Profile #: Robbin Rob1

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE)

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-156	WT				4/25/17	1500		2			2						✓	✓		024
2	P-165						1600		2			2						✓	✓		025
3	P-132						1650		2			2						✓	✓		026
4	P-131						1800		2			2						✓	✓		027
5	P-153	WT				4/26/17	0820		2			2						✓	✓		028
6	P-151						0920		2			2						✓	✓		029
7	P-162						1030		2			2						✓	✓		030
8	P-163						1130		2			2						✓	✓		031
9	P-164						1220		2			2						✓	✓		
10																					
11																					
12																					

DJA 4/25/17

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
① Client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson/Pace	4/27/17	0420	Michael Lee	5-1-17	945	NH n n y

① RA-226 EPA 903.1
RA-228 EPA 904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 4/26/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

RTB

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: XCel Ngy Project #30217613

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 7096 3373 2580

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

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

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

Temp should be above freezing to 6°C

Date and Initials of person examining contents: MC 5-1-17

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

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

May 2017

Field Datasheets and Laboratory Reports

Sherco CCR - May 2017
Field Proj. # 17-05710

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 5/23/17 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.99	19.0	1020	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.04	19.0	1020	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.10	19.0	1020	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.06	19.0	1030	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.08	18.0	1750	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 1000

Cond Std: 1000 umhos/cm —
Ricca - Lot #: 4606B22 —
Exp Date: 06/31/18 —
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	19.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm —
Ricca - Lot #: 4605D87 —
Exp Date: 05/31/18 —
Exp. Date

Meter Result (µS/cm)	Temp (°C)
97	19.0

Meter Make YSI Sonde ID #5
IC/ICV Time 1035 / 1038
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1755 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1009 Temp (°C) 18.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

DJA 5/23/17

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 5/23/17

Sherco CCR - May 2017
Field proj. #17-0570

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 5/23/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	238	Secondary Source Std. Value (mV)	238
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI #16100067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
239	19.0	238	19.0

Meter Make YSI Sonde ID #5

IC/ICV Time 1040 / 1042

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1800 Initials DJA Std. Value 240 ☑ Calibration Standard ☐ Secondary Source Standard

Result (mV) 237 Temp (°C) 18.0 CCV: (Pass) / Fail *(CCV acceptable if ± 10 mV of standard value)*

CCV Time ____ Initials ____ Std. Value ____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

DJA 5/23/17

CCV Time ____ Initials ____ Std. Value ____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	20.0 (°C)	Ambient Temp:	20.0 (°C)
Barometric Pressure	28.94 (in. Hg)	Barometric Pressure	28.94 (in. Hg)
Barometric Pressure	735.08 (mm Hg)	Barometric Pressure	735.08 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)		ICV Meter Result (%)	
97		98	

IC/ICV Time 1015 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster DB-266W

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1745 Initials DJA Barometric Pressure 735.08 (in. Hg / mm Hg)

Calibration Value 97 (%) Result 95 (%) CCV: (Pass) / Fail *(CCV acceptable if ± 2% of Calibration Value)*

CCV Time ____ Initials ____ Barometric Pressure ____ (in. Hg / mm Hg)

Calibration Value ____ (%) Result ____ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

DJA 5/23/17

CCV Time ____ Initials ____ Barometric Pressure ____ (in. Hg / mm Hg)

Calibration Value ____ (%) Result ____ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 5/23/17

Sherco CCR - May 2017
Field Proj. # 17-0570

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 5/23/17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C689664 / C686359 / C686358 / C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	10.0	99	999	IC Time 1045 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.02	9.9	98	998	ICV Time 1055 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	98	998	CCV Time 1810 Initials DJA CCV: (Pass) / Fail
CCV		DJA 5/23/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 5/23/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Sherco CCR - May 2017
Field Proj. # 17-0570

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 5/24/17 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.95	13.0	0705	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.06	13.0	0705	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.15	13.0	0705	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.08	13.0	0715	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.09	17.0	1840	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value	1000	Low Standard Value	100
Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18*		Cond Std: 100 umhos/cm Ricca - Lot #: 4605D87 *Exp Date: 05/31/18*	
Exp. Date		Exp. Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1000	13.0	96	13.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0720 / 0723
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1845 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1010 Temp (°C) 17.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) DJA 5/24/17 CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 5/24/17

Sherco CCR - May 2017
Field proj. #17-0570

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 5/24/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	247	Secondary Source Std. Value (mV)	247
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI #16100067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
247	13.0	245	13.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0725 / 0727

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1850	Initials DJA	Std. Value 241	☑ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 239	Temp (°C) 17.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		

DJA 5/24/17

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	12.0 (°C)	Ambient Temp:	12.0 (°C)
Barometric Pressure	28.94 (in. Hg)	Barometric Pressure	28.94 (in. Hg)
Barometric Pressure	735.08 (mm Hg)	Barometric Pressure	735.08 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)		ICV Meter Result (%)	
97		97	

IC/ICV Time 0700 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster DB-26EW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1835	Initials DJA	Barometric Pressure 735.08 (in. Hg / mm Hg)			
Calibration Value 97 (%)	Result 96 (%)	CCV: (Pass) / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		

DJA 5/24/17

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 5/24/17

Shelco CCR - May 2017
Field Proj. # 17-0570

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 5/24/17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	99	999	IC Time 0730 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	98	997	ICV Time 0735 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	99	997	CCV Time 1855 Initials DJA CCV: (Pass) / Fail
CCV		DJA 5/24/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 5/24/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Sherco CCR - May 2017
Field Proj. # 17-0570

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 5/25/17 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.97	13.0	0645	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.07	13.0	0645	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.16	13.0	0645	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.09	13.0	0655	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.09	15.0	1100	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value	1000	Low Standard Value	100
Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18*		Cond Std: 100 umhos/cm Ricca - Lot #: 4605D87 *Exp Date: 05/31/18*	
Exp. Date		Exp. Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1000	13.0	96	13.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0700 / 0703
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1105 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1007 Temp (°C) 15.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

DJA 5/25/17

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 5/25/17

Sherco CCR - May 2017
Field proj. #17-0570

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 5/25/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)		Meter Make YSI Sonde ID #5
Calibration Std. Value (mV)	247	Secondary Source Std. Value (mV)	247	
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.	IC/ICV Time 0705 / 0707
Lot No.	YSI #15610006 7	Lot No.	16L100376	Initials DJA
Exp Date	07/2017	Exp. Date	11/2017	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)	ICV: (Pass) / Fail
247	13.0	247	13.0	ICV acceptable if ± 10 mV of standard value.

CCV Time 1110	Initials DJA	Std. Value 244	☑ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 242	Temp (°C) 15.0	CCV: (Pass) / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value DJA 5/25/17	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		

Dissolved Oxygen (DO)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation		IC/ICV Time 0640 Initials DJA
Ambient Temp:	11.0 (°C)	Ambient Temp:	11.0 (°C)	DO Meter ID YSI Sonde #5
Barometric Pressure	28.94 (in. Hg)	Barometric Pressure	28.94 (in. Hg)	Barometer ID Skymaster NB-266W
Barometric Pressure	735.08 (mm Hg)	Barometric Pressure	735.08 (mm Hg)	
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)	ICV: (Pass) / Fail
IC Meter Result (%)		ICV Meter Result (%)		(ICV/CCV acceptable if ± 2% of Calibration Value)
97		96		

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1055	Initials DJA	Barometric Pressure 735.08 (in. Hg / mm Hg)			
Calibration Value 97 (%)	Result 95 (%)	CCV: (Pass) / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 5/25/17 (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 5/25/17

Sherco CCR - May 2017
Field Proj. # 17-0570

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 5/25/17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C686664 / C686359 / C686358 / C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	99	998	IC Time 0710 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	98	998	ICV Time 0720 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	98	997	CCV Time 1115 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 5/25/17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 5/25/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR + NPDES May Project No. 17-0537

Monitoring Point ID P-01a-1 Labeled P-01A

Inside Diameter 2 (inches) Key # 2106 ☐ Locked ☒ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel cover will not close

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 80.98 Feet

Static water level measurement before purging 75.98 Feet

Static water level measurement at time of sampling 75.98 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 5-16-17 Water Column 5.00 Feet

Time Purged 1355 - 1413 One Casing Volume 0.8 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 2.7 Gallons

Field Sampling Data

Date Sampled 5-16-17

Time Sampled 1425

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 6.3 (mg/l)

Spec. Cond. 650 (µmhos/cm) Turbidity 1.5 (NTU)

Temp. 13.5 (°C) Eh 193 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 78° + partly cloudy, wind SE 15

Sample Description: clear + odorless

Observations: DJA 5/16/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1401	7.8	650	13.5	6.7	NA	197	0.9
1407	7.7	650	13.5	6.5	NA	195	1.8
1413	7.7	650	13.5	6.3	NA	193	2.7

DJA 5/16/17

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 5/16/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR May'17 Project No. 17-0570

Monitoring Point ID P-17 Labeled P17

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 58.76 Feet

Static water level measurement before purging 35.60 Feet

Static water level measurement at time of sampling 35.60 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 5-24-17 Water Column 23.16 Feet

Time Purged 1230-1327 One Casing Volume 3.8 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 11.4 Gallons

Field Sampling Data

Date Sampled 5-24-17

Time Sampled 1335

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 8.2 (mg/l)

Spec. Cond. 540 (µmhos/cm) Turbidity 3.0 (NTU)

Temp. 10.5 (°C) (ORP) Eh 221 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 57°+ cloudy, wind NE10

Sample Description: clear + odorless

Observations: DJA 5/24/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1249	7.8	540	10.0	8.2	NA	229	3.8
1308	7.7	540	10.0	8.2	NA	223	7.6
1327	7.7	540	10.5	8.2	NA	221	11.4

DJA 5/24/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 5/24/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR+ NPDES May Project No. 17-0537

Monitoring Point ID P-22 Labeled P-22

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 57.85 Feet

Static water level measurement before purging 38.12 Feet

Static water level measurement at time of sampling 38.12 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 5-16-17 Water Column 19.73 Feet

Time Purged 1605-1653 One Casing Volume 3.2 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 5-16-17

Time Sampled 1700

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 5.1 (mg/l)

Spec. Cond. 880 (µmhos/cm) Turbidity 3.6 (NTU)

Temp. 13.0 (°C) Eh 194 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 80° + cloudy, wind 5 15

Sample Description: clear + odorless

Observations: DJA 5/16/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1621	7.6	880	13.0	5.2	NA	206	3.2
1637	7.6	880	13.0	5.1	NA	199	6.4
1653	7.5	880	13.0	5.1	NA	194	9.6
			DJA	5/16/17			

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 5/16/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR+ NPDES May Project No. 17-0537

Monitoring Point ID P-23 Labeled P-23

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	67.34	Feet
Static water level measurement before purging	40.18	Feet
Static water level measurement at time of sampling	40.18	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 5-16-17 Water Column 27.16 Feet

Time Purged 1140-1234 One Casing Volume 4.4 Gallons

Pump Rate 0.25 (GPM) / LPM Volume Purged 13.5 Gallons

Field Sampling Data

Date Sampled 5-16-17

Time Sampled 1240

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 6.7 (mg/l)

Spec. Cond. 650 (µmhos/cm) Turbidity 2.9 (NTU)

Temp. 13.0 (°C) Eh 202 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 75° + partly cloudy, wind SE 15

Sample Description: clear + odorless

Observations:

DJA 5/16/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1158	7.6	660	13.0	7.0	NA	204	4.5
1216	7.6	650	13.0	6.9	NA	203	9.0
1234	7.5	650	13.0	6.7	NA	202	13.5

DJA 5/16/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 5/16/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR May'17 Project No. 17-0570

Monitoring Point ID P-152d Labeled 806318

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	42.18	Feet
Static water level measurement before purging	35.58	Feet
Static water level measurement at time of sampling	35.58	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 5-24-17 Water Column 6.60 Feet

Time Purged 1355-1413 One Casing Volume 1.1 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 3.6 Gallons

Field Sampling Data

Date Sampled 5-24-17

Time Sampled 1430

Sampling Equip. above pump

Analyzed by bJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 9.7 (mg/l)

Spec. Cond. 380 (µmhos/cm) Turbidity 2.6 (NTU)

Temp. 11.0 (°C) (ORP) Eh 231 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 57°+ cloudy, wind NE10

Sample Description: clear + odorless

Observations: Collected duplicate at this well

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1401	7.8	380	11.0	9.7	NA	242	1.2
1407	7.8	380	11.0	9.7	NA	236	2.4
1413	7.7	380	11.0	9.7	NA	231	3.6
			bJA 5/24/17				

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 5/24/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR NPDES May Project No. 17-0537

Monitoring Point ID P-155 Labeled 812964

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 85.47 Feet

Static water level measurement before purging 76.24 Feet

Static water level measurement at time of sampling 76.24 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 5-16-17 Water Column 9.23 Feet

Time Purged 1300 - 1324 One Casing Volume 1.5 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 5-16-17

Time Sampled 1335

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 5.9 (mg/l)

Spec. Cond. 770 (µmhos/cm) Turbidity 13.1 (NTU)

Temp. 14.0 (°C) Eh 212 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 76° + partly cloudy, wind SE 15

Sample Description: clear + odorless

Observations: DJA 5/16/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1308	7.5	770	14.5	6.0	NA	215	1.6
1316	7.5	770	14.0	6.0	NA	213	3.2
1324	7.5	770	14.0	5.9	NA	212	4.8
				DJA 5/16/17			

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 5/16/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR+ NPDES May Project No. 17-0537

Monitoring Point ID P-156 Labeled 812965

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 85.53 Feet

Static water level measurement before purging 75.23 Feet

Static water level measurement at time of sampling 75.23 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 5-16-17 Water Column 10.30 Feet

Time Purged 1445-1512 One Casing Volume 1.7 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 5-16-17

Time Sampled 1520

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 5.9 (mg/l)

Spec. Cond. 520 (µmhos/cm) Turbidity 6.7 (NTU)

Temp. 14.5 (°C) Eh 184 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 80° & sunny, wind S 15

Sample Description: clear & odorless

Observations: DJA 5/16/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1454	7.8	530	14.5	6.3	NA	190	1.8
1503	7.8	520	14.5	6.0	NA	184	3.6
1512	7.8	520	14.5	5.9	NA	184	5.4

DJA 5/16/17

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 5/16/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR+ NPDES May Project No. 17-0537

Monitoring Point ID P-157 Labeled 812966

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 49.06 Feet

Static water level measurement before purging 40.70 Feet

Static water level measurement at time of sampling 40.70 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 5-16-17 Water Column 8.36 Feet

Time Purged 1105-1126 One Casing Volume 1.4 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 5-16-17

Time Sampled 1130

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 7.0 (mg/l)

Spec. Cond. 720 (µmhos/cm) Turbidity 3.7 (NTU)

Temp. 12.0 (°C) Eh 210 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 73° + cloudy, wind SE 15

Sample Description: clear + odorless

Observations:

DJA 5/16/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1112	7.4	720	12.0	8.1	NA	217	1.4
1119	7.4	720	12.0	7.4	NA	214	2.8
1126	7.3	720	12.0	7.0	NA	210	4.2

DJA 5/16/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 5/16/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR+ NPDES May Project No. 17-0537

Monitoring Point ID P-158 Labeled 812967

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 49.16 Feet

Static water level measurement before purging 38.47 Feet

Static water level measurement at time of sampling 38.47 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 5-16-17 Water Column 10.69 Feet

Time Purged 1010 - 1037 One Casing Volume 1.7 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 5-16-17

Time Sampled 1650

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 9.0 (mg/l)

Spec. Cond. 620 (µmhos/cm) Turbidity 2.5 (NTU)

Temp. 11.5 (°C) Eh 233 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 70° + cloudy, wind S 15

Sample Description: clear + odorless

Observations: DJA 5/16/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1019	7.6	630	11.0	9.4	NA	234	1.8
1028	7.5	630	11.5	9.2	NA	233	3.6
1037	7.5	620	11.5	9.0	NA	233	5.4
			DJA 5/16/17				

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 5/16/17

Amended Report

Original Report ID: MCE0177 Xcel General Report FINAL 06 13 2017 1353 06 13 2017 0613

Minneapolis Testing Laboratory
1518 Chestnut Ave N
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Certification #MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

11 January 2018

Charles A Donkers

Environmental Services-Water Minneapolis

250 Marquette Plaza

Minneapolis, MN 55401

RE: Sherco NPDES GW-B

cc: Laboratory report re-created to only include wells in the Bottom Ash Pond CCR Groundwater Monitoring System. HSD 1/11/18

Enclosed are the results of analyses for samples received by the laboratory on 05/18/2017 09:20-05/25/2017 12:26. If you have any questions concerning this report, please feel free to contact me.

I certify that this analysis report was prepared under my direction or supervision under a system designed to assure that qualified personnel analyzed the submitted samples. All protocols for analysis were followed as required by Minnesota Rules and the Applicable Management Plan.

Sincerely,

Steve Davis

Project Manager

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Amended Report

Original Report ID: MCE0257 Xcel General Report FINAL 06 14 2017 0715 06 14 2017 0607

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
P-158		MCE0177-13	Water	05/16/2017 10:50	05/18/2017 9:20
P-157		MCE0177-14	Water	05/16/2017 11:30	05/18/2017 9:20
P-23		MCE0177-15	Water	05/16/2017 12:40	05/18/2017 9:20
P-155		MCE0177-16	Water	05/16/2017 13:35	05/18/2017 9:20
P-01A-1		MCE0177-17	Water	05/16/2017 14:25	05/18/2017 9:20
P-156		MCE0177-18	Water	05/16/2017 15:20	05/18/2017 9:20
P-22		MCE0177-19	Water	05/16/2017 17:00	05/18/2017 9:20
Rinse		MCE0257-01	Water	05/23/2017 11:00	05/25/2017 12:26
P-17		MCE0257-14	Water	05/24/2017 13:35	05/25/2017 12:26
P-152a		MCE0257-15	Water	05/24/2017 14:30	05/25/2017 12:26
Duplicate		MCE0257-16	Water	05/24/2017 14:30	05/25/2017 12:26

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Amended Report

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-158

MCE0177-13 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	4.60	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 17:54	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 17:54	EPA 300.0	CRL
Sulfate	68.9	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 17:54	EPA 300.0	CRL
Wet Chemistry										
pH	7.77		pH Units	M_TTT	1	BCE0462	5/18/17 14:17	5/18/17 17:21	SM 4500-H+ B	CRL
Total Dissolved Solids	382	20.0	mg/L		1	BCE0486	5/22/17 9:06	5/22/17 9:06	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:06	EPA 200.8	CRL
Barium	73.2	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:06	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:06	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:06	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:06	EPA 200.8	CRL
Chromium	0.758	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:06	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:06	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:06	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:06	EPA 200.8	CRL
Selenium	2.25	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:06	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:06	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.578	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:08	EPA 200.7	HRD
Calcium	88.2	0.500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:05	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:05	EPA 200.7	HRD

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Amended Report

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-158

MCE0177-13 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0496	5/22/17 9:03	5/22/17 14:35	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCE0257 Xcel General Report FINAL 06 14 2017 0715 06 14 2017 0607

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Minneapolis, MN 55043
Certification # MN-027-053-197
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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-157

MCE0177-14 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	15.2	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 18:14	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 18:14	EPA 300.0	CRL
Sulfate	82.4	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 18:14	EPA 300.0	CRL
Wet Chemistry										
pH	7.75		pH Units	M_TTT	1	BCE0462	5/18/17 14:17	5/18/17 17:28	SM 4500-H+ B	CRL
Total Dissolved Solids	434	20.0	mg/L		1	BCE0486	5/22/17 9:06	5/22/17 9:06	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:11	EPA 200.8	CRL
Barium	52.0	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:11	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:11	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:11	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:11	EPA 200.8	CRL
Chromium	1.36	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:11	EPA 200.8	CRL
Molybdenum	0.575	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:11	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:11	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:11	EPA 200.8	CRL
Selenium	2.28	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:11	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:11	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.247	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:13	EPA 200.7	HRD
Calcium	94.2	0.500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:11	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:11	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-157

MCE0177-14 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0496	5/22/17 9:03	5/22/17 14:36	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-23

MCE0177-15 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	22.1	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 18:35	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 18:35	EPA 300.0	CRL
Sulfate	94.8	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 18:35	EPA 300.0	CRL
Wet Chemistry										
pH	7.90		pH Units	M_TTT	1	BCE0462	5/18/17 14:17	5/18/17 17:35	SM 4500-H+ B	CRL
Total Dissolved Solids	404	20.0	mg/L		1	BCE0486	5/22/17 9:06	5/22/17 9:06	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:15	EPA 200.8	CRL
Barium	62.3	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:15	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:15	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:15	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:15	EPA 200.8	CRL
Chromium	0.952	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:15	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:15	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:15	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:15	EPA 200.8	CRL
Selenium	0.870	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:15	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:15	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.288	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:19	EPA 200.7	HRD
Calcium	86.0	0.500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:17	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:17	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-23

MCE0177-15 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0496	5/22/17 9:03	5/22/17 14:38	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-155

MCE0177-16 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	13.0	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 18:55	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 18:55	EPA 300.0	CRL
Sulfate	148	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 18:55	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCE0462	5/18/17 14:17	5/18/17 17:43	SM 4500-H+ B	CRL
Total Dissolved Solids	494	20.0	mg/L		1	BCE0486	5/22/17 9:06	5/22/17 9:06	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:19	EPA 200.8	CRL
Barium	71.9	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:19	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:19	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:19	EPA 200.8	CRL
Cobalt	0.951	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:19	EPA 200.8	CRL
Chromium	1.98	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:19	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:19	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:19	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:19	EPA 200.8	CRL
Selenium	4.13	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:19	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:19	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.75	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:24	EPA 200.7	HRD
Calcium	89.4	0.500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:22	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:22	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-155

MCE0177-16 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0496	5/22/17 9:03	5/22/17 14:40	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-01A-1

MCE0177-17 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	8.39	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 19:16	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 19:16	EPA 300.0	CRL
Sulfate	80.9	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 19:16	EPA 300.0	CRL
Wet Chemistry										
pH	7.80		pH Units	M_TTT	1	BCE0462	5/18/17 14:17	5/18/17 17:50	SM 4500-H+ B	CRL
Total Dissolved Solids	406	20.0	mg/L		1	BCE0486	5/22/17 9:06	5/22/17 9:06	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:23	EPA 200.8	CRL
Barium	35.0	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:23	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:23	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:23	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:23	EPA 200.8	CRL
Chromium	1.03	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:23	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:23	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:23	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:23	EPA 200.8	CRL
Selenium	5.34	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:23	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:23	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.672	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:31	EPA 200.7	HRD
Calcium	79.5	0.500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:28	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:28	EPA 200.7	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-01A-1

MCE0177-17 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0496	5/22/17 9:03	5/22/17 14:41	EPA 245.1, 7470A	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-156

MCE0177-18 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	1.67	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 19:36	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 19:36	EPA 300.0	CRL
Sulfate	15.5	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 19:36	EPA 300.0	CRL
Wet Chemistry										
pH	7.99		pH Units	M_TTT	1	BCE0462	5/18/17 14:17	5/18/17 17:56	SM 4500-H+ B	CRL
Total Dissolved Solids	240	20.0	mg/L		1	BCE0486	5/22/17 9:06	5/22/17 9:06	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:27	EPA 200.8	CRL
Barium	49.9	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:27	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:27	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:27	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:27	EPA 200.8	CRL
Chromium	1.18	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:27	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:27	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:27	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:27	EPA 200.8	CRL
Selenium	0.641	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:27	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:27	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.145	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:36	EPA 200.7	HRD
Calcium	58.8	0.500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:34	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:34	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-156

MCE0177-18 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0496	5/22/17 9:03	5/22/17 14:47	EPA 245.1, 7470A	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-22

MCE0177-19 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	18.4	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 19:56	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 19:56	EPA 300.0	CRL
Sulfate	187	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 19:56	EPA 300.0	CRL
Wet Chemistry										
pH	7.87		pH Units	M_TTT	1	BCE0462	5/18/17 14:17	5/18/17 18:03	SM 4500-H+ B	CRL
Total Dissolved Solids	602	20.0	mg/L		1	BCE0486	5/22/17 9:06	5/22/17 9:06	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:39	EPA 200.8	CRL
Barium	80.2	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:39	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:39	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:39	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:39	EPA 200.8	CRL
Chromium	1.03	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:39	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:39	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:39	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:39	EPA 200.8	CRL
Selenium	11.9	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:39	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 11:39	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.19	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:53	EPA 200.7	HRD
Calcium	116	0.500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:51	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 16:51	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-22

MCE0177-19 (Water) - Chain of Custody Number: 2052831/2052833/2052834/2052835

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCE0496	5/22/17 9:03	5/22/17 14:48	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCE0257 Xcel General Report FINAL 06 14 2017 0715 06 14 2017 0607

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Rinse

MCE0257-01 (Water) - Chain of Custody Number: 2052836/2052894

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 15:27	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 15:27	EPA 300.0	CRL
Sulfate	< 1.00	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 15:27	EPA 300.0	CRL
Wet Chemistry										
pH	7.08		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 13:33	SM 4500-H+ B	CRL
Total Dissolved Solids	< 20.0	20.0	mg/L		1	BCE0614	5/26/17 8:31	5/26/17 8:31	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 9:48	EPA 200.8	CRL
Barium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 9:48	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 9:48	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 9:48	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 9:48	EPA 200.8	CRL
Chromium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 9:48	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 9:48	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 9:48	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 9:48	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 9:48	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 9:48	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 13:39	EPA 200.7	HRD
Calcium	< 0.500	0.500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 13:38	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 13:38	EPA 200.7	HRD

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Amended Report

Original Report ID: MCE0257 Xcel General Report FINAL 06 14 2017 0715 06 14 2017 0607

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Rinse

MCE0257-01 (Water) - Chain of Custody Number: 2052836/2052894

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0008	6/1/17 8:28	6/1/17 14:07	EPA 245.1, 7470A	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-17

MCE0257-14 (Water) - Chain of Custody Number: 2052836/2052894

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	21.4	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 21:34	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 21:34	EPA 300.0	CRL
Sulfate	30.6	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 21:34	EPA 300.0	CRL
Wet Chemistry										
pH	7.88		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 14:28	SM 4500-H+ B	CRL
Total Dissolved Solids	280	20.0	mg/L		1	BCE0644	5/30/17 9:50	5/30/17 9:50	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:02	EPA 200.8	CRL
Barium	41.8	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:02	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:02	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:02	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:02	EPA 200.8	CRL
Chromium	0.836	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:02	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:02	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:02	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:02	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:02	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:02	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:05	EPA 200.7	HRD
Calcium	71.8	0.500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:03	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:03	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-17

MCE0257-14 (Water) - Chain of Custody Number: 2052836/2052894

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0008	6/1/17 8:28	6/1/17 14:33	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCE0257 Xcel General Report FINAL 06 14 2017 0715 06 14 2017 0607

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-152a

MCE0257-15 (Water) - Chain of Custody Number: 2052836/2052894

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 21:54	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 21:54	EPA 300.0	CRL
Sulfate	9.17	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 21:54	EPA 300.0	CRL
Wet Chemistry										
pH	7.83		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 14:31	SM 4500-H+ B	CRL
Total Dissolved Solids	190	20.0	mg/L		1	BCE0644	5/30/17 9:50	5/30/17 9:50	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:06	EPA 200.8	CRL
Barium	39.1	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:06	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:06	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:06	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:06	EPA 200.8	CRL
Chromium	0.698	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:06	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:06	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:06	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:06	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:06	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:06	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:10	EPA 200.7	HRD
Calcium	55.1	0.500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:08	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:08	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

P-152a

MCE0257-15 (Water) - Chain of Custody Number: 2052836/2052894

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0008	6/1/17 8:28	6/1/17 14:35	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCE0257 Xcel General Report FINAL 06 14 2017 0715 06 14 2017 0607

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Duplicate

MCE0257-16 (Water) - Chain of Custody Number: 2052836/2052894

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 22:15	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 22:15	EPA 300.0	CRL
Sulfate	9.08	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 22:15	EPA 300.0	CRL
Wet Chemistry										
pH	7.86		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 14:35	SM 4500-H+ B	CRL
Total Dissolved Solids	200	20.0	mg/L		1	BCE0644	5/30/17 9:50	5/30/17 9:50	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:11	EPA 200.8	CRL
Barium	40.3	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:11	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:11	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:11	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:11	EPA 200.8	CRL
Chromium	0.649	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:11	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:11	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:11	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:11	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:11	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:11	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:15	EPA 200.7	HRD
Calcium	56.6	0.500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:13	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:13	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Duplicate

MCE0257-16 (Water) - Chain of Custody Number: 2052836/2052894

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0008	6/1/17 8:28	6/1/17 14:36	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0554 - Wet Prep										
Blank (BCE0554-BLK1)				Prepared & Analyzed: 05/24/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCE0554-BLK2)				Prepared & Analyzed: 05/24/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCE0554-BS1)				Prepared & Analyzed: 05/24/2017						
Chloride	24.0	1.00	mg/L	25.000		96.2	90-110			
Fluoride	4.62	0.750	mg/L	5.0000		92.3	90-110			
Sulfate	95.7	1.00	mg/L	100.00		95.7	90-110			
LCS (BCE0554-BS2)				Prepared & Analyzed: 05/24/2017						
Chloride	24.0	1.00	mg/L	25.000		95.8	90-110			
Fluoride	4.95	0.750	mg/L	5.0000		99.1	90-110			
Sulfate	96.7	1.00	mg/L	100.00		96.7	90-110			
LCS (BCE0554-BS3)				Prepared & Analyzed: 05/24/2017						
Chloride	24.2	1.00	mg/L	25.000		96.8	90-110			
Fluoride	5.00	0.750	mg/L	5.0000		100	90-110			
Sulfate	96.7	1.00	mg/L	100.00		96.7	90-110			
Duplicate (BCE0554-DUP1)		**Source: MCE0177-11**		Prepared & Analyzed: 05/24/2017						
Chloride	1.08	1.00	mg/L		1.12			2.91	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	11.6	1.00	mg/L		11.2			3.04	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0554 - Wet Prep										
Duplicate (BCE0554-DUP2)		**Source: MCE0177-20**		Prepared & Analyzed: 05/24/2017						
Chloride	1.23	1.00	mg/L		1.24			0.807	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	3.27	1.00	mg/L		3.25			0.705	20	
Matrix Spike (BCE0554-MS1)		**Source: MCE0177-11**		Prepared & Analyzed: 05/24/2017						
Chloride	13.0	1.00	mg/L	12.500	1.12	94.7	80-120			
Fluoride	2.38	0.750	mg/L	2.5000	<0.750	95.2	80-120			
Sulfate	60.0	1.00	mg/L	50.000	11.2	97.5	80-120			
Matrix Spike (BCE0554-MS2)		**Source: MCE0177-20**		Prepared & Analyzed: 05/24/2017						
Chloride	12.9	1.00	mg/L	12.500	1.24	93.4	80-120			
Fluoride	2.45	0.750	mg/L	2.5000	<0.750	97.8	80-120			
Sulfate	48.5	1.00	mg/L	50.000	3.25	90.4	80-120			
Matrix Spike Dup (BCE0554-MSD1)		**Source: MCE0177-11**		Prepared & Analyzed: 05/24/2017						
Chloride	12.9	1.00	mg/L	12.500	1.12	94.0	80-120	0.682	20	
Fluoride	2.36	0.750	mg/L	2.5000	<0.750	94.4	80-120	0.886	20	
Sulfate	60.8	1.00	mg/L	50.000	11.2	99.2	80-120	1.39	20	
Matrix Spike Dup (BCE0554-MSD2)		**Source: MCE0177-20**		Prepared & Analyzed: 05/24/2017						
Chloride	13.1	1.00	mg/L	12.500	1.24	94.8	80-120	1.42	20	
Fluoride	2.53	0.750	mg/L	2.5000	<0.750	101	80-120	3.49	20	
Sulfate	49.2	1.00	mg/L	50.000	3.25	91.9	80-120	1.52	20	
Batch BCE0608 - Wet Prep										
Blank (BCE0608-BLK1)				Prepared & Analyzed: 05/25/2017						
Chloride	<1.00	1.00	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0608 - Wet Prep										
Blank (BCE0608-BLK2)				Prepared & Analyzed: 05/25/2017						
Chloride	<1.00	1.00	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCE0608-BS1)				Prepared & Analyzed: 05/25/2017						
Chloride	24.2	1.00	mg/L	25.000		96.9	90-110			
Sulfate	95.9	1.00	mg/L	100.00		95.9	90-110			
LCS (BCE0608-BS2)				Prepared & Analyzed: 05/25/2017						
Chloride	23.5	1.00	mg/L	25.000		93.8	90-110			
Sulfate	98.3	1.00	mg/L	100.00		98.3	90-110			
LCS (BCE0608-BS3)				Prepared: 05/25/2017 Analyzed: 05/26/2017						
Chloride	24.3	1.00	mg/L	25.000		97.1	90-110			
Sulfate	96.5	1.00	mg/L	100.00		96.5	90-110			
Duplicate (BCE0608-DUP1)		**Source: MCE0177-24**		Prepared & Analyzed: 05/25/2017						
Chloride	18.4	1.00	mg/L		18.4			0.163	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	38.4	1.00	mg/L		38.4			0.0756	20	
Duplicate (BCE0608-DUP2)		**Source: MCE0177-30**		Prepared & Analyzed: 05/25/2017						
Chloride	0.761	1.00	mg/L		0.764			0.393	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	6.66	1.00	mg/L		6.71			0.733	20	
Matrix Spike (BCE0608-MS1)		**Source: MCE0177-24**		Prepared & Analyzed: 05/25/2017						
Chloride	30.5	1.00	mg/L	12.500	18.4	96.5	80-120			
Sulfate	86.1	1.00	mg/L	50.000	38.4	95.4	80-120			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0608 - Wet Prep										
Matrix Spike (BCE0608-MS2)		**Source: MCE0177-30**		Prepared & Analyzed: 05/25/2017						
Chloride	12.5	1.00	mg/L	12.500	0.764	93.8	80-120			
Sulfate	53.0	1.00	mg/L	50.000	6.71	92.5	80-120			
Matrix Spike Dup (BCE0608-MSD1)		**Source: MCE0177-24**		Prepared & Analyzed: 05/25/2017						
Chloride	30.6	1.00	mg/L	12.500	18.4	97.2	80-120	0.308	20	
Sulfate	86.2	1.00	mg/L	50.000	38.4	95.7	80-120	0.156	20	
Matrix Spike Dup (BCE0608-MSD2)		**Source: MCE0177-30**		Prepared & Analyzed: 05/25/2017						
Chloride	12.6	1.00	mg/L	12.500	0.764	94.8	80-120	1.00	20	
Sulfate	53.8	1.00	mg/L	50.000	6.71	94.2	80-120	1.61	20	
Batch BCF0082 - Wet Prep										
Blank (BCF0082-BLK1)				Prepared & Analyzed: 06/05/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCF0082-BLK2)				Prepared & Analyzed: 06/05/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCF0082-BS1)				Prepared & Analyzed: 06/05/2017						
Chloride	24.2	1.00	mg/L	25.000		96.8	90-110			
Fluoride	5.14	0.750	mg/L	5.0000		103	90-110			
Sulfate	103	1.00	mg/L	100.00		103	90-110			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0082 - Wet Prep										
LCS (BCF0082-BS2)				Prepared & Analyzed: 06/05/2017						
Chloride	24.5	1.00	mg/L	25.000		97.9	90-110			
Fluoride	5.02	0.750	mg/L	5.0000		100	90-110			
Sulfate	100	1.00	mg/L	100.00		100	90-110			
LCS (BCF0082-BS3)				Prepared & Analyzed: 06/05/2017						
Chloride	24.6	1.00	mg/L	25.000		98.3	90-110			
Fluoride	5.08	0.750	mg/L	5.0000		102	90-110			
Sulfate	99.2	1.00	mg/L	100.00		99.2	90-110			
Duplicate (BCF0082-DUP1)		**Source: MCE0257-02**		Prepared & Analyzed: 06/05/2017						
Chloride	10.6	1.00	mg/L		10.7			0.592	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	25.6	1.00	mg/L		25.7			0.546	20	
Duplicate (BCF0082-DUP2)		**Source: MCE0257-15**		Prepared & Analyzed: 06/05/2017						
Chloride	0.720	1.00	mg/L		0.676			6.30	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	9.27	1.00	mg/L		9.17			1.07	20	
Matrix Spike (BCF0082-MS1)		**Source: MCE0257-02**		Prepared & Analyzed: 06/05/2017						
Chloride	23.0	1.00	mg/L	12.500	10.7	98.8	80-120			
Fluoride	2.52	0.750	mg/L	2.5000	<0.750	101	80-120			
Sulfate	77.4	1.00	mg/L	50.000	25.7	103	80-120			
Matrix Spike (BCF0082-MS2)		**Source: MCE0257-15**		Prepared & Analyzed: 06/05/2017						
Chloride	12.4	1.00	mg/L	12.500	0.676	93.9	80-120			
Fluoride	2.49	0.750	mg/L	2.5000	<0.750	99.7	80-120			
Sulfate	58.1	1.00	mg/L	50.000	9.17	97.9	80-120			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0082 - Wet Prep										
Matrix Spike Dup (BCF0082-MSD1)		**Source: MCE0257-02**		Prepared & Analyzed: 06/05/2017						
Chloride	23.0	1.00	mg/L	12.500	10.7	98.4	80-120	0.217	20	
Fluoride	2.53	0.750	mg/L	2.5000	<0.750	101	80-120	0.277	20	
Sulfate	77.1	1.00	mg/L	50.000	25.7	103	80-120	0.496	20	
Matrix Spike Dup (BCF0082-MSD2)		**Source: MCE0257-15**		Prepared & Analyzed: 06/05/2017						
Chloride	12.7	1.00	mg/L	12.500	0.676	95.8	80-120	1.91	20	
Fluoride	2.55	0.750	mg/L	2.5000	<0.750	102	80-120	2.34	20	
Sulfate	58.4	1.00	mg/L	50.000	9.17	98.5	80-120	0.505	20	
Batch BCF0124 - Wet Prep										
Blank (BCF0124-BLK1)				Prepared & Analyzed: 06/07/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCF0124-BLK2)				Prepared & Analyzed: 06/07/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCF0124-BS1)				Prepared & Analyzed: 06/07/2017						
Chloride	25.1	1.00	mg/L	25.000		101	90-110			
Fluoride	5.30	0.750	mg/L	5.0000		106	90-110			
Sulfate	98.0	1.00	mg/L	100.00		98.0	90-110			
LCS (BCF0124-BS2)				Prepared & Analyzed: 06/07/2017						
Chloride	24.9	1.00	mg/L	25.000		99.5	90-110			
Fluoride	4.99	0.750	mg/L	5.0000		99.7	90-110			
Sulfate	96.5	1.00	mg/L	100.00		96.5	90-110			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0124 - Wet Prep										
LCS (BCF0124-BS3)				Prepared & Analyzed: 06/07/2017						
Chloride	24.8	1.00	mg/L	25.000		99.1	90-110			
Fluoride	5.15	0.750	mg/L	5.0000		103	90-110			
Sulfate	96.2	1.00	mg/L	100.00		96.2	90-110			
Duplicate (BCF0124-DUP1)		**Source: MCF0005-01**		Prepared & Analyzed: 06/07/2017						
Chloride	9.28	1.00	mg/L		9.34			0.623	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	8.52	1.00	mg/L		8.44			0.908	20	
Duplicate (BCF0124-DUP2)		**Source: MCF0049-01**		Prepared & Analyzed: 06/07/2017						
Chloride	4.61	1.00	mg/L		4.60			0.0868	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	2.47	1.00	mg/L		2.46			0.365	20	
Matrix Spike (BCF0124-MS1)		**Source: MCF0005-01**		Prepared & Analyzed: 06/07/2017						
Chloride	21.6	1.00	mg/L	12.500	9.34	97.9	80-120			
Fluoride	2.57	0.750	mg/L	2.5000	<0.750	103	80-120			
Sulfate	56.5	1.00	mg/L	50.000	8.44	96.1	80-120			
Matrix Spike (BCF0124-MS2)		**Source: MCF0049-01**		Prepared & Analyzed: 06/07/2017						
Chloride	15.9	1.00	mg/L	12.500	4.60	90.5	80-120			
Fluoride	2.62	0.750	mg/L	2.5000	<0.750	105	80-120			
Sulfate	50.6	1.00	mg/L	50.000	2.46	96.4	80-120			
Matrix Spike Dup (BCF0124-MSD1)		**Source: MCF0005-01**		Prepared & Analyzed: 06/07/2017						
Chloride	19.9	1.00	mg/L	12.500	9.34	84.6	80-120	8.01	20	
Fluoride	2.52	0.750	mg/L	2.5000	<0.750	101	80-120	1.93	20	
Sulfate	57.0	1.00	mg/L	50.000	8.44	97.0	80-120	0.814	20	

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0124 - Wet Prep										
Matrix Spike Dup (BCF0124-MSD2)		**Source: MCF0049-01**		Prepared & Analyzed: 06/07/2017						
Chloride	17.5	1.00	mg/L	12.500	4.60	103	80-120	9.55	20	
Fluoride	2.52	0.750	mg/L	2.5000	<0.750	101	80-120	3.93	20	
Sulfate	50.2	1.00	mg/L	50.000	2.46	95.4	80-120	0.909	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0452 - Wet Prep										
Blank (BCE0452-BLK1)				Prepared & Analyzed: 05/19/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCE0452-DUP1)			**Source: MCE0177-02**	Prepared & Analyzed: 05/19/2017						
Total Dissolved Solids	486	20.0	mg/L		518			6.37	20	
Batch BCE0462 - Wet Prep										
LCS (BCE0462-BS1)				Prepared & Analyzed: 05/18/2017						
pH	7.07		pH Units	7.0000		101	90-110			
LCS (BCE0462-BS2)				Prepared & Analyzed: 05/18/2017						
pH	7.10		pH Units	7.0000		101	90-110			
Duplicate (BCE0462-DUP1)			**Source: MCE0177-02**	Prepared & Analyzed: 05/18/2017						
pH	7.69		pH Units		7.64			0.652	20	
Duplicate (BCE0462-DUP2)			**Source: MCE0177-11**	Prepared & Analyzed: 05/18/2017						
pH	7.47		pH Units		7.50			0.401	20	
Duplicate (BCE0462-DUP3)			**Source: MCE0177-21**	Prepared & Analyzed: 05/18/2017						
pH	7.87		pH Units		7.84			0.382	20	
Duplicate (BCE0462-DUP4)			**Source: MCE0177-31**	Prepared & Analyzed: 05/18/2017						
pH	7.91		pH Units		7.93			0.253	20	
Batch BCE0486 - Wet Prep										
Blank (BCE0486-BLK1)				Prepared & Analyzed: 05/22/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							

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Amended Report

Original Report ID: MCE0257 Xcel General Report FINAL 06 14 2017 0715 06 14 2017 0607

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0486 - Wet Prep										
Duplicate (BCE0486-DUP1)		**Source: MCE0177-11**		Prepared & Analyzed: 05/22/2017						
Total Dissolved Solids	494	20.0	mg/L		496			0.404	20	
Batch BCE0507 - Wet Prep										
Blank (BCE0507-BLK1)				Prepared & Analyzed: 05/23/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCE0507-DUP1)		**Source: MCE0177-21**		Prepared & Analyzed: 05/23/2017						
Total Dissolved Solids	226	20.0	mg/L		216			4.52	20	
Batch BCE0549 - Wet Prep										
Blank (BCE0549-BLK1)				Prepared & Analyzed: 05/24/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCE0549-DUP1)		**Source: MCE0177-29**		Prepared & Analyzed: 05/24/2017						
Total Dissolved Solids	304	20.0	mg/L		326			6.98	20	
Batch BCE0611 - Wet Prep										
LCS (BCE0611-BS1)				Prepared & Analyzed: 05/25/2017						
pH	7.03		pH Units	7.0000		100	90-110			
LCS (BCE0611-BS2)				Prepared & Analyzed: 05/25/2017						
pH	7.07		pH Units	7.0000		101	90-110			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0611 - Wet Prep										
Duplicate (BCE0611-DUP1)		**Source: MCE0257-02**		Prepared & Analyzed: 05/25/2017						
pH	7.72		pH Units		7.76			0.517	20	
Duplicate (BCE0611-DUP2)		**Source: MCE0257-11**		Prepared & Analyzed: 05/25/2017						
pH	7.71		pH Units		7.71			0.00	20	
Duplicate (BCE0611-DUP3)		**Source: MCE0257-21**		Prepared & Analyzed: 05/25/2017						
pH	7.88		pH Units		7.89			0.127	20	
Batch BCE0614 - Wet Prep										
Blank (BCE0614-BLK1)				Prepared & Analyzed: 05/26/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCE0614-DUP1)		**Source: MCE0257-01**		Prepared & Analyzed: 05/26/2017						
Total Dissolved Solids	<20.0	20.0	mg/L		<20.0				20	
Batch BCE0644 - Wet Prep										
Blank (BCE0644-BLK1)				Prepared & Analyzed: 05/30/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCE0644-DUP1)		**Source: MCE0257-11**		Prepared & Analyzed: 05/30/2017						
Total Dissolved Solids	362	20.0	mg/L		366			1.10	20	
Batch BCE0664 - Wet Prep										
Blank (BCE0664-BLK1)				Prepared & Analyzed: 05/31/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							M_Y

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0664 - Wet Prep										
Duplicate (BCE0664-DUP1)		**Source: MCE0257-21**		Prepared & Analyzed: 05/31/2017						
Total Dissolved Solids	228	20.0	mg/L		250			9.21	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0495 - EPA 200.2, EPA 3005										
Blank (BCE0495-BLK1)				Prepared: 05/22/2017 Analyzed: 05/24/2017						
Cadmium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
LCS (BCE0495-BS1)				Prepared: 05/22/2017 Analyzed: 05/24/2017						
Lead	99.4	0.500	ug/L	100.00		99.4	85-115			
Barium	103	0.500	ug/L	100.00		103	85-115			
Thallium	101	0.500	ug/L	100.00		101	85-115			
Arsenic	98.7	0.500	ug/L	100.00		98.7	85-115			
Cadmium	99.5	0.500	ug/L	100.00		99.5	85-115			
Molybdenum	101	0.500	ug/L	100.00		101	85-115			
Selenium	96.7	0.500	ug/L	100.00		96.7	85-115			
Antimony	101	0.500	ug/L	100.00		101	85-115			
Cobalt	103	0.500	ug/L	100.00		103	85-115			
Chromium	104	0.500	ug/L	100.00		104	85-115			
Beryllium	98.1	0.500	ug/L	100.00		98.1	85-115			
Duplicate (BCE0495-DUP1)		**Source: MCE0177-13**		Prepared: 05/22/2017 Analyzed: 05/24/2017						
Arsenic	0.418	0.500	ug/L		0.404			3.19	20	
Beryllium	0.223	0.500	ug/L		<0.500				20	
Cadmium	0.0269	0.500	ug/L		<0.500				20	
Cobalt	0.0764	0.500	ug/L		0.0490			43.6	20	M_D-RL
Chromium	0.889	0.500	ug/L		0.758			15.8	20	
Molybdenum	0.276	0.500	ug/L		0.148			60.1	20	M_D-RL
Antimony	0.143	0.500	ug/L		0.0498			96.7	20	M_D-RL
Selenium	2.30	0.500	ug/L		2.25			2.36	20	
Thallium	0.151	0.500	ug/L		0.0106			174	20	M_D-RL
Lead	0.0835	0.500	ug/L		0.0221			116	20	M_D-RL
Barium	72.9	0.500	ug/L		73.2			0.413	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0495 - EPA 200.2, EPA 3005										
Duplicate (BCE0495-DUP2)		**Source: MCE0177-14**		Prepared: 05/22/2017 Analyzed: 05/24/2017						
Selenium	2.16	0.500	ug/L		2.28			5.63	20	
Arsenic	0.179	0.500	ug/L		0.209			15.4	20	
Barium	52.2	0.500	ug/L		52.0			0.476	20	
Thallium	0.0245	0.500	ug/L		0.0113			73.9	20	M_D-RL
Beryllium	0.00586	0.500	ug/L		<0.500				20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Cobalt	0.0507	0.500	ug/L		0.0429			16.7	20	
Antimony	0.0533	0.500	ug/L		0.0513			3.81	20	
Chromium	1.37	0.500	ug/L		1.36			0.694	20	
Molybdenum	0.595	0.500	ug/L		0.575			3.32	20	
Lead	<0.500	0.500	ug/L		<0.500				20	
Matrix Spike (BCE0495-MS1)		**Source: MCE0177-13**		Prepared: 05/22/2017 Analyzed: 05/24/2017						
Cobalt	101	0.500	ug/L	100.00	0.0490	101	70-130			
Barium	177	0.500	ug/L	100.00	73.2	104	70-130			
Beryllium	103	0.500	ug/L	100.00	<0.500	103	70-130			
Chromium	104	0.500	ug/L	100.00	0.758	103	70-130			
Antimony	101	0.500	ug/L	100.00	0.0498	101	70-130			
Lead	91.4	0.500	ug/L	100.00	0.0221	91.4	70-130			
Arsenic	104	0.500	ug/L	100.00	0.404	103	70-130			
Thallium	94.5	0.500	ug/L	100.00	0.0106	94.4	70-130			
Selenium	101	0.500	ug/L	100.00	2.25	98.4	70-130			
Molybdenum	104	0.500	ug/L	100.00	0.148	103	70-130			
Cadmium	98.3	0.500	ug/L	100.00	<0.500	98.3	70-130			
Matrix Spike (BCE0495-MS2)		**Source: MCE0177-14**		Prepared: 05/22/2017 Analyzed: 05/24/2017						
Molybdenum	105	0.500	ug/L	100.00	0.575	104	70-130			
Cobalt	103	0.500	ug/L	100.00	0.0429	103	70-130			
Selenium	103	0.500	ug/L	100.00	2.28	101	70-130			
Barium	160	0.500	ug/L	100.00	52.0	108	70-130			
Thallium	95.8	0.500	ug/L	100.00	0.0113	95.8	70-130			
Chromium	107	0.500	ug/L	100.00	1.36	106	70-130			
Antimony	103	0.500	ug/L	100.00	0.0513	103	70-130			
Lead	92.5	0.500	ug/L	100.00	<0.500	92.5	70-130			
Beryllium	102	0.500	ug/L	100.00	<0.500	102	70-130			
Arsenic	106	0.500	ug/L	100.00	0.209	105	70-130			
Cadmium	100	0.500	ug/L	100.00	<0.500	100	70-130			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0495 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCE0495-MSD1)		**Source: MCE0177-13**		Prepared: 05/22/2017 Analyzed: 05/24/2017						
Cobalt	100	0.500	ug/L	100.00	0.0490	100	70-130	1.13	20	
Chromium	107	0.500	ug/L	100.00	0.758	106	70-130	2.31	20	
Molybdenum	104	0.500	ug/L	100.00	0.148	104	70-130	0.876	20	
Barium	181	0.500	ug/L	100.00	73.2	107	70-130	1.99	20	
Beryllium	102	0.500	ug/L	100.00	<0.500	102	70-130	0.844	20	
Thallium	96.8	0.500	ug/L	100.00	0.0106	96.8	70-130	2.46	20	
Arsenic	105	0.500	ug/L	100.00	0.404	105	70-130	1.68	20	
Cadmium	98.2	0.500	ug/L	100.00	<0.500	98.2	70-130	0.101	20	
Lead	92.9	0.500	ug/L	100.00	0.0221	92.9	70-130	1.58	20	
Antimony	102	0.500	ug/L	100.00	0.0498	102	70-130	0.481	20	
Selenium	101	0.500	ug/L	100.00	2.25	98.9	70-130	0.571	20	
Matrix Spike Dup (BCE0495-MSD2)		**Source: MCE0177-14**		Prepared: 05/22/2017 Analyzed: 05/24/2017						
Thallium	96.0	0.500	ug/L	100.00	0.0113	96.0	70-130	0.177	20	
Molybdenum	106	0.500	ug/L	100.00	0.575	106	70-130	1.13	20	
Selenium	100	0.500	ug/L	100.00	2.28	97.9	70-130	2.61	20	
Antimony	104	0.500	ug/L	100.00	0.0513	104	70-130	0.747	20	
Beryllium	103	0.500	ug/L	100.00	<0.500	103	70-130	0.671	20	
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130	0.913	20	
Chromium	105	0.500	ug/L	100.00	1.36	104	70-130	1.99	20	
Lead	93.4	0.500	ug/L	100.00	<0.500	93.4	70-130	1.01	20	
Arsenic	109	0.500	ug/L	100.00	0.209	108	70-130	2.79	20	
Barium	163	0.500	ug/L	100.00	52.0	111	70-130	1.79	20	
Cobalt	102	0.500	ug/L	100.00	0.0429	102	70-130	0.461	20	
Batch BCE0679 - EPA 200.2, EPA 3005										
Blank (BCE0679-BLK1)				Prepared: 05/31/2017 Analyzed: 06/05/2017						
Selenium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0679 - EPA 200.2, EPA 3005										
LCS (BCE0679-BS1)				Prepared: 05/31/2017 Analyzed: 06/05/2017						
Thallium	101	0.500	ug/L	100.00		101	85-115			
Selenium	96.8	0.500	ug/L	100.00		96.8	85-115			
Antimony	99.2	0.500	ug/L	100.00		99.2	85-115			
Barium	97.8	0.500	ug/L	100.00		97.8	85-115			
Beryllium	97.6	0.500	ug/L	100.00		97.6	85-115			
Lead	101	0.500	ug/L	100.00		101	85-115			
Chromium	100	0.500	ug/L	100.00		100	85-115			
Cobalt	99.3	0.500	ug/L	100.00		99.3	85-115			
Cadmium	99.7	0.500	ug/L	100.00		99.7	85-115			
Molybdenum	101	0.500	ug/L	100.00		101	85-115			
Arsenic	99.7	0.500	ug/L	100.00		99.7	85-115			
Duplicate (BCE0679-DUP1)		**Source: MCE0257-07**		Prepared: 05/31/2017 Analyzed: 06/05/2017						
Chromium	0.639	0.500	ug/L		0.698			8.79	20	
Arsenic	0.660	0.500	ug/L		0.656			0.572	20	
Cobalt	0.379	0.500	ug/L		0.375			0.899	20	
Selenium	0.283	0.500	ug/L		0.294			4.02	20	
Molybdenum	0.215	0.500	ug/L		0.117			59.2	20	M_D-RL
Antimony	0.112	0.500	ug/L		0.0471			81.1	20	M_D-RL
Barium	76.5	0.500	ug/L		76.6			0.160	20	
Lead	0.101	0.500	ug/L		0.0590			52.0	20	M_D-RL
Beryllium	0.155	0.500	ug/L		<0.500				20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Thallium	0.0959	0.500	ug/L		<0.500				20	
Duplicate (BCE0679-DUP2)		**Source: MCE0257-08**		Prepared: 05/31/2017 Analyzed: 06/05/2017						
Antimony	0.0541	0.500	ug/L		0.0495			8.87	20	
Selenium	0.228	0.500	ug/L		0.238			4.25	20	
Arsenic	0.870	0.500	ug/L		0.835			4.11	20	
Cobalt	0.427	0.500	ug/L		0.467			8.92	20	
Thallium	<0.500	0.500	ug/L		<0.500				20	
Chromium	0.473	0.500	ug/L		0.526			10.6	20	
Beryllium	<0.500	0.500	ug/L		<0.500				20	
Lead	0.106	0.500	ug/L		0.109			3.25	20	
Barium	97.6	0.500	ug/L		98.1			0.487	20	
Molybdenum	0.147	0.500	ug/L		0.135			8.52	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0679 - EPA 200.2, EPA 3005										
Matrix Spike (BCE0679-MS1)		**Source: MCE0257-07**		Prepared: 05/31/2017 Analyzed: 06/05/2017						
Lead	102	0.500	ug/L	100.00	0.0590	102	70-130			
Selenium	95.4	0.500	ug/L	100.00	0.294	95.1	70-130			
Chromium	98.2	0.500	ug/L	100.00	0.698	97.5	70-130			
Thallium	105	0.500	ug/L	100.00	<0.500	105	70-130			
Beryllium	97.6	0.500	ug/L	100.00	<0.500	97.6	70-130			
Cadmium	94.7	0.500	ug/L	100.00	<0.500	94.7	70-130			
Cobalt	98.4	0.500	ug/L	100.00	0.375	98.1	70-130			
Antimony	103	0.500	ug/L	100.00	0.0471	103	70-130			
Arsenic	102	0.500	ug/L	100.00	0.656	101	70-130			
Molybdenum	103	0.500	ug/L	100.00	0.117	103	70-130			
Barium	177	0.500	ug/L	100.00	76.6	101	70-130			
Matrix Spike (BCE0679-MS2)		**Source: MCE0257-08**		Prepared: 05/31/2017 Analyzed: 06/05/2017						
Cadmium	98.5	0.500	ug/L	100.00	<0.500	98.5	70-130			
Thallium	109	0.500	ug/L	100.00	<0.500	109	70-130			
Selenium	97.6	0.500	ug/L	100.00	0.238	97.4	70-130			
Lead	105	0.500	ug/L	100.00	0.109	105	70-130			
Chromium	102	0.500	ug/L	100.00	0.526	101	70-130			
Antimony	103	0.500	ug/L	100.00	0.0495	103	70-130			
Molybdenum	106	0.500	ug/L	100.00	0.135	106	70-130			
Cobalt	101	0.500	ug/L	100.00	0.467	100	70-130			
Barium	197	0.500	ug/L	100.00	98.1	98.4	70-130			
Arsenic	104	0.500	ug/L	100.00	0.835	103	70-130			
Beryllium	99.0	0.500	ug/L	100.00	<0.500	99.0	70-130			
Matrix Spike Dup (BCE0679-MSD1)		**Source: MCE0257-07**		Prepared: 05/31/2017 Analyzed: 06/05/2017						
Molybdenum	105	0.500	ug/L	100.00	0.117	105	70-130	2.27	20	
Beryllium	99.6	0.500	ug/L	100.00	<0.500	99.6	70-130	1.95	20	
Thallium	109	0.500	ug/L	100.00	<0.500	109	70-130	3.72	20	
Selenium	92.9	0.500	ug/L	100.00	0.294	92.6	70-130	2.67	20	
Chromium	101	0.500	ug/L	100.00	0.698	99.8	70-130	2.30	20	
Antimony	101	0.500	ug/L	100.00	0.0471	101	70-130	1.97	20	
Lead	105	0.500	ug/L	100.00	0.0590	105	70-130	2.80	20	
Cobalt	100	0.500	ug/L	100.00	0.375	100	70-130	2.00	20	
Barium	177	0.500	ug/L	100.00	76.6	100	70-130	0.416	20	
Arsenic	103	0.500	ug/L	100.00	0.656	103	70-130	1.54	20	
Cadmium	99.6	0.500	ug/L	100.00	<0.500	99.6	70-130	5.06	20	

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0679 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCE0679-MSD2)		**Source: MCE0257-08**		Prepared: 05/31/2017 Analyzed: 06/05/2017						
Arsenic	103	0.500	ug/L	100.00	0.835	102	70-130	1.24	20	
Selenium	95.3	0.500	ug/L	100.00	0.238	95.0	70-130	2.40	20	
Thallium	108	0.500	ug/L	100.00	<0.500	108	70-130	0.577	20	
Molybdenum	103	0.500	ug/L	100.00	0.135	103	70-130	2.89	20	
Chromium	99.9	0.500	ug/L	100.00	0.526	99.4	70-130	1.61	20	
Antimony	103	0.500	ug/L	100.00	0.0495	103	70-130	0.177	20	
Cadmium	99.7	0.500	ug/L	100.00	<0.500	99.7	70-130	1.24	20	
Lead	105	0.500	ug/L	100.00	0.109	105	70-130	0.0684	20	
Cobalt	99.7	0.500	ug/L	100.00	0.467	99.2	70-130	1.01	20	
Beryllium	97.0	0.500	ug/L	100.00	<0.500	97.0	70-130	1.98	20	
Barium	195	0.500	ug/L	100.00	98.1	97.3	70-130	0.543	20	
Batch BCE0681 - EPA 200.2, EPA 3005										
Blank (BCE0681-BLK1)				Prepared: 05/31/2017 Analyzed: 06/05/2017						
Antimony	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0681 - EPA 200.2, EPA 3005										
LCS (BCE0681-BS1)				Prepared: 05/31/2017 Analyzed: 06/05/2017						
Thallium	102	0.500	ug/L	100.00		102	85-115			
Cobalt	101	0.500	ug/L	100.00		101	85-115			
Beryllium	103	0.500	ug/L	100.00		103	85-115			
Barium	102	0.500	ug/L	100.00		102	85-115			
Antimony	104	0.500	ug/L	100.00		104	85-115			
Selenium	97.4	0.500	ug/L	100.00		97.4	85-115			
Arsenic	99.9	0.500	ug/L	100.00		99.9	85-115			
Lead	101	0.500	ug/L	100.00		101	85-115			
Chromium	100	0.500	ug/L	100.00		100	85-115			
Molybdenum	103	0.500	ug/L	100.00		103	85-115			
Cadmium	102	0.500	ug/L	100.00		102	85-115			
Duplicate (BCE0681-DUP1)		**Source: MCE0257-21**		Prepared: 05/31/2017 Analyzed: 06/05/2017						
Cadmium	0.0270	0.500	ug/L		<0.500				20	
Chromium	1.32	0.500	ug/L		1.40			5.39	20	
Barium	32.2	0.500	ug/L		32.4			0.717	20	
Thallium	0.0923	0.500	ug/L		0.130			34.0	20	M_D-RL
Selenium	0.776	0.500	ug/L		0.801			3.22	20	
Antimony	0.126	0.500	ug/L		0.151			18.4	20	
Lead	0.102	0.500	ug/L		0.140			31.5	20	M_D-RL
Arsenic	0.364	0.500	ug/L		0.417			13.5	20	
Cobalt	0.173	0.500	ug/L		0.148			16.0	20	
Beryllium	0.137	0.500	ug/L		0.256			60.9	20	M_D-RL
Molybdenum	0.250	0.500	ug/L		0.324			25.8	20	M_D-RL
Matrix Spike (BCE0681-MS1)		**Source: MCE0257-21**		Prepared: 05/31/2017 Analyzed: 06/05/2017						
Arsenic	102	0.500	ug/L	100.00	0.417	102	70-130			
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130			
Thallium	106	0.500	ug/L	100.00	0.130	106	70-130			
Selenium	96.2	0.500	ug/L	100.00	0.801	95.4	70-130			
Molybdenum	104	0.500	ug/L	100.00	0.324	103	70-130			
Lead	103	0.500	ug/L	100.00	0.140	103	70-130			
Chromium	104	0.500	ug/L	100.00	1.40	103	70-130			
Cobalt	101	0.500	ug/L	100.00	0.148	100	70-130			
Beryllium	104	0.500	ug/L	100.00	0.256	104	70-130			
Barium	133	0.500	ug/L	100.00	32.4	100	70-130			
Antimony	104	0.500	ug/L	100.00	0.151	104	70-130			

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0681 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCE0681-MSD1)		**Source: MCE0257-21**		Prepared: 05/31/2017 Analyzed: 06/05/2017						
Thallium	107	0.500	ug/L	100.00	0.130	107	70-130	1.13	20	
Antimony	103	0.500	ug/L	100.00	0.151	102	70-130	1.64	20	
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130	0.0929	20	
Beryllium	96.1	0.500	ug/L	100.00	0.256	95.8	70-130	8.00	20	
Lead	105	0.500	ug/L	100.00	0.140	105	70-130	1.71	20	
Arsenic	104	0.500	ug/L	100.00	0.417	103	70-130	1.33	20	
Barium	134	0.500	ug/L	100.00	32.4	102	70-130	1.13	20	
Chromium	102	0.500	ug/L	100.00	1.40	101	70-130	2.22	20	
Cobalt	99.8	0.500	ug/L	100.00	0.148	99.6	70-130	0.811	20	
Molybdenum	103	0.500	ug/L	100.00	0.324	103	70-130	0.344	20	
Selenium	98.9	0.500	ug/L	100.00	0.801	98.1	70-130	2.75	20	

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WI-999071150
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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0494 - EPA 200.2, EPA 3005										
Blank (BCE0494-BLK1)				Prepared: 05/22/2017 Analyzed: 06/06/2017						
Boron	<0.0500	0.0500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
LCS (BCE0494-BS1)				Prepared: 05/22/2017 Analyzed: 06/06/2017						
Boron	0.952	0.0500	mg/L	1.0000		95.2	85-115			
Calcium	103	0.500	mg/L	100.00		103	85-115			
Lithium	1.01	0.0500	mg/L	1.0000		101	85-115			
Duplicate (BCE0494-DUP1)		**Source: MCE0177-11**		Prepared: 05/22/2017 Analyzed: 06/06/2017						
Boron	<0.0500	0.0500	mg/L		<0.0500				20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	129	0.500	mg/L		130			1.20	20	
Duplicate (BCE0494-DUP2)		**Source: MCE0177-12**		Prepared: 05/22/2017 Analyzed: 06/06/2017						
Calcium	90.3	0.500	mg/L		89.7			0.680	20	
Boron	0.461	0.0500	mg/L		0.461			0.0895	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Matrix Spike (BCE0494-MS1)		**Source: MCE0177-11**		Prepared: 05/22/2017 Analyzed: 06/06/2017						
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125			
Boron	0.999	0.0500	mg/L	1.0000	<0.0500	99.9	70-130			
Calcium	236	0.500	mg/L	100.00	130	105	70-130			
Matrix Spike (BCE0494-MS2)		**Source: MCE0177-12**		Prepared: 05/22/2017 Analyzed: 06/06/2017						
Boron	1.47	0.0500	mg/L	1.0000	0.461	101	70-130			
Calcium	199	0.500	mg/L	100.00	89.7	109	70-130			
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0494 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCE0494-MSD1)		**Source: MCE0177-11**		Prepared: 05/22/2017 Analyzed: 06/06/2017						
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125	1.02	20	
Calcium	241	0.500	mg/L	100.00	130	111	70-130	2.27	20	
Boron	1.01	0.0500	mg/L	1.0000	<0.0500	101	70-130	1.56	20	
Matrix Spike Dup (BCE0494-MSD2)		**Source: MCE0177-12**		Prepared: 05/22/2017 Analyzed: 06/06/2017						
Calcium	198	0.500	mg/L	100.00	89.7	108	70-130	0.316	20	
Boron	1.46	0.0500	mg/L	1.0000	0.461	99.8	70-130	0.716	20	
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125	0.0124	20	
Batch BCE0678 - EPA 200.2, EPA 3005										
Blank (BCE0678-BLK1)				Prepared: 05/31/2017 Analyzed: 06/12/2017						
Calcium	<0.500	0.500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
Boron	<0.0500	0.0500	mg/L							
LCS (BCE0678-BS1)				Prepared: 05/31/2017 Analyzed: 06/12/2017						
Boron	1.01	0.0500	mg/L	1.0000		101	85-115			
Calcium	101	0.500	mg/L	100.00		101	85-115			
Lithium	0.982	0.0500	mg/L	1.0000		98.2	85-115			
Duplicate (BCE0678-DUP1)		**Source: MCE0257-05**		Prepared: 05/31/2017 Analyzed: 06/12/2017						
Calcium	85.7	0.500	mg/L		87.3			1.82	20	
Boron	0.131	0.0500	mg/L		0.124			5.88	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Duplicate (BCE0678-DUP2)		**Source: MCE0257-06**		Prepared: 05/31/2017 Analyzed: 06/12/2017						
Boron	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	64.7	0.500	mg/L		65.3			0.907	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0678 - EPA 200.2, EPA 3005										
Matrix Spike (BCE0678-MS1)		**Source: MCE0257-05**		Prepared: 05/31/2017 Analyzed: 06/12/2017						
Boron	1.14	0.0500	mg/L	1.0000	0.124	102	70-130			
Calcium	192	0.500	mg/L	100.00	87.3	104	70-130			
Lithium	0.991	0.0500	mg/L	1.0000	<0.0500	99.1	75-125			
Matrix Spike (BCE0678-MS2)		**Source: MCE0257-06**		Prepared: 05/31/2017 Analyzed: 06/12/2017						
Calcium	175	0.500	mg/L	100.00	65.3	110	70-130			
Boron	1.05	0.0500	mg/L	1.0000	<0.0500	105	70-130			
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125			
Matrix Spike Dup (BCE0678-MSD1)		**Source: MCE0257-05**		Prepared: 05/31/2017 Analyzed: 06/12/2017						
Boron	1.16	0.0500	mg/L	1.0000	0.124	103	70-130	1.40	20	
Calcium	195	0.500	mg/L	100.00	87.3	107	70-130	1.56	20	
Lithium	1.01	0.0500	mg/L	1.0000	<0.0500	101	75-125	1.70	20	
Matrix Spike Dup (BCE0678-MSD2)		**Source: MCE0257-06**		Prepared: 05/31/2017 Analyzed: 06/12/2017						
Boron	1.05	0.0500	mg/L	1.0000	<0.0500	105	70-130	0.297	20	
Lithium	0.999	0.0500	mg/L	1.0000	<0.0500	99.9	75-125	1.94	20	
Calcium	171	0.500	mg/L	100.00	65.3	106	70-130	2.09	20	
Batch BCE0680 - EPA 200.2, EPA 3005										
Blank (BCE0680-BLK1)				Prepared: 05/31/2017 Analyzed: 06/06/2017						
Calcium	<0.500	0.500	mg/L							
Boron	<0.0500	0.0500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
LCS (BCE0680-BS1)				Prepared: 05/31/2017 Analyzed: 06/06/2017						
Lithium	0.998	0.0500	mg/L	1.0000		99.8	85-115			
Boron	0.960	0.0500	mg/L	1.0000		96.0	85-115			
Calcium	103	0.500	mg/L	100.00		103	85-115			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0680 - EPA 200.2, EPA 3005										
Duplicate (BCE0680-DUP1)		**Source: MCE0237-01**		Prepared: 05/31/2017 Analyzed: 06/06/2017						
Boron	0.0389	0.0500	mg/L		0.0399			2.63	20	
Lithium	0.0377	0.0500	mg/L		0.0391			3.41	20	
Calcium	105	0.500	mg/L		104			0.520	20	
Matrix Spike (BCE0680-MS1)		**Source: MCE0237-01**		Prepared: 05/31/2017 Analyzed: 06/06/2017						
Boron	1.03	0.0500	mg/L	1.0000	0.0399	99.1	70-130			
Lithium	1.03	0.0500	mg/L	1.0000	0.0391	99.2	75-125			
Calcium	210	0.500	mg/L	100.00	104	106	70-130			
Matrix Spike Dup (BCE0680-MSD1)		**Source: MCE0237-01**		Prepared: 05/31/2017 Analyzed: 06/06/2017						
Calcium	211	0.500	mg/L	100.00	104	107	70-130	0.763	20	
Boron	1.03	0.0500	mg/L	1.0000	0.0399	98.9	70-130	0.197	20	
Lithium	1.04	0.0500	mg/L	1.0000	0.0391	100	75-125	1.01	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCE0496 - EPA 245.1, EPA 7470A										
Blank (BCE0496-BLK1)				Prepared & Analyzed: 05/22/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCE0496-BS1)				Prepared & Analyzed: 05/22/2017						
Mercury	2.83	0.200	ug/L	3.0000		94.3	85-115			
Duplicate (BCE0496-DUP1)		**Source: MCE0177-02**		Prepared & Analyzed: 05/22/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCE0496-DUP2)		**Source: MCE0177-08**		Prepared & Analyzed: 05/22/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCE0496-MS1)		**Source: MCE0177-02**		Prepared & Analyzed: 05/22/2017						
Mercury	2.82	0.200	ug/L	3.0000	<0.200	94.1	70-130			
Matrix Spike (BCE0496-MS2)		**Source: MCE0177-08**		Prepared & Analyzed: 05/22/2017						
Mercury	2.83	0.200	ug/L	3.0000	<0.200	94.4	70-130			
Matrix Spike Dup (BCE0496-MSD1)		**Source: MCE0177-02**		Prepared & Analyzed: 05/22/2017						
Mercury	2.77	0.200	ug/L	3.0000	<0.200	92.4	70-130	1.89	20	
Matrix Spike Dup (BCE0496-MSD2)		**Source: MCE0177-08**		Prepared & Analyzed: 05/22/2017						
Mercury	2.75	0.200	ug/L	3.0000	<0.200	91.8	70-130	2.84	20	
Batch BCF0008 - EPA 245.1, EPA 7470A										
Blank (BCF0008-BLK1)				Prepared & Analyzed: 06/01/2017						
Mercury	<0.200	0.200	ug/L							

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0008 - EPA 245.1, EPA 7470A										
LCS (BCF0008-BS1)				Prepared & Analyzed: 06/01/2017						
Mercury	2.75	0.200	ug/L	3.0000		91.7	85-115			
Duplicate (BCF0008-DUP1)		**Source: MCE0257-02**		Prepared & Analyzed: 06/01/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCF0008-DUP2)		**Source: MCE0257-03**		Prepared & Analyzed: 06/01/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCF0008-MS1)		**Source: MCE0257-02**		Prepared & Analyzed: 06/01/2017						
Mercury	2.76	0.200	ug/L	3.0000	<0.200	91.9	70-130			
Matrix Spike (BCF0008-MS2)		**Source: MCE0257-03**		Prepared & Analyzed: 06/01/2017						
Mercury	2.81	0.200	ug/L	3.0000	<0.200	93.5	70-130			
Matrix Spike Dup (BCF0008-MSD1)		**Source: MCE0257-02**		Prepared & Analyzed: 06/01/2017						
Mercury	2.74	0.200	ug/L	3.0000	<0.200	91.3	70-130	0.626	20	
Matrix Spike Dup (BCF0008-MSD2)		**Source: MCE0257-03**		Prepared & Analyzed: 06/01/2017						
Mercury	2.73	0.200	ug/L	3.0000	<0.200	91.2	70-130	2.58	20	
Batch BCF0272 - EPA 245.1, EPA 7470A										
Blank (BCF0272-BLK1)				Prepared & Analyzed: 06/13/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCF0272-BS1)				Prepared & Analyzed: 06/13/2017						
Mercury	2.69	0.200	ug/L	3.0000		89.8	85-115			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCE0257 Xcel General Report FINAL 06 14 2017 0715 06 14 2017 0607

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0272 - EPA 245.1, EPA 7470A										
Duplicate (BCF0272-DUP1)		**Source: MCE0257-20**		Prepared & Analyzed: 06/13/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCF0272-MS1)		**Source: MCE0257-20**		Prepared & Analyzed: 06/13/2017						
Mercury	2.74	0.200	ug/L	3.0000	<0.200	91.5	70-130			
Matrix Spike Dup (BCF0272-MSD1)		**Source: MCE0257-20**		Prepared & Analyzed: 06/13/2017						
Mercury	2.78	0.200	ug/L	3.0000	<0.200	92.7	70-130	1.36	20	

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:14

Qualifiers and Definitions

M_Y	HSD 6/1/17: Did not report the blank due to crucible breaking during analysis.
M_TTT	Sample received at the lab outside of required hold time.
M_D-RL	The RPD for the sample duplicate was outside of QC acceptance limits due to<RL.
Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Page: 1 of 4

2052831

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco NPDES, May 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-B	Total metals	GW-CCR+GW-B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Rinse	WT				5/15/17	1100		3	1	1	1							✓				
2	P128	↓				↓	1140		4	1	1	2							✓	✓			
3	P127	↓				↓	1220		3	1	1	1							✓				
4	P126	↓				↓	1315		3	1	1	1							✓				
5	P-43	↓				↓	1400		3	1	1	1							✓				
6	P-90	↓				↓	1505		3	1	1	1							✓				
7	P-90A	↓				↓	1535		3	1	1	1							✓				
8	P129	↓				↓	1615		4	1	1	2							✓	✓			
* 9	P-132	↓				↓	1710		4	1	1	2									✓		
* 10	P-131	↓				↓	1810		4	1	1	2									✓		
* 11	P-130	WT				5/16/17	0910		4	1	1	2									✓		
12	P-88	↓				↓	0955		4	1	1	2							✓	✓			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	5/18/17	0920	[signature] / Xcel	5/18/17	0920	4.3°C M400341	Y	Y	Y
② * Well is on CCR schedule also, Line Item #s 9, 10, 11										

ORIGINAL
Client Delivery

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 5/16/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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2052836

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, May 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6W-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Rinse	WT				5/23/17	1100		4	1	1	2							✓		
2	P-73a-1	↓				↓	1140		4	1	1	2							✓		
3	P-98						1410		4	1	1	2							✓		
4	P-120						1500		4	1	1	2							✓		
5	P-74-1						1545		4	1	1	2							✓		
6	P-125						1650		4	1	1	2							✓		
7	P-141	↓				↓	1740		4	1	1	2							✓		
8	P-134	WT				5/24/17	0810		4	1	1	2							✓		
9	P-138A	↓				↓	0900		4	1	1	2							✓		
10	P-137A						0955		4	1	1	2							✓		
11	P-117						1040		4	1	1	2							✓		
12	P-75-1	↓				↓	1120		4	1	1	2							✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① marked HNO3 bottles filtered and unfiltered.	David Anderson/Pace	5/25/17	1205	[signature]/Xcel	5/25/17	1226	MU 0034 4.5 ✓	Y	Y	Y

ORIGINAL

PA Corp: MB00508

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 5/24/17

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Page: 2 of 4

2052833

Section A Required Client Information:

Company: Xcel Energy
Address: Environmental Services
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Chuck Donkers
Copy To:
Purchase Order No.:
Project Name: Sherco NPDES, May 2017
Project Number:

Section C Invoice Information:

Attention: Steve Davis
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: GW-B	GW-CCR+GW-B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
* 1	P-158	WT				5/16/17	1050		4	1	1	2								✓		
** 2	P-157						1130		4	1	1	2								✓		
** 3	P-23						1240		4	1	1	2								✓		
** 4	P-155						1335		4	1	1	2								✓		
** 5	P-01a-1						1435		4	1	1	2								✓		
** 6	P-156						1520		4	1	1	2								✓		
* 7	P-22						1700		4	1	1	2								✓		
8	P-04A						1740		3	1	1	1									✓	
9	P-03A						1825		3	1	1	1									✓	
10	P-05A	↓				↓	1900		3	1	1	1									✓	
11	P-94A	WT				5/17/17	0840		3	1	1	1									✓	
12	P-89-1	↓				↓	0920		3	1	1	1									✓	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
(1.) marked HNO3 bottles filtered and unfiltered.	David Anderson Pace	5/18/17	0920	HH Xcel	5/18/17	0920
(2.) * Well is on CCR schedule also, Line Item #5						

SAMPLE CONDITIONS: #32 M#0841 : Y Y Y

ORIGINAL Client Delivery

1, 2, 3, 4, 5, 6, 7

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 5-17-17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

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2052894

Section A Required Client Information:
Company: Xcel Energy
Address: Environmental Services MP-7
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:
Report To: Chuck Dankers
Copy To:
Purchase Order No.:
Project Name: Sherco CCR, May 2017
Project Number:

Section C Invoice Information:
Attention: Steve Davis
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER
Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test ↓ Y/N: GW - CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-97	WT				5/24/17	1210		4	1	1	2						✓		
2	P-17						1335		4	1	1	2						✓		
3	P-152a						1430		4	1	1	2						✓		
4	duplicate						1430		4	1	1	2						✓		
5	P-150						1520		4	1	1	2						✓		
6	P-154a						1630		4	1	1	2						✓		
7	P-153						1720		4	1	1	2						✓		
8	P-151						1830		4	1	1	2						✓		
9	P-165	WT				5/25/17	0800		4	1	1	2						✓		
10	P-162						0850		4	1	1	2						✓		
11	P-163						0950		4	1	1	2						✓		
12	P-164						1040		4	1	1	2						✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① marked HNO3 bottles filtered and unfiltered.	David Anderson Pace	5/25/17	1205	FEDEX	5/25/17	1226	5.6	Y	Y	Y
							MB00941			

ORIGINAL
pH Strips: MB00508

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 5/25/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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2052834

Section A Required Client Information:

Company: Xcel Energy
Address: Environmental Services
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Chuck Donkels
Copy To:
Purchase Order No.:
Project Name: Sherco NPDES, May 2017
Project Number:

Section C Invoice Information:

Attention: Steve Davis
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Requested Analysis Filtered (Y/N)

Section D Required Client Information

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

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	GW-B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-50D	WT				5/17/17	1050		3	1	1	1							✓		
2	P-50B						1145		3	1	1	1							✓		
3	P-50						1220		3	1	1	1							✓		
4	P-66						1300		3	1	1	1							✓		
5	Duplicate						1300		3	1	1	1							✓		
6	P-42						1330		3	1	1	1							✓		
7	P-92A						1410		3	1	1	1							✓		
8	P-93A						1505		3	1	1	1							✓		
9	P101B						1600		3	1	1	1							✓		
10	P101A						1630		3	1	1	1							✓		
11	P-56						1710		3	1	1	1							✓		
12	P-62	↓				↓	1755		3	1	1	1							✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
(1) marked HNO3 bottles filtered.	David Anderson/Pace	5/18/17	0920	/Xcel	5/19/17	0920	4.3 °C	Y	Y	Y
							M#00841			

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 5-17-17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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2052835

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco NPDES, May 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-60	WT				5/17/17	1835		3	1	1	1							✓		
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

DJA 5/17/17

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① marked HNO3 bottles filtered.	David Anderson / Pace	5/18/17	0920	[signature] / Xcel	5/18/17	0920	4.3°C M400841	Y	Y	Y

ORIGINAL Client Delivery

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 5-17-17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

June 14, 2017

Dave Anderson
Pace Analytical Services - Field Svcs Division
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Dear Dave Anderson:
Enclosed are the analytical results for sample(s) received by the laboratory on May 30, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Robbin Robl
robbin.robl@pacelabs.com
(724)850-5613
Project Manager

Enclosures

cc: Harry S. Davis III, Xcel Energy
Charles A. Donkers, Xcel Energy
Sylvia Hunter, Pace Analytical Services - Field Svcs Division
Christine M. Keefe, Xcel Energy
Ciara Ruikkie, Pace Analytical Services - Field Svcs Division

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30220129001	P-132	Water	05/15/17 17:10	05/30/17 09:20
30220129002	P-131	Water	05/15/17 18:10	05/30/17 09:20
30220129003	P-130	Water	05/16/17 09:10	05/30/17 09:20
30220129004	P-158	Water	05/16/17 10:50	05/30/17 09:20
30220129005	P-157	Water	05/16/17 11:30	05/30/17 09:20
30220129006	P-23	Water	05/16/17 12:40	05/30/17 09:20
30220129007	P-155	Water	05/16/17 13:35	05/30/17 09:20
30220129008	P-01a-1	Water	05/16/17 14:25	05/30/17 09:20
30220129009	P-156	Water	05/16/17 15:20	05/30/17 09:20
30220129010	P-22	Water	05/16/17 17:00	05/30/17 09:20
30220129011	P-73a-1	Water	05/23/17 11:40	05/30/17 09:20
30220129012	P-98	Water	05/23/17 14:10	05/30/17 09:20
30220129013	P-120	Water	05/23/17 15:00	05/30/17 09:20
30220129014	P-74-1	Water	05/23/17 15:45	05/30/17 09:20
30220129015	P-125	Water	05/23/17 16:50	05/30/17 09:20
30220129016	P-141	Water	05/23/17 17:40	05/30/17 09:20
30220129017	P-134	Water	05/24/17 08:10	05/30/17 09:20
30220129018	P-138A	Water	05/24/17 09:00	05/30/17 09:20
30220129019	P-137A	Water	05/24/17 09:55	05/30/17 09:20
30220129020	P-117	Water	05/24/17 10:40	05/30/17 09:20
30220129021	P-75-1	Water	05/24/17 11:20	05/30/17 09:20
30220129022	P-97	Water	05/24/17 12:10	05/30/17 09:20
30220129023	P-17	Water	05/24/17 13:35	05/30/17 09:20
30220129024	P-152a	Water	05/24/17 14:30	05/30/17 09:20
30220129025	P-150	Water	05/24/17 15:20	05/30/17 09:20
30220129026	P-154a	Water	05/24/17 16:30	05/30/17 09:20
30220129027	P-153	Water	05/24/17 17:20	05/30/17 09:20
30220129028	P-151	Water	05/24/17 18:30	05/30/17 09:20
30220129029	P-165	Water	05/25/17 08:00	05/30/17 09:20
30220129030	P-162	Water	05/25/17 08:50	05/30/17 09:20
30220129031	P-163	Water	05/25/17 09:50	05/30/17 09:20
30220129032	P-164	Water	05/25/17 10:40	05/30/17 09:20

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SAMPLE ANALYTE COUNT

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30220129001	P-132	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129002	P-131	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129003	P-130	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129004	P-158	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129005	P-157	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129006	P-23	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129007	P-155	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129008	P-01a-1	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129009	P-156	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129010	P-22	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129011	P-73a-1	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129012	P-98	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129013	P-120	EPA 903.1	WRR	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129014	P-74-1	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129015	P-125	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129016	P-141	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129017	P-134	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129018	P-138A	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129019	P-137A	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129020	P-117	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129021	P-75-1	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129022	P-97	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129023	P-17	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129024	P-152a	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129025	P-150	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Total Radium Calculation	CMC	1	PASI-PA
30220129026	P-154a	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129027	P-153	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129028	P-151	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129029	P-165	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129030	P-162	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129031	P-163	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
30220129032	P-164	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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PROJECT NARRATIVE

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Pace-MN Field Services Division
Date: June 14, 2017

General Information:
32 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Pace-MN Field Services Division
Date: June 14, 2017

General Information:
32 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Pace-MN Field Services Division
Date: June 14, 2017

General Information:
32 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Sample: P-132 **Lab ID: 30220129001** Collected: 05/15/17 17:10 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.184 ± 0.211 (0.125) C:NA T:97%**	pCi/L	06/13/17 11:21	13982-63-3	
Radium-228	EPA 904.0	**0.355 ± 0.304 (0.612) C:77% T:96%**	pCi/L	06/13/17 11:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.539 ± 0.515 (0.737)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-131 **Lab ID: 30220129002** Collected: 05/15/17 18:10 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.315 ± 0.267 (0.331) C:NA T:102%**	pCi/L	06/13/17 11:21	13982-63-3	
Radium-228	EPA 904.0	**0.360 ± 0.371 (0.766) C:77% T:99%**	pCi/L	06/13/17 14:32	15262-20-1	
Total Radium	Total Radium Calculation	**0.675 ± 0.638 (1.10)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-130 **Lab ID: 30220129003** Collected: 05/16/17 09:10 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.362 ± 0.307 (0.380) C:NA T:85%**	pCi/L	06/13/17 11:21	13982-63-3	
Radium-228	EPA 904.0	**0.400 ± 0.381 (0.769) C:73% T:90%**	pCi/L	06/13/17 14:32	15262-20-1	
Total Radium	Total Radium Calculation	**0.762 ± 0.688 (1.15)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-158 **Lab ID: 30220129004** Collected: 05/16/17 10:50 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.244 ± 0.379 (0.656) C:NA T:76%**	pCi/L	06/13/17 11:21	13982-63-3	
Radium-228	EPA 904.0	**0.462 ± 0.376 (0.744) C:75% T:100%**	pCi/L	06/13/17 14:32	15262-20-1	
Total Radium	Total Radium Calculation	**0.706 ± 0.755 (1.40)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-157 **Lab ID: 30220129005** Collected: 05/16/17 11:30 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.211 ± 0.255 (0.389) C:NA T:80%**	pCi/L	06/13/17 11:21	13982-63-3	
Radium-228	EPA 904.0	**0.137 ± 0.373 (0.836) C:76% T:91%**	pCi/L	06/13/17 14:32	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Sample: P-157 **Lab ID: 30220129005** Collected: 05/16/17 11:30 Received: 05/30/17 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	**0.348 ± 0.628 (1.23)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-23 **Lab ID: 30220129006** Collected: 05/16/17 12:40 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.287 ± 0.300 (0.423) C:NA T:87%**	pCi/L	06/13/17 11:21	13982-63-3	
Radium-228	EPA 904.0	**0.601 ± 0.410 (0.786) C:79% T:100%**	pCi/L	06/13/17 14:32	15262-20-1	
Total Radium	Total Radium Calculation	**0.888 ± 0.710 (1.21)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-155 **Lab ID: 30220129007** Collected: 05/16/17 13:35 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.161 ± 0.458 (0.850) C:NA T:86%**	pCi/L	06/13/17 11:39	13982-63-3	
Radium-228	EPA 904.0	**-0.000901 ± 0.395 (0.925) C:77% T:86%**	pCi/L	06/13/17 14:33	15262-20-1	
Total Radium	Total Radium Calculation	**0.161 ± 0.853 (1.78)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-01a-1 **Lab ID: 30220129008** Collected: 05/16/17 14:25 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.334 (0.706) C:NA T:81%**	pCi/L	06/13/17 11:39	13982-63-3	
Radium-228	EPA 904.0	**0.544 ± 0.440 (0.876) C:79% T:98%**	pCi/L	06/13/17 18:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.544 ± 0.774 (1.58)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-156 **Lab ID: 30220129009** Collected: 05/16/17 15:20 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.046 ± 0.268 (0.597) C:NA T:96%**	pCi/L	06/13/17 11:39	13982-63-3	
Radium-228	EPA 904.0	**-0.115 ± 0.389 (0.939) C:76% T:92%**	pCi/L	06/13/17 18:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.657 (1.54)**	pCi/L	06/14/17 14:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Sample: P-22 **Lab ID: 30220129010** Collected: 05/16/17 17:00 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.309 ± 0.454 (0.774) C:NA T:87%**	pCi/L	06/13/17 11:39	13982-63-3	
Radium-228	EPA 904.0	**0.229 ± 0.389 (0.847) C:80% T:92%**	pCi/L	06/13/17 18:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.538 ± 0.843 (1.62)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-73a-1 **Lab ID: 30220129011** Collected: 05/23/17 11:40 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.407 ± 0.379 (0.499) C:NA T:65%**	pCi/L	06/13/17 11:39	13982-63-3	
Radium-228	EPA 904.0	**0.463 ± 0.504 (1.05) C:75% T:86%**	pCi/L	06/13/17 18:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.870 ± 0.883 (1.55)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-98 **Lab ID: 30220129012** Collected: 05/23/17 14:10 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.420 ± 0.329 (0.386) C:NA T:83%**	pCi/L	06/13/17 11:39	13982-63-3	
Radium-228	EPA 904.0	**1.02 ± 0.487 (0.815) C:76% T:96%**	pCi/L	06/13/17 18:47	15262-20-1	
Total Radium	Total Radium Calculation	**1.44 ± 0.816 (1.20)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-120 **Lab ID: 30220129013** Collected: 05/23/17 15:00 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.161 ± 0.407 (0.756) C:NA T:85%**	pCi/L	06/13/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.712 ± 0.446 (0.819) C:79% T:88%**	pCi/L	06/13/17 18:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.873 ± 0.853 (1.58)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-74-1 **Lab ID: 30220129014** Collected: 05/23/17 15:45 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.284 ± 0.295 (0.439) C:NA T:93%**	pCi/L	06/13/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.434 ± 0.350 (0.688) C:82% T:100%**	pCi/L	06/13/17 18:47	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Sample: P-74-1 **Lab ID: 30220129014** Collected: 05/23/17 15:45 Received: 05/30/17 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	**0.718 ± 0.645 (1.13)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-125 **Lab ID: 30220129015** Collected: 05/23/17 16:50 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.153 ± 0.233 (0.138) C:NA T:87%**	pCi/L	06/13/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.0964 ± 0.426 (0.973) C:81% T:79%**	pCi/L	06/13/17 18:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.249 ± 0.659 (1.11)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-141 **Lab ID: 30220129016** Collected: 05/23/17 17:40 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.195 ± 0.429 (0.775) C:NA T:88%**	pCi/L	06/13/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.489 ± 0.411 (0.822) C:80% T:95%**	pCi/L	06/13/17 18:33	15262-20-1	
Total Radium	Total Radium Calculation	**0.684 ± 0.840 (1.60)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-134 **Lab ID: 30220129017** Collected: 05/24/17 08:10 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0906 ± 0.207 (0.333) C:NA T:95%**	pCi/L	06/13/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.252 ± 0.461 (1.01) C:80% T:95%**	pCi/L	06/13/17 18:33	15262-20-1	
Total Radium	Total Radium Calculation	**0.343 ± 0.668 (1.34)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-138A **Lab ID: 30220129018** Collected: 05/24/17 09:00 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.048 ± 0.310 (0.672) C:NA T:94%**	pCi/L	06/13/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.878 ± 0.486 (0.875) C:79% T:93%**	pCi/L	06/13/17 18:33	15262-20-1	
Total Radium	Total Radium Calculation	**0.878 ± 0.796 (1.55)**	pCi/L	06/14/17 14:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Sample: P-137A **Lab ID: 30220129019** Collected: 05/24/17 09:55 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.262 ± 0.309 (0.486) C:NA T:85%**	pCi/L	06/13/17 12:16	13982-63-3	
Radium-228	EPA 904.0	**0.729 ± 0.498 (0.952) C:80% T:82%**	pCi/L	06/13/17 18:33	15262-20-1	
Total Radium	Total Radium Calculation	**0.991 ± 0.807 (1.44)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-117 **Lab ID: 30220129020** Collected: 05/24/17 10:40 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0460 ± 0.349 (0.690) C:NA T:94%**	pCi/L	06/13/17 12:16	13982-63-3	
Radium-228	EPA 904.0	**0.0741 ± 0.457 (1.05) C:84% T:71%**	pCi/L	06/13/17 18:33	15262-20-1	
Total Radium	Total Radium Calculation	**0.120 ± 0.806 (1.74)**	pCi/L	06/14/17 14:58	7440-14-4	

Sample: P-75-1 **Lab ID: 30220129021** Collected: 05/24/17 11:20 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.355 ± 0.304 (0.412) C:NA T:99%**	pCi/L	06/13/17 12:33	13982-63-3	
Radium-228	EPA 904.0	**0.472 ± 0.323 (0.618) C:84% T:94%**	pCi/L	06/13/17 15:59	15262-20-1	
Total Radium	Total Radium Calculation	**0.827 ± 0.627 (1.03)**	pCi/L	06/14/17 14:42	7440-14-4	

Sample: P-97 **Lab ID: 30220129022** Collected: 05/24/17 12:10 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.411 ± 0.372 (0.549) C:NA T:95%**	pCi/L	06/13/17 12:33	13982-63-3	
Radium-228	EPA 904.0	**1.11 ± 0.429 (0.644) C:81% T:89%**	pCi/L	06/13/17 15:59	15262-20-1	
Total Radium	Total Radium Calculation	**1.52 ± 0.801 (1.19)**	pCi/L	06/14/17 14:42	7440-14-4	

Sample: P-17 **Lab ID: 30220129023** Collected: 05/24/17 13:35 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.149 ± 0.292 (0.534) C:NA T:88%**	pCi/L	06/13/17 12:53	13982-63-3	
Radium-228	EPA 904.0	**0.639 ± 0.356 (0.645) C:83% T:93%**	pCi/L	06/13/17 15:59	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Sample: P-17 **Lab ID: 30220129023** Collected: 05/24/17 13:35 Received: 05/30/17 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	**0.788 ± 0.648 (1.18)**	pCi/L	06/14/17 14:42	7440-14-4	

Sample: P-152a **Lab ID: 30220129024** Collected: 05/24/17 14:30 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.136 ± 0.367 (0.681) C:NA T:98%**	pCi/L	06/13/17 12:53	13982-63-3	
Radium-228	EPA 904.0	**0.258 ± 0.350 (0.748) C:79% T:86%**	pCi/L	06/13/17 16:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.394 ± 0.717 (1.43)**	pCi/L	06/14/17 14:42	7440-14-4	

Sample: P-150 **Lab ID: 30220129025** Collected: 05/24/17 15:20 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0996 ± 0.309 (0.598) C:NA T:96%**	pCi/L	06/13/17 12:53	13982-63-3	
Radium-228	EPA 904.0	**0.739 ± 0.382 (0.679) C:79% T:97%**	pCi/L	06/13/17 16:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.839 ± 0.691 (1.28)**	pCi/L	06/14/17 14:42	7440-14-4	

Sample: P-154a **Lab ID: 30220129026** Collected: 05/24/17 16:30 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.331 (0.670) C:NA T:102%**	pCi/L	06/13/17 12:53	13982-63-3	
Radium-228	EPA 904.0	**0.594 ± 0.374 (0.706) C:80% T:87%**	pCi/L	06/13/17 16:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.594 ± 0.705 (1.38)**	pCi/L	06/14/17 14:42	7440-14-4	

Sample: P-153 **Lab ID: 30220129027** Collected: 05/24/17 17:20 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0483 ± 0.284 (0.580) C:NA T:91%**	pCi/L	06/13/17 12:53	13982-63-3	
Radium-228	EPA 904.0	**0.736 ± 0.379 (0.665) C:81% T:90%**	pCi/L	06/13/17 16:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.784 ± 0.663 (1.25)**	pCi/L	06/14/17 14:42	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Sample: P-151 **Lab ID: 30220129028** Collected: 05/24/17 18:30 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.309 ± 0.323 (0.455) C:NA T:73%**	pCi/L	06/13/17 12:53	13982-63-3	
Radium-228	EPA 904.0	**0.300 ± 0.375 (0.792) C:82% T:92%**	pCi/L	06/13/17 18:34	15262-20-1	
Total Radium	Total Radium Calculation	**0.609 ± 0.698 (1.25)**	pCi/L	06/14/17 15:08	7440-14-4	

Sample: P-165 **Lab ID: 30220129029** Collected: 05/25/17 08:00 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.320 ± 0.299 (0.424) C:NA T:94%**	pCi/L	06/13/17 13:09	13982-63-3	
Radium-228	EPA 904.0	**0.360 ± 0.361 (0.740) C:84% T:92%**	pCi/L	06/13/17 18:34	15262-20-1	
Total Radium	Total Radium Calculation	**0.680 ± 0.660 (1.16)**	pCi/L	06/14/17 15:08	7440-14-4	

Sample: P-162 **Lab ID: 30220129030** Collected: 05/25/17 08:50 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.173 ± 0.268 (0.465) C:NA T:97%**	pCi/L	06/13/17 13:09	13982-63-3	
Radium-228	EPA 904.0	**0.580 ± 0.461 (0.909) C:79% T:84%**	pCi/L	06/13/17 18:34	15262-20-1	
Total Radium	Total Radium Calculation	**0.753 ± 0.729 (1.37)**	pCi/L	06/14/17 15:08	7440-14-4	

Sample: P-163 **Lab ID: 30220129031** Collected: 05/25/17 09:50 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.317 ± 0.329 (0.490) C:NA T:83%**	pCi/L	06/13/17 13:09	13982-63-3	
Radium-228	EPA 904.0	**0.341 ± 0.402 (0.844) C:81% T:89%**	pCi/L	06/13/17 18:34	15262-20-1	
Total Radium	Total Radium Calculation	**0.658 ± 0.731 (1.33)**	pCi/L	06/14/17 15:08	7440-14-4	

Sample: P-164 **Lab ID: 30220129032** Collected: 05/25/17 10:40 Received: 05/30/17 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.377 ± 0.323 (0.438) C:NA T:92%**	pCi/L	06/13/17 13:09	13982-63-3	
Radium-228	EPA 904.0	**-0.120 ± 0.338 (0.826) C:82% T:88%**	pCi/L	06/13/17 18:34	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

Sample: P-164 **Lab ID: 30220129032** Collected: 05/25/17 10:40 Received: 05/30/17 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	**0.377 ± 0.661 (1.26)**	pCi/L	06/14/17 15:08	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

QC Batch: 260233 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30220129001, 30220129002, 30220129003, 30220129004, 30220129005, 30220129006, 30220129007, 30220129008, 30220129009, 30220129010, 30220129011, 30220129012, 30220129013, 30220129014, 30220129015, 30220129016, 30220129017, 30220129018, 30220129019, 30220129020

METHOD BLANK: 1281802 Matrix: Water
Associated Lab Samples: 30220129001, 30220129002, 30220129003, 30220129004, 30220129005, 30220129006, 30220129007, 30220129008, 30220129009, 30220129010, 30220129011, 30220129012, 30220129013, 30220129014, 30220129015, 30220129016, 30220129017, 30220129018, 30220129019, 30220129020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0560 ± 0.256 (0.520) C:NA T:77%	pCi/L	06/13/17 11:05	

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

QC Batch: 260250 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30220129021, 30220129022, 30220129023, 30220129024, 30220129025, 30220129026, 30220129027, 30220129028, 30220129029, 30220129030, 30220129031, 30220129032

METHOD BLANK: 1281837 Matrix: Water
Associated Lab Samples: 30220129021, 30220129022, 30220129023, 30220129024, 30220129025, 30220129026, 30220129027, 30220129028, 30220129029, 30220129030, 30220129031, 30220129032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.427 ± 0.324 (0.632) C:79% T:92%	pCi/L	06/13/17 15:58	

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

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

QC Batch: 260235 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30220129021, 30220129022, 30220129023, 30220129024, 30220129025, 30220129026, 30220129027, 30220129028, 30220129029, 30220129030, 30220129031, 30220129032

METHOD BLANK: 1281811 Matrix: Water
Associated Lab Samples: 30220129021, 30220129022, 30220129023, 30220129024, 30220129025, 30220129026, 30220129027, 30220129028, 30220129029, 30220129030, 30220129031, 30220129032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.489 ± 0.342 (0.413) C:NA T:97%	pCi/L	06/13/17 12:16	

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

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

QC Batch: 260248 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30220129001, 30220129002, 30220129003, 30220129004, 30220129005, 30220129006, 30220129007, 30220129008, 30220129009, 30220129010, 30220129011, 30220129012, 30220129013, 30220129014, 30220129015, 30220129016, 30220129017, 30220129018, 30220129019, 30220129020

METHOD BLANK: 1281831 Matrix: Water
Associated Lab Samples: 30220129001, 30220129002, 30220129003, 30220129004, 30220129005, 30220129006, 30220129007, 30220129008, 30220129009, 30220129010, 30220129011, 30220129012, 30220129013, 30220129014, 30220129015, 30220129016, 30220129017, 30220129018, 30220129019, 30220129020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.824 ± 0.388 (0.650) C:68% T:94%	pCi/L	06/13/17 11:44	

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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Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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www.pacelabs.com

CH WO#: 220129 Document
The ... pleted accurately.

30220129

Page: 1 of 3

2052832

Section A
Required Client Information:

Company:	Xcel Energy
Address:	c/o Pace MN Field
Email To:	
Phone:	Fax:
Requested Due Date/TAT:	

Section B
Required Project Information:

Report To:	David Anderson
Copy To:	
Purchase Order No.:	
Project Name:	17-0570, Xcel Energy -
Project Number:	Sherco CCR, May 2017

Invoice Information:

Attention:	Ciara Ruikkie
Company Name:	Pace MN Field services
Address:	
Pace Quote Reference:	Tom Halverson
Pace Project Manager:	Robbin Robl
Pace Profile #:	

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location
STATE:

Section D
Required Client Information

Matrix Codes
MATRIX / CODE

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

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-132	WT				5/15/17	1710		2			2							✓	✓		001
2	P-131	↓				↓	1810		2			2							✓	✓		002
3	P-130	WT				5/16/17	0910		2			2							✓	✓		003
4	P-158	↓				↓	1050		2			2							✓	✓		004
5	P-157	↓				↓	1130		2			2							✓	✓		005
6	P-23	↓				↓	1240		2			2							✓	✓		006
7	P-155	↓				↓	1335		2			2							✓	✓		007
8	P-01a-1	↓				↓	1425		2			2							✓	✓		008
9	P-156	↓				↓	1520		2			2							✓	✓		009
10	P-22	↓				↓	1700		2			2							✓	✓		010
11																						
12				DJA 5/16/17																		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
(1.) client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson/Pace	5/25/17	1315	Ashleeophan/Pace	5-30-17	0920	N/A	N	N	Y

(2.) RA-226 EPA 903.1
RA-228 EPA 904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 5/16/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

30220129

Page: 2 of 3

2052893

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0570, Xcel Energy - Sherco CCR, May 2017
Project Number:

Section C Invoice Information:

Attention: Clara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Robl
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	RA-226EPA903.1	RA-228EPA904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-73a-1	WT				5/23/17	1140		2			2							✓	✓		011
2	P-98						1410		2			2							✓	✓		012
3	P-120						1500		2			2							✓	✓		013
4	P-74-1						1545		2			2							✓	✓		014
5	P-125						1650		2			2							✓	✓		015
6	P-141						1740		2			2							✓	✓		016
7	P-134	WT				5/24/17	0810		2			2							✓	✓		017
8	P-138A						0900		2			2							✓	✓		018
9	P-137A						0955		2			2							✓	✓		019
10	P-117						1040		2			2							✓	✓		020
11	P-75-1						1120		2			2							✓	✓		021
12	P-97						1210		2			2							✓	✓		022

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody aled Cooler (Y/N)	Samples Intact (Y/N)
(1.) Client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson / Pace	5/25/17	1315	Ashley Paul / Pace	5-30-17	0920	N/A	N	N	Y

(2.) RA-226EPA903.1
RA-228EPA904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 5/24/17

*Imp e: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month voices not paid within 30 days.

F-ALL-Q-020rev.07, ay-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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

30220129

Page: 3 of 3

2052895

Section A Required Client Information:
Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:
Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0570, Xcel Energy - Sherco CCR, May 2017
Project Number:

Section C Invoice Information:
Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Rabl
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER
Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-17	WT				5/24/17	1335		2			2							✓	✓			023
2	P-152a						1430		2			2							✓	✓			024
3	P-150						1520		2			2							✓	✓			025
4	P-154a						1630		2			2							✓	✓			026
5	P-153						1720		2			2							✓	✓			027
6	P-151						1830		2			2							✓	✓			028
7	P-165	WT				5/25/17	0800		2			2							✓	✓			029
8	P-162						0850		2			2							✓	✓			030
9	P-163						0950		2			2							✓	✓			031
10	P-164						1040		2			2							✓	✓			032
11																							
12																							

DTA 5/25/17

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1) Client needs to analyze for: Radium 226 + 228 pCi/L combined.	David Anderson/Pace	5/25/17	1315	Ashley Rust/Pace	5-30-17	0920	N/A	N	N	Y
(2) RA-226 EPA 903.1 ORIGINAL RA-228 EPA 904.0										

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 5/25/17

Temp In °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Sample Condition Upon Receipt Pittsburgh

AN

Face Analytical

Client Name: XCel Project # 30220129

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 7180 9267 3130

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

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

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

Temp should be above freezing to 6°C

Date and Initials of person examining contents: AMR 5-30-17

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:	X			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	X			5.
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Orthophosphate field filtered			X	12.
Organic Samples checked for dechlorination:			X	13.
Filtered volume received for Dissolved tests			X	14.
All containers have been checked for preservation.	X			15. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	X			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed AMR Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	16.
Trip Blank Present:		X		17.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr		X		Initial when completed: AMR Date: 5-30-17

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

June 2017

Field Datasheets and Laboratory Reports

Xcel - Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 6-19-17 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.98	25.0	1050	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.01	25.0	1050	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.04	25.0	1050	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.02	25.0	1100	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.04	24.0	1755	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value: 1000

Cond Std: 1000 umhos/cm — Ricca - Lot #: 4606B22 — *Exp Date: 06/31/18* — Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	25.0

Initial Cal. Verification (ICV)

Low Standard Value: 100

Cond Std: 100 umhos/cm — Ricca - Lot #: 4605D87 — *Exp Date: 05/31/18* — Exp. Date

Meter Result (µS/cm)	Temp (°C)
95	25.0

Meter Make YSI Sonde ID #5

IC/ICV Time 1105 / 1108

Initials DJA

ICV: (Pass) / Fail

(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1800 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard

Result (µS/cm) 1002 Temp (°C) 24.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard

Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

DJA 6/19/17

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard

Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 6/19/17

Xcel – Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 6-19-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)		Meter Make YSI Sonde ID #5
Calibration Std. Value (mV)	231	Secondary Source Std. Value (mV)	231	
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.	IC/ICV Time 1110 / 1112
Lot No.	YSI #156100667	Lot No.	16L100376	Initials DJA
Exp Date	07/2017	Exp. Date	11/2017	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)	ICV: (Pass) / Fail
231	25.0	231	25.0	ICV acceptable if ± 10 mV of standard value.

CCV Time 1805	Initials DJA	Std. Value 232	(Calibration Standard) / Secondary Source Standard	(CCV acceptable if ± 10 mV of standard value)
Result (mV) 230	Temp (°C) 24.0	CCV: (Pass) / Fail		
CCV Time	Initials	Std. Value	Calibration Standard / Secondary Source Standard	(CCV acceptable if ± 10 mV of standard value)
Result (mV)	Temp (°C) DJA 6-19-17	CCV: Pass / Fail		
CCV Time	Initials	Std. Value	Calibration Standard / Secondary Source Standard	(CCV acceptable if ± 10 mV of standard value)
Result (mV)	Temp (°C)	CCV: Pass / Fail		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation		IC/ICV Time 1045 Initials DJA
Ambient Temp:	24.0 (°C)	Ambient Temp:	24.0 (°C)	DO Meter ID YSI Sonde #5
Barometric Pressure	28.92 (in. Hg)	Barometric Pressure	28.92 (in. Hg)	Barometer ID Skymaster DB-26 GW
Barometric Pressure	734.57 (mm Hg)	Barometric Pressure	734.57 (mm Hg)	
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)	ICV: (Pass) / Fail
IC Meter Result (%)		ICV Meter Result (%)		(ICV/CCV acceptable if ± 2% of Calibration Value)
96		96		

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1750	Initials DJA	Barometric Pressure 734.82 (in. Hg / mm Hg)		(CCV acceptable if ± 2% of Calibration Value)
Calibration Value 97 (%)	Result 96 (%)	CCV: (Pass) / Fail		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)		(CCV acceptable if ± 2% of Calibration Value)
Calibration Value (%)	Result DJA 6/19/17 (%)	CCV: Pass / Fail		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)		(CCV acceptable if ± 2% of Calibration Value)
Calibration Value (%)	Result (%)	CCV: Pass / Fail		

Form Revised: 02/03/17

Lead Technician Signature: Dana Anderson Date: 6/19/17

Xcel - Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 6/19/17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C689664 / C686359 / C686358 / C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	10.0	99	999	IC Time 1120 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.02	10.0	100	999	ICV Time 1125 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.02	9.9	99	998	CCV Time 1810 Initials DJA CCV: (Pass) / Fail
CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	CCV Time ____ Initials ____ CCV: Pass / Fail
		DJA	6/19/17		
CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 6/19/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel - Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 6/20/17 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.97	20.0	0710	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.03	20.0	0710	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.06	20.0	0710	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.05	20.0	0720	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.04	24.0	1840	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value: 1000

Cond Std: 1000 umhos/cm —
Ricca - Lot #: 4606B22 —
Exp Date: 06/31/18 —
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	20.0

Initial Cal. Verification (ICV)

Low Standard Value: 100

Cond Std: 100 umhos/cm —
Ricca - Lot #: 4605D87 —
Exp Date: 05/31/18 —
Exp. Date

Meter Result (µS/cm)	Temp (°C)
97	20.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0725 / 0727
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1845 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1008 Temp (°C) 24.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA 6/20/17 Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 6/20/17

Xcel – Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 6/20/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	238	Secondary Source Std. Value (mV)	238
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI #156100667	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	238	Meter Result (mV)	237
Temp (°C)	20.0	Temp (°C)	20.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0730 / 0732

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time	1850	Initials	DJA	Std. Value	232
Result (mV)	231	Temp (°C)	24.0	CCV: (Pass) / Fail	

☒ Calibration Standard ☐ Secondary Source Standard

(CCV acceptable if ± 10 mV of standard value)

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)	DJA 6/20/17	CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard

(CCV acceptable if ± 10 mV of standard value)

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)		CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard

(CCV acceptable if ± 10 mV of standard value)

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	20.0 (°C)	Ambient Temp:	20.0 (°C)
Barometric Pressure	28.90 (in. Hg)	Barometric Pressure	28.90 (in. Hg)
Barometric Pressure	734.06 (mm Hg)	Barometric Pressure	734.06 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)	97	ICV Meter Result (%)	97

IC/ICV Time 0705 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster D.B-26 GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time	1835	Initials	DJA	Barometric Pressure	736.09	(in. Hg / mm Hg)
Calibration Value	97 (%)	Result	95 (%)	CCV: (Pass) / Fail		

(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure		(in. Hg / mm Hg)
Calibration Value	(%)	Result	DJA 6/20/17 (%)	CCV: Pass / Fail		

(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure		(in. Hg / mm Hg)
Calibration Value	(%)	Result	(%)	CCV: Pass / Fail		

(CCV acceptable if ± 2% of Calibration Value)

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 6/20/17

Xcel – Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 6/20/17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	10.0	99	999	IC Time 0735 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	10.0	99	998	ICV Time 0745 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	99	998	CCV Time 1855 Initials DJA CCV: (Pass) / Fail
CCV		DJA 6/20/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 6/20/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel - Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 6-21-17 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.96	18.0	0715	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.04	18.0	0715	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.10	18.0	0715	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.06	18.0	0725	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.03	25.0	1825	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 1000

Cond Std: 1000 umhos/cm —
Ricca - Lot #: 4606B22 —
Exp Date: 06/31/18 —
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	18.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm —
Ricca - Lot #: 4605D87 —
Exp Date: 05/31/18 —
Exp. Date

Meter Result (µS/cm)	Temp (°C)
95	18.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0730 / 0733
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1830 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1008 Temp (°C) 25.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA 6/21/17 Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 6/21/17

Xcel – Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 6-21-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	240	Secondary Source Std. Value (mV)	240
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI #156100667	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	240	Meter Result (mV)	238
Temp (°C)	18.0	Temp (°C)	18.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0735/0737

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time	1835	Initials	DJA	Std. Value	231
Result (mV)	230	Temp (°C)	25.0	CCV: (Pass) / Fail	

☒ Calibration Standard ☐ Secondary Source Standard

(CCV acceptable if ± 10 mV of standard value)

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)	DJA 6/21/17	CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard

(CCV acceptable if ± 10 mV of standard value)

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)		CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard

(CCV acceptable if ± 10 mV of standard value)

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	14.0 (°C)	Ambient Temp:	14.0 (°C)
Barometric Pressure	28.91 (in. Hg)	Barometric Pressure	28.91 (in. Hg)
Barometric Pressure	734.31 (mm Hg)	Barometric Pressure	734.31 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)	97	ICV Meter Result (%)	97

IC/ICV Time 0710 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster DB-26 GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 Inches Hg.

CCV Time	1820	Initials	DJA	Barometric Pressure	731.27	(in. Hg / mm Hg)	
Calibration Value	96 (%)	Result	95 (%)	CCV: (Pass) / Fail			

(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure		(in. Hg / mm Hg)	
Calibration Value	(%)	Result	DJA 6/21/17 (%)	CCV: Pass / Fail			

(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure		(in. Hg / mm Hg)	
Calibration Value	(%)	Result	(%)	CCV: Pass / Fail			

(CCV acceptable if ± 2% of Calibration Value)

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 6/21/17

Xcel – Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 6-21-17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C689664 / C686359 / C686358 / C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	99	998	IC Time 0740 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	98	998	ICV Time 0750 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	98	998	CCV Time 1840 Initials DJA CCV: (Pass) / Fail
CCV		DJA 6/21/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 6/21/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Xcel - Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 6-22-17 Page 1 of 3

pH

Meter Make YSI Sonde Meter ID #5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.96	20.0	0710	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.02	20.0	0710	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.07	20.0	0710	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.04	20.0	0720	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.07	20.0	1055	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value: 1000

Cond Std: 1000 umhos/cm —
Ricca - Lot #: 4606B22 —
Exp Date: 06/31/18 —
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1001	20.0

Initial Cal. Verification (ICV)

Low Standard Value: 100

Cond Std: 100 umhos/cm —
Ricca - Lot #: 4605D87 —
Exp Date: 05/31/18 —
Exp. Date

Meter Result (µS/cm)	Temp (°C)
97	20.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0725 / 0728
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1100 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1004 Temp (°C) 20.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

DJA 6/22/17

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 6/22/17

Xcel – Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 6-22-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	238	Secondary Source Std. Value (mV)	238
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI #15G100067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
238	20.0	238	20.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0730 / 0732

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1105	Initials DJA	Std. Value 238	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 235	Temp (°C) 20.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 6-22-17	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	20.0 (°C)	Ambient Temp:	20.0 (°C)
Barometric Pressure	28.74 (in. Hg)	Barometric Pressure	28.74 (in. Hg)
Barometric Pressure	730.00 (mm Hg)	Barometric Pressure	730.00 (mm Hg)
Calibration Value[1]	96 (%)	Calibration Value[1]	96 (%)
IC Meter Result (%)		ICV Meter Result (%)	
96		96	

IC/ICV Time 0705 Initials DJA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster D.B-26 GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1050	Initials DJA	Barometric Pressure 730.00 (in. Hg / mm Hg)			
Calibration Value 96 (%)	Result 95 (%)	CCV: (Pass) / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 6-22-17 (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		

Form Revised: 02/03/17

Lead Technician Signature: Dana Anderson Date: 6-22-17

Xcel – Sherco CCR, June 2017
Field Proj. # 17-0684

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 6/22/17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	9.9	99	997	IC Time 0740 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	98	997	ICV Time 0745 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	98	998	CCV Time 1110 Initials DJA CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 6/22/17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 6/22/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR June Project No. 17-0684

Monitoring Point ID P-01a-1 Labeled P-01A

Inside Diameter 2 (inches) Key # 2106 ☐ Locked ☒ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel cover will not close,

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 80.98 Feet

Static water level measurement before purging 75.58 Feet

Static water level measurement at time of sampling 75.58 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 6-21-17 Water Column 5.40 Feet

Time Purged 1435-1453 One Casing Volume 0.9 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 2.7 Gallons

Field Sampling Data

Date Sampled 6-21-17

Time Sampled 1500

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 7.2 (mg/l)

Spec. Cond. 680 (µmhos/cm) Turbidity 2.7 (NTU)

Temp. 13.0 (°C) Eh 220 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 74° + sunny, wind SE 10

Sample Description: clear + odorless

Observations: DTA 6-21-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1441	7.7	710	12.5	7.4	NA	228	0.9
1447	7.7	690	13.0	7.3	NA	224	1.8
1453	7.7	680	13.0	7.2	NA	220	2.7

DTA 6/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 6/21/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR June Project No. 17-0684

Monitoring Point ID P-17 Labeled P17

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	58.76	Feet
Static water level measurement before purging	35.00	Feet
Static water level measurement at time of sampling	35.00	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 6-21-17 Water Column 23.76 Feet

Time Purged 0800 - 0900 One Casing Volume 3.9 Gallons

Pump Rate 0.2 (GPM / LPM) Volume Purged 12.0 Gallons

Field Sampling Data

Date Sampled 6-21-17

Time Sampled 0910

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 7.9 (mg/l)

Spec. Cond. 550 (µmhos/cm) Turbidity 2.4 (NTU)

Temp. 10.5 (°C) Eh 142 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 58° + sunny, wind W-S

Sample Description: clear + odorless

Observations:

DJA 6/21/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0820	7.2	550	10.5	8.0	NA	151	4.0
0840	7.2	550	10.5	7.9	NA	146	8.0
0900	7.2	550	10.5	7.9	NA	142	12.0

DJA 6/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 6/21/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, June Project No. 17-0684

Monitoring Point ID P-22 Labeled P-22

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 57.85 Feet

Static water level measurement before purging 37.54 Feet

Static water level measurement at time of sampling 37.54 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 6-21-17 Water Column 20.31 Feet

Time Purged 1235-1326 One Casing Volume 3.3 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 10.2 Gallons

Field Sampling Data

Date Sampled 6-21-17

Time Sampled 1330

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 6.2 (mg/l)

Spec. Cond. 460 (µmhos/cm) Turbidity 2.0 (NTU)

Temp. 13.0 (°C) Eh 229 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 72° + sunny, wind SE 10

Sample Description: clear + odorless

Observations:

DTA 6/21/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1252	7.6	460	13.0	6.3	NA	206	3.4
1309	7.6	460	13.0	6.2	NA	218	6.8
1326	7.6	460	13.0	6.2	NA	229	10.2

DTA 6/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 6/21/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR June Project No. 17-0684

Monitoring Point ID P-23 Labeled P-23

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	67.34	Feet
Static water level measurement before purging	39.63	Feet
Static water level measurement at time of sampling	39.63	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 6-21-17 Water Column 27.71 Feet

Time Purged 1100-1209 One Casing Volume 4.5 Gallons

Pump Rate 0.2 (GPM / LPM) Volume Purged 13.8 Gallons

Field Sampling Data

Date Sampled 6-21-17

Time Sampled 1220

Sampling Equip. 4hose pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 7.6 (mg/l)

Spec. Cond. 700 (µmhos/cm) Turbidity 2.6 (NTU)

Temp. 14.0 (°C) Eh 162 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 70°+ sunny, wind SE 10

Sample Description: clear + odorless

Observations: DTA 6/21/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1123	7.7	720	14.0	7.8	NA	184	4.6
1146	7.6	710	14.0	7.7	NA	170	9.2
1209	7.6	700	14.0	7.6	NA	162	13.8

DTA 6/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 6/21/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR June Project No. 17-0684

Monitoring Point ID P-152a Labeled 806318

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 42.18 Feet

Static water level measurement before purging 34.33 Feet

Static water level measurement at time of sampling 34.33 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 6-19-17 Water Column 7.85 Feet

Time Purged 1255-1316 One Casing Volume 1.3 Gallons

Pump Rate 0.2 (GPM / LPM) Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 6-19-17

Time Sampled 1325

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 9.4 (mg/l)

Spec. Cond. 350 (µmhos/cm) Turbidity 2.4 (NTU)

Temp. 11.0 (°C) Eh 97 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 68° + partly cloudy, wind W10

Sample Description: clear + odorless

Observations: DJA 6/19/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1302	7.3	350	11.0	9.5	NA	122	1.4
1309	7.4	350	11.0	9.4	NA	109	2.8
1316	7.4	350	11.0	9.4	NA	97	4.2
				DJA	6/19/17		

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 6/19/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, June Project No. 17-0684

Monitoring Point ID P-155 Labeled 812964

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 85.47 Feet

Static water level measurement before purging 75.84 Feet

Static water level measurement at time of sampling 75.84 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 6-21-17 Water Column 9.63 Feet

Time Purged 1345-1409 One Casing Volume 1.6 Gallons

Pump Rate 0.2 (GPM / LPM) Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 6-21-17

Time Sampled 1420

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 7.3 (mg/l)

Spec. Cond. 680 (µmhos/cm) Turbidity 4.6 (NTU)

Temp. 13.5 (°C) Eh 209 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 73° + sunny, wind SE 10

Sample Description: clear + odorless

Observations:

DJA 6/21/17

Stabilization Test

Time	pH (units)	Specifc Conductance (umhos/cm)	Temp (C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1353	7.4	690	13.5	7.5	NA	220	1.6
1401	7.4	680	13.5	7.3	NA	213	3.2
1409	7.4	680	13.5	7.3	NA	209	4.8

DJA 6/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 6/21/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR June Project No. 17-0684

Monitoring Point ID P-156 Labeled 812965

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	85.53	Feet
Static water level measurement before purging	74.82	Feet
Static water level measurement at time of sampling	74.82	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 6-21-17 Water Column 10.71 Feet

Time Purged 1515-1542 One Casing Volume 1.7 Gallons

Pump Rate 0.2 (GPM / LPM) Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 6-21-17

Time Sampled 1550

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 6.7 (mg/l)

Spec. Cond. 630 (µmhos/cm) Turbidity 6.6 (NTU)

Temp. 13.5 (°C) Eh 180 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 75° + Sunny, Wind SE 10

Sample Description: clear + odorless

Observations:

DJA 6-21-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1524	7.8	640	13.5	7.0	NA	187	1.8
1533	7.8	630	13.5	6.8	NA	183	3.6
1542	7.8	630	13.5	6.7	NA	180	5.4

DJA 6/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 6-21-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR June Project No. 17-0684

Monitoring Point ID P-157 Labeled 812966

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	49.06	Feet
Static water level measurement before purging	40.14	Feet
Static water level measurement at time of sampling	40.14	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 6-21-17 Water Column 8.92 Feet

Time Purged 1015-1039 One Casing Volume 1.5 Gallons

Pump Rate 0.2 (GPM / LPM) Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 6-21-17

Time Sampled 1050

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 8.0 (mg/l)

Spec. Cond. 700 (µmhos/cm) Turbidity 2.8 (NTU)

Temp. 12.0 (°C) Eh 140 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 65° + sunny, wind S 5-10

Sample Description: clear + odorless

Observations: DTA 6-21-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1023	7.3	700	12.0	8.0	NA	175	1.6
1031	7.3	700	12.0	8.0	NA	153	3.2
1039	7.3	700	12.0	8.0	NA	140	4.8

DTA 6/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 6-21-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR June Project No. 17-0684

Monitoring Point ID P-158 Labeled 8/2967

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	49.16	Feet
Static water level measurement before purging	37.87	Feet
Static water level measurement at time of sampling	37.87	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 6-21-17 Water Column 11.29 Feet

Time Purged 0920-0947 One Casing Volume 1.8 Gallons

Pump Rate 0.2 (GPM / LPM) Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 6-21-17

Time Sampled 1000

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 10.4 (mg/l)

Spec. Cond. 540 (µmhos/cm) Turbidity 2.4 (NTU)

Temp. 11.0 (°C) Eh 168 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 61° + sunny, wind W 5

Sample Description: clear + odorless

Observations: collected Duplicate at this well.

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0929	7.2	550	11.0	10.8	NA	181	1.8
0938	7.3	540	11.0	10.7	NA	175	3.6
0947	7.3	540	11.0	10.4	NA	168	5.4

DTA 6/21/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 6/21/17

Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification #MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

11 January 2018

Charles A Donkers

Environmental Services-Water Minneapolis

250 Marquette Plaza

Minneapolis, MN 55401

RE: Sherco CCR

cc: Laboratory report re-created to only include wells in the Bottom Ash Pond CCR Groundwater Monitoring System. HSD 1/11/18

Enclosed are the results of analyses for samples received by the laboratory on 06/22/2017 12:40. If you have any questions concerning this report, please feel free to contact me.

I certify that this analysis report was prepared under my direction or supervision under a system designed to assure that qualified personnel analyzed the submitted samples. All protocols for analysis were followed as required by Minnesota Rules and the Applicable Management Plan.

Sincerely,

Steve Davis

Project Manager

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Rinse		MCF0235-01	Water	06/19/2017 11:35	06/22/2017 12:40
P-152a		MCF0235-03	Water	06/19/2017 13:25	06/22/2017 12:40
P-17		MCF0235-20	Water	06/21/2017 9:10	06/22/2017 12:40
P-158		MCF0235-21	Water	06/21/2017 10:00	06/22/2017 12:40
Duplicate		MCF0235-22	Water	06/21/2017 10:00	06/22/2017 12:40
P-157		MCF0235-23	Water	06/21/2017 10:50	06/22/2017 12:40
P-23		MCF0235-24	Water	06/21/2017 12:20	06/22/2017 12:40
P-22		MCF0235-25	Water	06/21/2017 13:30	06/22/2017 12:40
P-155		MCF0235-26	Water	06/21/2017 14:20	06/22/2017 12:40
P-01a-1		MCF0235-27	Water	06/21/2017 15:00	06/22/2017 12:40
P-156		MCF0235-28	Water	06/21/2017 15:50	06/22/2017 12:40

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Rinse

MCF0235-01 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 12:05	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 12:05	EPA 300.0	CRL
Sulfate	< 1.00	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 12:05	EPA 300.0	CRL
Wet Chemistry										
pH	6.65		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 13:55	SM 4500-H+ B	CRL
Total Dissolved Solids	< 20.0	20.0	mg/L		1	BCF0527	6/23/17 8:27	6/23/17 8:27	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:46	EPA 200.8	CRL
Barium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:46	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:46	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:46	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:46	EPA 200.8	CRL
Chromium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:46	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:46	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:46	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:46	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:46	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:46	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:24	EPA 200.7	HRD
Calcium	< 0.500	0.500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:21	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:21	EPA 200.7	HRD

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Rinse

MCF0235-01 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0570	6/26/17 8:46	6/26/17 13:50	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-152a

MCF0235-03 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 12:45	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 12:45	EPA 300.0	CRL
Sulfate	8.15	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 12:45	EPA 300.0	CRL
Wet Chemistry										
pH	7.77		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 14:06	SM 4500-H+ B	CRL
Total Dissolved Solids	168	20.0	mg/L		1	BCF0527	6/23/17 8:27	6/23/17 8:27	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:02	EPA 200.8	CRL
Barium	38.2	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:02	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:02	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:02	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:02	EPA 200.8	CRL
Chromium	0.706	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:02	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:02	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:02	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:02	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:02	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:02	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0502	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:47	EPA 200.7	HRD
Calcium	51.2	0.500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:44	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:44	EPA 200.7	HRD

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Amended Report

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-152a

MCF0235-03 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0570	6/26/17 8:46	6/26/17 13:58	EPA 245.1, 7470A	HRD

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Amended Report

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-17

MCF0235-20 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	24.3	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 20:15	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 20:15	EPA 300.0	CRL
Sulfate	32.0	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 20:15	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:11	SM 4500-H+ B	CRL
Total Dissolved Solids	336	20.0	mg/L		1	BCF0584	6/27/17 9:29	6/27/17 9:29	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 10:20	EPA 200.8	CRL
Barium	42.3	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 10:20	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 10:20	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 10:20	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 10:20	EPA 200.8	CRL
Chromium	0.847	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 10:20	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 10:20	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 10:20	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 10:20	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 10:20	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 10:20	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 14:35	EPA 200.7	HRD
Calcium	74.6	0.500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 14:33	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 14:33	EPA 200.7	HRD

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Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-17

MCF0235-20 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0570	6/26/17 8:46	6/26/17 14:30	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-158

MCF0235-21 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	2.91	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 12:36	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 12:36	EPA 300.0	CRL
Sulfate	55.0	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 12:36	EPA 300.0	CRL
Wet Chemistry										
pH	7.70		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:18	SM 4500-H+ B	CRL
Total Dissolved Solids	358	20.0	mg/L		1	BCF0584	6/27/17 9:29	6/27/17 9:29	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:21	EPA 200.8	CRL
Barium	64.1	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:21	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:21	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:21	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:21	EPA 200.8	CRL
Chromium	0.804	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:21	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:21	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:21	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:21	EPA 200.8	CRL
Selenium	1.69	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:21	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:21	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.454	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:30	EPA 200.7	HRD
Calcium	75.8	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:28	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:28	EPA 200.7	HRD

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Amended Report

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-158

MCF0235-21 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0671	6/28/17 14:21	6/29/17 14:05	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Duplicate

MCF0235-22 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	2.87	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 12:57	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 12:57	EPA 300.0	CRL
Sulfate	55.1	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 12:57	EPA 300.0	CRL
Wet Chemistry										
pH	7.70		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:22	SM 4500-H+ B	CRL
Total Dissolved Solids	366	20.0	mg/L		1	BCF0584	6/27/17 9:29	6/27/17 9:29	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:25	EPA 200.8	CRL
Barium	63.2	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:25	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:25	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:25	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:25	EPA 200.8	CRL
Chromium	0.846	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:25	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:25	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:25	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:25	EPA 200.8	CRL
Selenium	1.71	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:25	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:25	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.452	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:36	EPA 200.7	HRD
Calcium	76.8	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:33	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:33	EPA 200.7	HRD

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Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Duplicate

MCF0235-22 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0671	6/28/17 14:21	6/29/17 14:11	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-157

MCF0235-23 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	12.7	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 13:17	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 13:17	EPA 300.0	CRL
Sulfate	86.7	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 13:17	EPA 300.0	CRL
Wet Chemistry										
pH	7.61		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:25	SM 4500-H+ B	CRL
Total Dissolved Solids	474	20.0	mg/L		1	BCF0584	6/27/17 9:29	6/27/17 9:29	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:37	EPA 200.8	CRL
Barium	49.9	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:37	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:37	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:37	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:37	EPA 200.8	CRL
Chromium	1.36	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:37	EPA 200.8	CRL
Molybdenum	0.794	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:37	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:37	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:37	EPA 200.8	CRL
Selenium	2.24	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:37	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:37	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.268	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:53	EPA 200.7	HRD
Calcium	87.2	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:51	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:51	EPA 200.7	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-157

MCF0235-23 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0671	6/28/17 14:21	6/29/17 14:12	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-23

MCF0235-24 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	21.5	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 13:37	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 13:37	EPA 300.0	CRL
Sulfate	95.3	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 13:37	EPA 300.0	CRL
Wet Chemistry										
pH	7.77		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:29	SM 4500-H+ B	CRL
Total Dissolved Solids	446	20.0	mg/L		1	BCF0584	6/27/17 9:29	6/27/17 9:29	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:41	EPA 200.8	CRL
Barium	60.9	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:41	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:41	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:41	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:41	EPA 200.8	CRL
Chromium	0.992	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:41	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:41	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:41	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:41	EPA 200.8	CRL
Selenium	0.970	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:41	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:41	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.304	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:59	EPA 200.7	HRD
Calcium	84.6	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:56	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 12:56	EPA 200.7	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-23

MCF0235-24 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0671	6/28/17 14:21	6/29/17 14:14	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-22

MCF0235-25 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	16.5	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 13:58	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 13:58	EPA 300.0	CRL
Sulfate	193	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 13:58	EPA 300.0	CRL
Wet Chemistry										
pH	7.74		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:32	SM 4500-H+ B	CRL
Total Dissolved Solids	600	20.0	mg/L		1	BCF0584	6/27/17 9:29	6/27/17 9:29	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:45	EPA 200.8	CRL
Barium	71.9	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:45	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:45	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:45	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:45	EPA 200.8	CRL
Chromium	0.971	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:45	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:45	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:45	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:45	EPA 200.8	CRL
Selenium	9.07	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:45	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:45	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.40	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:04	EPA 200.7	HRD
Calcium	107	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:02	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:02	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-22

MCF0235-25 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0671	6/28/17 14:21	6/29/17 14:16	EPA 245.1, 7470A	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

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MCF0235-26 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	13.8	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 14:18	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 14:18	EPA 300.0	CRL
Sulfate	161	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 14:18	EPA 300.0	CRL
Wet Chemistry										
pH	7.69		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:36	SM 4500-H+ B	CRL
Total Dissolved Solids	540	20.0	mg/L		1	BCF0584	6/27/17 9:29	6/27/17 9:29	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:49	EPA 200.8	CRL
Barium	71.3	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:49	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:49	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:49	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:49	EPA 200.8	CRL
Chromium	1.06	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:49	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:49	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:49	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:49	EPA 200.8	CRL
Selenium	4.65	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:49	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:49	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.85	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:10	EPA 200.7	HRD
Calcium	90.8	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:08	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:08	EPA 200.7	HRD

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Amended Report

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-155

MCF0235-26 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0671	6/28/17 14:21	6/29/17 14:17	EPA 245.1, 7470A	HRD

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Certification # MN-027-053-197
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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-01a-1

MCF0235-27 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	8.57	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 14:39	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 14:39	EPA 300.0	CRL
Sulfate	114	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 14:39	EPA 300.0	CRL
Wet Chemistry										
pH	7.65		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:40	SM 4500-H+ B	CRL
Total Dissolved Solids	504	20.0	mg/L		1	BCF0584	6/27/17 9:29	6/27/17 9:29	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:54	EPA 200.8	CRL
Barium	37.6	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:54	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:54	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:54	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:54	EPA 200.8	CRL
Chromium	0.965	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:54	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:54	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:54	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:54	EPA 200.8	CRL
Selenium	8.77	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:54	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:54	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.876	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:15	EPA 200.7	HRD
Calcium	91.0	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:13	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:13	EPA 200.7	HRD

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Amended Report

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-01a-1

MCF0235-27 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0671	6/28/17 14:21	6/29/17 14:19	EPA 245.1, 7470A	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

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MCF0235-28 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	1.85	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 14:59	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 14:59	EPA 300.0	CRL
Sulfate	18.0	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 14:59	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:43	SM 4500-H+ B	CRL
Total Dissolved Solids	282	20.0	mg/L		1	BCF0584	6/27/17 9:29	6/27/17 9:29	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:58	EPA 200.8	CRL
Barium	50.4	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:58	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:58	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:58	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:58	EPA 200.8	CRL
Chromium	0.931	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:58	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:58	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:58	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:58	EPA 200.8	CRL
Selenium	0.890	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:58	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 9:58	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.183	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:21	EPA 200.7	HRD
Calcium	61.3	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:19	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:19	EPA 200.7	HRD

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Amended Report

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

P-156

MCF0235-28 (Water) - Chain of Custody Number: 2052847/2125436/2125438

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCF0671	6/28/17 14:21	6/29/17 14:21	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0596 - Wet Prep										
Blank (BCF0596-BLK1)				Prepared & Analyzed: 06/27/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCF0596-BLK2)				Prepared & Analyzed: 06/27/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCF0596-BS1)				Prepared & Analyzed: 06/27/2017						
Chloride	24.3	1.00	mg/L	25.000		97.1	90-110			
Fluoride	5.21	0.750	mg/L	5.0000		104	90-110			
Sulfate	99.1	1.00	mg/L	100.00		99.1	90-110			
LCS (BCF0596-BS2)				Prepared & Analyzed: 06/27/2017						
Chloride	24.3	1.00	mg/L	25.000		97.1	90-110			
Fluoride	5.08	0.750	mg/L	5.0000		102	90-110			
Sulfate	97.9	1.00	mg/L	100.00		97.9	90-110			
LCS (BCF0596-BS3)				Prepared & Analyzed: 06/27/2017						
Chloride	24.3	1.00	mg/L	25.000		97.2	90-110			
Fluoride	5.04	0.750	mg/L	5.0000		101	90-110			
Sulfate	97.0	1.00	mg/L	100.00		97.0	90-110			
Duplicate (BCF0596-DUP1)		**Source: MCF0235-03**		Prepared & Analyzed: 06/27/2017						
Chloride	0.649	1.00	mg/L		0.660			1.68	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	8.30	1.00	mg/L		8.15			1.82	20	

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0596 - Wet Prep										
Duplicate (BCF0596-DUP2)		**Source: MCF0235-04**		Prepared & Analyzed: 06/27/2017						
Chloride	1.15	1.00	mg/L		1.15			0.261	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	10.5	1.00	mg/L		10.5			0.142	20	
Matrix Spike (BCF0596-MS1)		**Source: MCF0235-03**		Prepared & Analyzed: 06/27/2017						
Chloride	12.4	1.00	mg/L	12.500	0.660	93.6	80-120			
Fluoride	2.60	0.750	mg/L	2.5000	<0.750	104	80-120			
Sulfate	58.3	1.00	mg/L	50.000	8.15	100	80-120			
Matrix Spike (BCF0596-MS2)		**Source: MCF0235-04**		Prepared & Analyzed: 06/27/2017						
Chloride	12.6	1.00	mg/L	12.500	1.15	91.4	80-120			
Fluoride	2.49	0.750	mg/L	2.5000	<0.750	99.5	80-120			
Sulfate	59.9	1.00	mg/L	50.000	10.5	98.8	80-120			
Matrix Spike Dup (BCF0596-MSD1)		**Source: MCF0235-03**		Prepared & Analyzed: 06/27/2017						
Chloride	12.1	1.00	mg/L	12.500	0.660	91.8	80-120	1.82	20	
Fluoride	2.45	0.750	mg/L	2.5000	<0.750	97.8	80-120	6.18	20	
Sulfate	58.4	1.00	mg/L	50.000	8.15	101	80-120	0.300	20	
Matrix Spike Dup (BCF0596-MSD2)		**Source: MCF0235-04**		Prepared & Analyzed: 06/27/2017						
Chloride	12.5	1.00	mg/L	12.500	1.15	91.0	80-120	0.414	20	
Fluoride	2.40	0.750	mg/L	2.5000	<0.750	95.9	80-120	3.73	20	
Sulfate	60.8	1.00	mg/L	50.000	10.5	101	80-120	1.42	20	
Batch BCF0625 - Wet Prep										
Blank (BCF0625-BLK1)				Prepared & Analyzed: 06/28/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0625 - Wet Prep										
Blank (BCF0625-BLK2)				Prepared & Analyzed: 06/28/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCF0625-BS1)				Prepared & Analyzed: 06/28/2017						
Chloride	24.3	1.00	mg/L	25.000		97.3	90-110			
Fluoride	4.87	0.750	mg/L	5.0000		97.3	90-110			
Sulfate	99.1	1.00	mg/L	100.00		99.1	90-110			
LCS (BCF0625-BS2)				Prepared & Analyzed: 06/28/2017						
Chloride	24.3	1.00	mg/L	25.000		97.2	90-110			
Fluoride	4.49	0.750	mg/L	5.0000		89.8	90-110			
Sulfate	95.8	1.00	mg/L	100.00		95.8	90-110			
LCS (BCF0625-BS3)				Prepared & Analyzed: 06/28/2017						
Chloride	24.3	1.00	mg/L	25.000		97.1	90-110			
Fluoride	5.16	0.750	mg/L	5.0000		103	90-110			
Sulfate	100	1.00	mg/L	100.00		100	90-110			
Duplicate (BCF0625-DUP1)		**Source: MCF0235-30**		Prepared & Analyzed: 06/28/2017						
Chloride	0.423	1.00	mg/L		0.439			3.71	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	2.37	1.00	mg/L		2.66			11.5	20	
Duplicate (BCF0625-DUP2)		**Source: MCF0235-31**		Prepared & Analyzed: 06/28/2017						
Chloride	1.95	1.00	mg/L		1.95			0.102	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	18.6	1.00	mg/L		18.5			0.167	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0625 - Wet Prep										
Matrix Spike (BCF0625-MS1)		**Source: MCF0235-30**		Prepared & Analyzed: 06/28/2017						
Chloride	12.3	1.00	mg/L	12.500	0.439	95.0	80-120			
Fluoride	2.18	0.750	mg/L	2.5000	<0.750	87.2	80-120			
Sulfate	51.8	1.00	mg/L	50.000	2.66	98.4	80-120			
Matrix Spike (BCF0625-MS2)		**Source: MCF0235-31**		Prepared & Analyzed: 06/28/2017						
Chloride	13.5	1.00	mg/L	12.500	1.95	92.1	80-120			
Fluoride	2.05	0.750	mg/L	2.5000	<0.750	82.0	80-120			
Sulfate	67.6	1.00	mg/L	50.000	18.5	98.1	80-120			
Matrix Spike Dup (BCF0625-MSD1)		**Source: MCF0235-30**		Prepared & Analyzed: 06/28/2017						
Chloride	12.2	1.00	mg/L	12.500	0.439	94.5	80-120	0.562	20	
Fluoride	2.16	0.750	mg/L	2.5000	<0.750	86.2	80-120	1.20	20	
Sulfate	51.7	1.00	mg/L	50.000	2.66	98.1	80-120	0.321	20	
Matrix Spike Dup (BCF0625-MSD2)		**Source: MCF0235-31**		Prepared & Analyzed: 06/28/2017						
Chloride	13.6	1.00	mg/L	12.500	1.95	92.9	80-120	0.740	20	
Fluoride	2.23	0.750	mg/L	2.5000	<0.750	89.2	80-120	8.46	20	
Sulfate	66.9	1.00	mg/L	50.000	18.5	96.8	80-120	0.993	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0525 - Wet Prep										
LCS (BCF0525-BS1)				Prepared & Analyzed: 06/22/2017						
pH	7.04		pH Units	7.0000		101	90-110			
LCS (BCF0525-BS2)				Prepared & Analyzed: 06/22/2017						
pH	7.16		pH Units	7.0000		102	90-110			
Duplicate (BCF0525-DUP1)		**Source: MCF0235-02**		Prepared & Analyzed: 06/22/2017						
pH	7.75		pH Units		7.82			0.899	20	
Duplicate (BCF0525-DUP2)		**Source: MCF0235-11**		Prepared & Analyzed: 06/22/2017						
pH	7.80		pH Units		7.80			0.00	20	
Duplicate (BCF0525-DUP3)		**Source: MCF0235-21**		Prepared & Analyzed: 06/22/2017						
pH	7.68		pH Units		7.70			0.260	20	
Duplicate (BCF0525-DUP4)		**Source: MCF0235-31**		Prepared & Analyzed: 06/22/2017						
pH	7.86		pH Units		7.89			0.381	20	
Batch BCF0527 - Wet Prep										
Blank (BCF0527-BLK1)				Prepared & Analyzed: 06/23/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCF0527-DUP1)		**Source: MCF0235-02**		Prepared & Analyzed: 06/23/2017						
Total Dissolved Solids	230	20.0	mg/L		240			4.26	20	
Batch BCF0563 - Wet Prep										
Blank (BCF0563-BLK1)				Prepared & Analyzed: 06/27/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0563 - Wet Prep										
Duplicate (BCF0563-DUP1)		**Source: MCF0235-11**		Prepared & Analyzed: 06/27/2017						
Total Dissolved Solids	360	20.0	mg/L		372			3.28	20	
Batch BCF0584 - Wet Prep										
Blank (BCF0584-BLK1)				Prepared & Analyzed: 06/27/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCF0584-DUP1)		**Source: MCF0235-20**		Prepared & Analyzed: 06/27/2017						
Total Dissolved Solids	336	20.0	mg/L		336			0.00	20	
Batch BCF0614 - Wet Prep										
Blank (BCF0614-BLK1)				Prepared & Analyzed: 06/28/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCF0614-DUP1)		**Source: MCF0235-30**		Prepared & Analyzed: 06/28/2017						
Total Dissolved Solids	102	20.0	mg/L		106			3.85	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0522 - EPA 200.2, EPA 3005										
Blank (BCF0522-BLK1)				Prepared: 06/22/2017 Analyzed: 06/23/2017						
Cobalt	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
LCS (BCF0522-BS1)				Prepared: 06/22/2017 Analyzed: 06/23/2017						
Selenium	98.3	0.500	ug/L	100.00		98.3	85-115			
Beryllium	102	0.500	ug/L	100.00		102	85-115			
Cobalt	102	0.500	ug/L	100.00		102	85-115			
Molybdenum	100	0.500	ug/L	100.00		100	85-115			
Cadmium	99.9	0.500	ug/L	100.00		99.9	85-115			
Barium	98.4	0.500	ug/L	100.00		98.4	85-115			
Antimony	99.7	0.500	ug/L	100.00		99.7	85-115			
Arsenic	98.5	0.500	ug/L	100.00		98.5	85-115			
Lead	101	0.500	ug/L	100.00		101	85-115			
Thallium	102	0.500	ug/L	100.00		102	85-115			
Chromium	101	0.500	ug/L	100.00		101	85-115			
Duplicate (BCF0522-DUP1)		**Source: MCF0235-04**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Cadmium	0.0476	0.500	ug/L		<0.500				20	
Chromium	0.866	0.500	ug/L		0.871			0.647	20	
Selenium	0.0841	0.500	ug/L		0.131			43.7	20	M_D-RL
Cobalt	0.0467	0.500	ug/L		0.0305			42.1	20	M_D-RL
Thallium	0.0745	0.500	ug/L		0.0190			119	20	M_D-RL
Antimony	0.0872	0.500	ug/L		0.0599			37.2	20	M_D-RL
Arsenic	0.362	0.500	ug/L		0.346			4.41	20	
Lead	0.0222	0.500	ug/L		<0.500				20	
Barium	94.6	0.500	ug/L		96.6			2.07	20	
Molybdenum	0.170	0.500	ug/L		0.115			39.0	20	M_D-RL
Beryllium	0.0273	0.500	ug/L		<0.500				20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0522 - EPA 200.2, EPA 3005										
Duplicate (BCF0522-DUP2)		**Source: MCF0235-05**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Cadmium	0.0243	0.500	ug/L		<0.500				20	
Thallium	0.0255	0.500	ug/L		0.0169			40.7	20	M_D-RL
Chromium	0.803	0.500	ug/L		0.883			9.48	20	
Antimony	0.0680	0.500	ug/L		0.0541			22.7	20	M_D-RL
Lead	0.0262	0.500	ug/L		<0.500				20	
Selenium	0.222	0.500	ug/L		0.253			13.3	20	
Barium	77.9	0.500	ug/L		79.2			1.71	20	
Arsenic	0.513	0.500	ug/L		0.494			3.89	20	
Beryllium	<0.500	0.500	ug/L		<0.500				20	
Cobalt	0.0330	0.500	ug/L		<0.500				20	
Molybdenum	0.263	0.500	ug/L		0.250			5.13	20	
Matrix Spike (BCF0522-MS1)		**Source: MCF0235-04**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Selenium	101	0.500	ug/L	100.00	0.131	101	70-130			
Thallium	98.3	0.500	ug/L	100.00	0.0190	98.2	70-130			
Barium	196	0.500	ug/L	100.00	96.6	99.2	70-130			
Cobalt	102	0.500	ug/L	100.00	0.0305	102	70-130			
Chromium	100	0.500	ug/L	100.00	0.871	99.2	70-130			
Molybdenum	100	0.500	ug/L	100.00	0.115	99.9	70-130			
Lead	95.1	0.500	ug/L	100.00	<0.500	95.1	70-130			
Cadmium	97.4	0.500	ug/L	100.00	<0.500	97.4	70-130			
Arsenic	103	0.500	ug/L	100.00	0.346	103	70-130			
Beryllium	102	0.500	ug/L	100.00	<0.500	102	70-130			
Antimony	101	0.500	ug/L	100.00	0.0599	101	70-130			
Matrix Spike (BCF0522-MS2)		**Source: MCF0235-05**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Antimony	96.2	0.500	ug/L	100.00	0.0541	96.1	70-130			
Cobalt	101	0.500	ug/L	100.00	<0.500	101	70-130			
Arsenic	98.5	0.500	ug/L	100.00	0.494	98.0	70-130			
Selenium	102	0.500	ug/L	100.00	0.253	101	70-130			
Chromium	99.4	0.500	ug/L	100.00	0.883	98.5	70-130			
Thallium	93.4	0.500	ug/L	100.00	0.0169	93.4	70-130			
Barium	173	0.500	ug/L	100.00	79.2	93.3	70-130			
Molybdenum	94.5	0.500	ug/L	100.00	0.250	94.3	70-130			
Cadmium	97.0	0.500	ug/L	100.00	<0.500	97.0	70-130			
Lead	91.4	0.500	ug/L	100.00	<0.500	91.4	70-130			
Beryllium	104	0.500	ug/L	100.00	<0.500	104	70-130			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0522 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCF0522-MSD1)		**Source: MCF0235-04**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Beryllium	100	0.500	ug/L	100.00	<0.500	100	70-130	2.23	20	
Chromium	104	0.500	ug/L	100.00	0.871	103	70-130	3.41	20	
Selenium	105	0.500	ug/L	100.00	0.131	105	70-130	4.29	20	
Antimony	100	0.500	ug/L	100.00	0.0599	100	70-130	0.643	20	
Cadmium	97.8	0.500	ug/L	100.00	<0.500	97.8	70-130	0.456	20	
Arsenic	101	0.500	ug/L	100.00	0.346	101	70-130	1.84	20	
Molybdenum	99.0	0.500	ug/L	100.00	0.115	98.9	70-130	1.02	20	
Lead	95.2	0.500	ug/L	100.00	<0.500	95.2	70-130	0.0973	20	
Thallium	97.4	0.500	ug/L	100.00	0.0190	97.4	70-130	0.890	20	
Barium	196	0.500	ug/L	100.00	96.6	99.1	70-130	0.0462	20	
Cobalt	103	0.500	ug/L	100.00	0.0305	103	70-130	0.643	20	
Matrix Spike Dup (BCF0522-MSD2)		**Source: MCF0235-05**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Molybdenum	96.0	0.500	ug/L	100.00	0.250	95.8	70-130	1.61	20	
Cadmium	93.8	0.500	ug/L	100.00	<0.500	93.8	70-130	3.45	20	
Arsenic	99.3	0.500	ug/L	100.00	0.494	98.8	70-130	0.838	20	
Selenium	97.8	0.500	ug/L	100.00	0.253	97.6	70-130	3.86	20	
Thallium	94.2	0.500	ug/L	100.00	0.0169	94.1	70-130	0.785	20	
Lead	92.2	0.500	ug/L	100.00	<0.500	92.2	70-130	0.900	20	
Chromium	99.5	0.500	ug/L	100.00	0.883	98.6	70-130	0.0756	20	
Beryllium	106	0.500	ug/L	100.00	<0.500	106	70-130	2.22	20	
Cobalt	98.7	0.500	ug/L	100.00	<0.500	98.7	70-130	2.56	20	
Antimony	99.2	0.500	ug/L	100.00	0.0541	99.1	70-130	3.05	20	
Barium	175	0.500	ug/L	100.00	79.2	95.8	70-130	1.44	20	
Batch BCF0569 - EPA 200.2, EPA 3005										
Blank (BCF0569-BLK1)				Prepared: 06/26/2017 Analyzed: 06/27/2017						
Barium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0569 - EPA 200.2, EPA 3005										
LCS (BCF0569-BS1)				Prepared: 06/26/2017 Analyzed: 06/27/2017						
Beryllium	99.6	0.500	ug/L	100.00		99.6	85-115			
Chromium	105	0.500	ug/L	100.00		105	85-115			
Selenium	97.8	0.500	ug/L	100.00		97.8	85-115			
Arsenic	101	0.500	ug/L	100.00		101	85-115			
Antimony	100	0.500	ug/L	100.00		100	85-115			
Barium	101	0.500	ug/L	100.00		101	85-115			
Cobalt	103	0.500	ug/L	100.00		103	85-115			
Lead	102	0.500	ug/L	100.00		102	85-115			
Cadmium	98.2	0.500	ug/L	100.00		98.2	85-115			
Thallium	102	0.500	ug/L	100.00		102	85-115			
Molybdenum	103	0.500	ug/L	100.00		103	85-115			
Duplicate (BCF0569-DUP1)		**Source: MCF0235-23**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Arsenic	0.240	0.500	ug/L		0.250			4.15	20	
Cobalt	0.0487	0.500	ug/L		0.0421			14.5	20	
Thallium	0.0646	0.500	ug/L		<0.500				20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Antimony	0.0751	0.500	ug/L		0.0356			71.5	20	M_D-RL
Beryllium	0.120	0.500	ug/L		<0.500				20	
Chromium	1.36	0.500	ug/L		1.36			0.649	20	
Lead	0.0301	0.500	ug/L		<0.500				20	
Selenium	2.30	0.500	ug/L		2.24			2.66	20	
Molybdenum	0.845	0.500	ug/L		0.794			6.20	20	
Barium	51.1	0.500	ug/L		49.9			2.40	20	
Duplicate (BCF0569-DUP2)		**Source: MCF0235-24**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Thallium	<0.500	0.500	ug/L		<0.500				20	
Antimony	0.0399	0.500	ug/L		0.0338			16.7	20	
Cobalt	0.0370	0.500	ug/L		<0.500				20	
Beryllium	<0.500	0.500	ug/L		<0.500				20	
Arsenic	0.495	0.500	ug/L		0.494			0.347	20	
Chromium	0.934	0.500	ug/L		0.992			6.05	20	
Molybdenum	0.166	0.500	ug/L		0.159			4.65	20	
Selenium	0.928	0.500	ug/L		0.970			4.37	20	
Barium	61.3	0.500	ug/L		60.9			0.531	20	
Lead	0.0180	0.500	ug/L		<0.500				20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0569 - EPA 200.2, EPA 3005										
Matrix Spike (BCF0569-MS1)		**Source: MCF0235-23**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Barium	158	0.500	ug/L	100.00	49.9	108	70-130			
Beryllium	97.1	0.500	ug/L	100.00	<0.500	97.1	70-130			
Chromium	104	0.500	ug/L	100.00	1.36	103	70-130			
Selenium	103	0.500	ug/L	100.00	2.24	100	70-130			
Arsenic	105	0.500	ug/L	100.00	0.250	105	70-130			
Cobalt	100	0.500	ug/L	100.00	0.0421	100	70-130			
Thallium	99.1	0.500	ug/L	100.00	<0.500	99.1	70-130			
Antimony	102	0.500	ug/L	100.00	0.0356	102	70-130			
Cadmium	95.6	0.500	ug/L	100.00	<0.500	95.6	70-130			
Molybdenum	104	0.500	ug/L	100.00	0.794	103	70-130			
Lead	95.8	0.500	ug/L	100.00	<0.500	95.8	70-130			
Matrix Spike (BCF0569-MS2)		**Source: MCF0235-24**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Cadmium	95.9	0.500	ug/L	100.00	<0.500	95.9	70-130			
Barium	164	0.500	ug/L	100.00	60.9	104	70-130			
Thallium	97.7	0.500	ug/L	100.00	<0.500	97.7	70-130			
Molybdenum	103	0.500	ug/L	100.00	0.159	103	70-130			
Chromium	103	0.500	ug/L	100.00	0.992	102	70-130			
Lead	94.1	0.500	ug/L	100.00	<0.500	94.1	70-130			
Beryllium	96.9	0.500	ug/L	100.00	<0.500	96.9	70-130			
Antimony	101	0.500	ug/L	100.00	0.0338	101	70-130			
Selenium	100	0.500	ug/L	100.00	0.970	99.2	70-130			
Arsenic	105	0.500	ug/L	100.00	0.494	104	70-130			
Cobalt	99.8	0.500	ug/L	100.00	<0.500	99.8	70-130			
Matrix Spike Dup (BCF0569-MSD1)		**Source: MCF0235-23**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Chromium	102	0.500	ug/L	100.00	1.36	100	70-130	2.64	20	
Thallium	96.8	0.500	ug/L	100.00	<0.500	96.8	70-130	2.30	20	
Barium	154	0.500	ug/L	100.00	49.9	104	70-130	2.56	20	
Selenium	101	0.500	ug/L	100.00	2.24	99.2	70-130	1.07	20	
Cobalt	97.7	0.500	ug/L	100.00	0.0421	97.7	70-130	2.81	20	
Beryllium	95.3	0.500	ug/L	100.00	<0.500	95.3	70-130	1.87	20	
Arsenic	106	0.500	ug/L	100.00	0.250	106	70-130	1.13	20	
Antimony	102	0.500	ug/L	100.00	0.0356	102	70-130	0.600	20	
Cadmium	96.6	0.500	ug/L	100.00	<0.500	96.6	70-130	1.08	20	
Lead	93.5	0.500	ug/L	100.00	<0.500	93.5	70-130	2.46	20	
Molybdenum	105	0.500	ug/L	100.00	0.794	104	70-130	0.744	20	

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0569 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCF0569-MSD2)		**Source: MCF0235-24**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Molybdenum	104	0.500	ug/L	100.00	0.159	104	70-130	0.835	20	
Lead	94.6	0.500	ug/L	100.00	<0.500	94.6	70-130	0.550	20	
Barium	166	0.500	ug/L	100.00	60.9	105	70-130	0.822	20	
Antimony	103	0.500	ug/L	100.00	0.0338	103	70-130	1.56	20	
Cadmium	96.3	0.500	ug/L	100.00	<0.500	96.3	70-130	0.426	20	
Beryllium	96.7	0.500	ug/L	100.00	<0.500	96.7	70-130	0.261	20	
Thallium	98.3	0.500	ug/L	100.00	<0.500	98.3	70-130	0.572	20	
Arsenic	106	0.500	ug/L	100.00	0.494	106	70-130	1.54	20	
Cobalt	101	0.500	ug/L	100.00	<0.500	101	70-130	0.848	20	
Selenium	99.3	0.500	ug/L	100.00	0.970	98.3	70-130	0.830	20	
Chromium	104	0.500	ug/L	100.00	0.992	103	70-130	1.55	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0521 - EPA 200.2, EPA 3005										
Blank (BCF0521-BLK1)				Prepared: 06/22/2017 Analyzed: 06/23/2017						
Boron	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
LCS (BCF0521-BS1)				Prepared: 06/22/2017 Analyzed: 06/23/2017						
Boron	1.02	0.0500	mg/L	1.0000		102	85-115			
Lithium	1.04	0.0500	mg/L	1.0000		104	85-115			
Calcium	103	0.500	mg/L	100.00		103	85-115			
Duplicate (BCF0521-DUP1)		**Source: MCF0235-02**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Calcium	52.0	0.500	mg/L		52.0			0.00481	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Boron	<0.0500	0.0500	mg/L		<0.0500				20	
Duplicate (BCF0521-DUP2)		**Source: MCF0235-03**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Calcium	51.3	0.500	mg/L		51.2			0.289	20	
Boron	0.0497	0.0500	mg/L		0.0502			1.05	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Matrix Spike (BCF0521-MS1)		**Source: MCF0235-02**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Calcium	157	0.500	mg/L	100.00	52.0	105	70-130			
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125			
Boron	1.06	0.0500	mg/L	1.0000	<0.0500	106	70-130			
Matrix Spike (BCF0521-MS2)		**Source: MCF0235-03**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Boron	1.10	0.0500	mg/L	1.0000	0.0502	105	70-130			
Lithium	1.05	0.0500	mg/L	1.0000	<0.0500	105	75-125			
Calcium	159	0.500	mg/L	100.00	51.2	108	70-130			

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0521 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCF0521-MSD1)		**Source: MCF0235-02**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125	0.515	20	
Calcium	158	0.500	mg/L	100.00	52.0	106	70-130	0.960	20	
Boron	1.06	0.0500	mg/L	1.0000	<0.0500	106	70-130	0.0887	20	
Matrix Spike Dup (BCF0521-MSD2)		**Source: MCF0235-03**		Prepared: 06/22/2017 Analyzed: 06/23/2017						
Calcium	158	0.500	mg/L	100.00	51.2	107	70-130	0.255	20	
Boron	1.12	0.0500	mg/L	1.0000	0.0502	107	70-130	2.06	20	
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125	0.590	20	
Batch BCF0568 - EPA 200.2, EPA 3005										
Blank (BCF0568-BLK1)				Prepared: 06/26/2017 Analyzed: 06/27/2017						
Calcium	<0.500	0.500	mg/L							
Boron	<0.0500	0.0500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
LCS (BCF0568-BS1)				Prepared: 06/26/2017 Analyzed: 06/27/2017						
Boron	0.990	0.0500	mg/L	1.0000		99.0	85-115			
Lithium	1.00	0.0500	mg/L	1.0000		100	85-115			
Calcium	101	0.500	mg/L	100.00		101	85-115			
Duplicate (BCF0568-DUP1)		**Source: MCF0235-21**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Calcium	76.0	0.500	mg/L		75.8			0.211	20	
Boron	0.446	0.0500	mg/L		0.454			1.59	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Duplicate (BCF0568-DUP2)		**Source: MCF0235-22**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Boron	0.448	0.0500	mg/L		0.452			0.750	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	76.6	0.500	mg/L		76.8			0.308	20	

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0568 - EPA 200.2, EPA 3005										
Matrix Spike (BCF0568-MS1)		**Source: MCF0235-21**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125			
Calcium	184	0.500	mg/L	100.00	75.8	108	70-130			
Boron	1.46	0.0500	mg/L	1.0000	0.454	101	70-130			
Matrix Spike (BCF0568-MS2)		**Source: MCF0235-22**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Calcium	182	0.500	mg/L	100.00	76.8	105	70-130			
Boron	1.54	0.0500	mg/L	1.0000	0.452	108	70-130			
Lithium	1.01	0.0500	mg/L	1.0000	<0.0500	101	75-125			
Matrix Spike Dup (BCF0568-MSD1)		**Source: MCF0235-21**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125	0.244	20	
Boron	1.48	0.0500	mg/L	1.0000	0.454	103	70-130	1.26	20	
Calcium	184	0.500	mg/L	100.00	75.8	108	70-130	0.138	20	
Matrix Spike Dup (BCF0568-MSD2)		**Source: MCF0235-22**		Prepared: 06/26/2017 Analyzed: 06/27/2017						
Calcium	185	0.500	mg/L	100.00	76.8	108	70-130	1.47	20	
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125	1.49	20	
Boron	1.48	0.0500	mg/L	1.0000	0.452	103	70-130	3.41	20	

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Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0570 - EPA 245.1, EPA 7470A										
Blank (BCF0570-BLK1)				Prepared & Analyzed: 06/26/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCF0570-BS1)				Prepared & Analyzed: 06/26/2017						
Mercury	2.87	0.200	ug/L	3.0000		95.6	85-115			
Duplicate (BCF0570-DUP1)		**Source: MCF0235-06**		Prepared & Analyzed: 06/26/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCF0570-DUP2)		**Source: MCF0235-07**		Prepared & Analyzed: 06/26/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCF0570-MS1)		**Source: MCF0235-06**		Prepared & Analyzed: 06/26/2017						
Mercury	2.77	0.200	ug/L	3.0000	<0.200	92.3	70-130			
Matrix Spike (BCF0570-MS2)		**Source: MCF0235-07**		Prepared & Analyzed: 06/26/2017						
Mercury	2.69	0.200	ug/L	3.0000	<0.200	89.7	70-130			
Matrix Spike Dup (BCF0570-MSD1)		**Source: MCF0235-06**		Prepared & Analyzed: 06/26/2017						
Mercury	2.76	0.200	ug/L	3.0000	<0.200	91.8	70-130	0.467	20	
Matrix Spike Dup (BCF0570-MSD2)		**Source: MCF0235-07**		Prepared & Analyzed: 06/26/2017						
Mercury	2.69	0.200	ug/L	3.0000	<0.200	89.6	70-130	0.0929	20	
Batch BCF0671 - EPA 245.1, EPA 7470A										
Blank (BCF0671-BLK1)				Prepared: 06/28/2017 Analyzed: 06/29/2017						
Mercury	<0.200	0.200	ug/L							

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Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Minneapolis Testing Laboratory
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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCF0671 - EPA 245.1, EPA 7470A										
LCS (BCF0671-BS1)				Prepared: 06/28/2017 Analyzed: 06/29/2017						
Mercury	2.87	0.200	ug/L	3.0000		95.7	85-115			
Duplicate (BCF0671-DUP1)		**Source: MCF0235-25**		Prepared: 06/28/2017 Analyzed: 06/29/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCF0671-DUP2)		**Source: MCF0235-26**		Prepared: 06/28/2017 Analyzed: 06/29/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCF0671-MS1)		**Source: MCF0235-25**		Prepared: 06/28/2017 Analyzed: 06/29/2017						
Mercury	3.02	0.200	ug/L	3.0000	<0.200	101	70-130			
Matrix Spike (BCF0671-MS2)		**Source: MCF0235-26**		Prepared: 06/28/2017 Analyzed: 06/29/2017						
Mercury	2.93	0.200	ug/L	3.0000	<0.200	97.6	70-130			
Matrix Spike Dup (BCF0671-MSD1)		**Source: MCF0235-25**		Prepared: 06/28/2017 Analyzed: 06/29/2017						
Mercury	2.96	0.200	ug/L	3.0000	<0.200	98.7	70-130	2.04	20	
Matrix Spike Dup (BCF0671-MSD2)		**Source: MCF0235-26**		Prepared: 06/28/2017 Analyzed: 06/29/2017						
Mercury	2.94	0.200	ug/L	3.0000	<0.200	98.1	70-130	0.579	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCF0235 Xcel General Report FINAL 07 05 2017 0853 07 05 2017 0708

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:27

Qualifiers and Definitions

M_TTT	Sample received at the lab outside of required hold time.
M_D-RL	The RPD for the sample duplicate was outside of QC acceptance limits due to<RL.
Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 3

2052847

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, June 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Rinse	WT				6/19/17	1135		4	1	1	2							✓		
2	P-150						1220		4	1	1	2							✓		
3	P-152a						1325		4	1	1	2							✓		
4	P-130						1420		4	1	1	2							✓		
5	P-131						1530		4	1	1	2							✓		
6	P-154a						1640		4	1	1	2							✓		
7	P-132						1740		4	1	1	2							✓		
8	P-74-1	WT				6/20/17	0825		4	1	1	2							✓		
9	P-73a-1						0900		4	1	1	2							✓		
10	P-125						0950		4	1	1	2							✓		
11	P-141						1040		4	1	1	2							✓		
12	P-134						1135		4	1	1	2							✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1.) Marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	6/22/17	1230	Xcel / W	6/22/17	1240	4.5°C

M400341

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	✓	✓	✓

pHstrpMB00508 ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 6-20-17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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Page: 2 of 3

2125436

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, June 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-138A	WT				6/20/17	1245		4	1	1	2							✓		
2	P-137A						1340		4	1	1	2							✓		
3	P-117						1430		4	1	1	2							✓		
4	P-75-1						1525		4	1	1	2							✓		
5	P-97						1620		4	1	1	2							✓		
6	P-98						1720		4	1	1	2							✓		
7	P-120						1830		4	1	1	2							✓		
8	P-17	WT				6/21/17	0910		4	1	1	2							✓		
9	P-158						1000		4	1	1	2							✓		
10	Duplicate						1000		4	1	1	2							✓		
11	P-157						1050		4	1	1	2							✓		
12	P-23						1220		4	1	1	2							✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1. Marked HNO3 bottles filtered and unfiltered	David Anderson/Pace	6/22/17	1230	[signature] XCEL	6/22/17	1240	MY00341: 4.5°C	Y	Y	Y

pH strips MB00508 ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 6-21-17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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Page: 3 of 3

2125438

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, June 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-22	WT				6/21/17	1330		4	1	1	2							✓		
2	P-155						1420		4	1	1	2							✓		
3	P-01a-1						1500		4	1	1	2							✓		
4	P-156						1550		4	1	1	2							✓		
5	P-151						1700		4	1	1	2							✓		
6	P-153						1810		4	1	1	2							✓		
7	P-165	WT				6/22/17	0825		4	1	1	2							✓		
8	P-162						0910		4	1	1	2							✓		
9	P-163						0950		4	1	1	2							✓		
10	P-164						1040		4	1	1	2							✓		
11																					
12	DJA 6/22/17																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
(1) marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	6/22/17	1230	[signature] / Xcel	6/22/17	1240	4.5°C M400841	Y	Y	Y

pH strips MB00588 ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 6/22/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

July 14, 2017

Dave Anderson
Pace Analytical Services - Field Svcs Division
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Dear Dave Anderson:
Enclosed are the analytical results for sample(s) received by the laboratory on June 23, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Robbin Robl
robbin.robl@pacelabs.com
(724)850-5613
Project Manager

Enclosures

cc: Harry S. Davis III, Xcel Energy
Charles A. Donkers, Xcel Energy
Sylvia Hunter, Pace Analytical Services - Field Svcs Division
Christine M. Keefe, Xcel Energy
Ciara Ruikkie, Pace Analytical Services - Field Svcs Division

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30222501001	**P-150**	Water	06/19/17 12:20	06/23/17 10:00
30222501002	**P-152a**	Water	06/19/17 13:25	06/23/17 10:00
30222501003	**P-130**	Water	06/19/17 14:20	06/23/17 10:00
30222501004	**P-131**	Water	06/19/17 15:30	06/23/17 10:00
30222501005	**P-154a**	Water	06/19/17 16:40	06/23/17 10:00
30222501006	**P-132**	Water	06/19/17 17:40	06/23/17 10:00
30222501007	**P-74-1**	Water	06/20/17 08:25	06/23/17 10:00
30222501008	**P-73a-1**	Water	06/20/17 09:00	06/23/17 10:00
30222501009	**P-125**	Water	06/20/17 09:50	06/23/17 10:00
30222501010	**P-141**	Water	06/20/17 10:40	06/23/17 10:00
30222501011	**P-134**	Water	06/20/17 11:35	06/23/17 10:00
30222501012	**P-138A**	Water	06/20/17 12:45	06/23/17 10:00
30222501013	**P-137A**	Water	06/20/17 13:40	06/23/17 10:00
30222501014	**P-117**	Water	06/20/17 14:30	06/23/17 10:00
30222501015	**P-75-1**	Water	06/20/17 15:25	06/23/17 10:00
30222501016	**P-97**	Water	06/20/17 16:20	06/23/17 10:00
30222501017	**P-98**	Water	06/20/17 17:20	06/23/17 10:00
30222501018	**P-120**	Water	06/20/17 18:30	06/23/17 10:00
30222501019	**P-17**	Water	06/21/17 09:10	06/23/17 10:00
30222501020	**P-158**	Water	06/21/17 10:00	06/23/17 10:00
30222501021	**P-157**	Water	06/21/17 10:50	06/23/17 10:00
30222501022	**P-23**	Water	06/21/17 12:20	06/23/17 10:00
30222501023	**P-22**	Water	06/21/17 13:30	06/23/17 10:00
30222501024	**P-155**	Water	06/21/17 14:20	06/23/17 10:00
30222501025	**P-01a-1**	Water	06/21/17 15:00	06/23/17 10:00
30222501026	**P-156**	Water	06/21/17 15:50	06/23/17 10:00
30222501027	**P-151**	Water	06/21/17 17:00	06/23/17 10:00
30222501028	**P-153**	Water	06/21/17 18:10	06/23/17 10:00
30222501029	**P-165**	Water	06/22/17 08:25	06/23/17 10:00
30222501030	**P-162**	Water	06/22/17 09:10	06/23/17 10:00
30222501031	**P-163**	Water	06/22/17 09:50	06/23/17 10:00
30222501032	**P-164**	Water	06/22/17 10:40	06/23/17 10:00

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30222501001	**P-150**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501002	**P-152a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501003	**P-130**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501004	**P-131**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501005	**P-154a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501006	**P-132**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501007	**P-74-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501008	**P-73a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501009	**P-125**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501010	**P-141**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501011	**P-134**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501012	**P-138A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501013	**P-137A**	EPA 903.1	WRR	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501014	**P-117**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501015	**P-75-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501016	**P-97**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501017	**P-98**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501018	**P-120**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501019	**P-17**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501020	**P-158**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501021	**P-157**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501022	**P-23**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501023	**P-22**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501024	**P-155**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501025	**P-01a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Total Radium Calculation	RMK	1	PASI-PA
30222501026	**P-156**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501027	**P-151**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501028	**P-153**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501029	**P-165**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501030	**P-162**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501031	**P-163**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30222501032	**P-164**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

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PROJECT NARRATIVE

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Pace-MN Field Services Division
Date: July 14, 2017

General Information:
32 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Pace-MN Field Services Division
Date: July 14, 2017

General Information:
32 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 263421

1c: Analyte detected in MB above the RL and associated MDC. Samples with results below the RL of 1.0 pCi/L or sample associated MDC are reportable without additional qualification.

- BLANK (Lab ID: 1297573)
  - Radium-228

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PROJECT NARRATIVE

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Pace-MN Field Services Division
Date: July 14, 2017

General Information:
32 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Sample: P-150 **Lab ID: 30222501001** Collected: 06/19/17 12:20 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.999 ± 0.532 (0.459) C:NA T:85%**	pCi/L	07/06/17 10:15	13982-63-3	
Radium-228	EPA 904.0	**0.327 ± 0.300 (0.607) C:78% T:90%**	pCi/L	07/11/17 12:10	15262-20-1	
Total Radium	Total Radium Calculation	**1.33 ± 0.832 (1.07)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-152a **Lab ID: 30222501002** Collected: 06/19/17 13:25 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.494 ± 0.488 (0.742) C:NA T:89%**	pCi/L	07/06/17 10:15	13982-63-3	
Radium-228	EPA 904.0	**0.381 ± 0.309 (0.612) C:80% T:89%**	pCi/L	07/11/17 12:10	15262-20-1	
Total Radium	Total Radium Calculation	**0.875 ± 0.797 (1.35)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-130 **Lab ID: 30222501003** Collected: 06/19/17 14:20 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.319 ± 0.293 (0.173) C:NA T:92%**	pCi/L	07/06/17 10:15	13982-63-3	
Radium-228	EPA 904.0	**0.661 ± 0.400 (0.748) C:79% T:83%**	pCi/L	07/11/17 12:10	15262-20-1	
Total Radium	Total Radium Calculation	**0.980 ± 0.693 (0.921)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-131 **Lab ID: 30222501004** Collected: 06/19/17 15:30 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.173 ± 0.340 (0.621) C:NA T:92%**	pCi/L	07/06/17 10:15	13982-63-3	
Radium-228	EPA 904.0	**0.364 ± 0.299 (0.593) C:79% T:92%**	pCi/L	07/11/17 15:21	15262-20-1	
Total Radium	Total Radium Calculation	**0.537 ± 0.639 (1.21)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-154a **Lab ID: 30222501005** Collected: 06/19/17 16:40 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.601 ± 0.440 (0.492) C:NA T:82%**	pCi/L	07/06/17 10:15	13982-63-3	
Radium-228	EPA 904.0	**0.351 ± 0.283 (0.555) C:78% T:94%**	pCi/L	07/11/17 15:21	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Sample: P-154a **Lab ID: 30222501005** Collected: 06/19/17 16:40 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.952 ± 0.723 (1.05)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-132 **Lab ID: 30222501006** Collected: 06/19/17 17:40 Received: 06/23/17 10:00 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 ± 0.462 (1.02) C:NA T:77%**	pCi/L	07/06/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**0.213 ± 0.300 (0.643) C:80% T:84%**	pCi/L	07/11/17 15:21	15262-20-1	
Total Radium	Total Radium Calculation	**0.213 ± 0.762 (1.66)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-74-1 **Lab ID: 30222501007** Collected: 06/20/17 08:25 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.472 ± 0.331 (0.160) C:NA T:90%**	pCi/L	07/06/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**0.267 ± 0.276 (0.569) C:79% T:98%**	pCi/L	07/11/17 15:21	15262-20-1	
Total Radium	Total Radium Calculation	**0.739 ± 0.607 (0.729)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-73a-1 **Lab ID: 30222501008** Collected: 06/20/17 09:00 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0572 ± 0.462 (0.907) C:NA T:95%**	pCi/L	07/06/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**0.0563 ± 0.318 (0.727) C:76% T:91%**	pCi/L	07/11/17 15:21	15262-20-1	
Total Radium	Total Radium Calculation	**0.114 ± 0.780 (1.63)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-125 **Lab ID: 30222501009** Collected: 06/20/17 09:50 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.120 ± 0.408 (0.788) C:NA T:87%**	pCi/L	07/06/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**0.741 ± 0.335 (0.540) C:79% T:97%**	pCi/L	07/11/17 15:21	15262-20-1	
Total Radium	Total Radium Calculation	**0.861 ± 0.743 (1.33)**	pCi/L	07/14/17 08:10	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Sample: P-141 **Lab ID: 30222501010** Collected: 06/20/17 10:40 Received: 06/23/17 10:00 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 ± 0.339 (0.566) C:NA T:90%**	pCi/L	07/06/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**0.436 ± 0.308 (0.590) C:84% T:88%**	pCi/L	07/11/17 15:22	15262-20-1	
Total Radium	Total Radium Calculation	**0.680 ± 0.647 (1.16)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-134 **Lab ID: 30222501011** Collected: 06/20/17 11:35 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.760 ± 0.453 (0.431) C:NA T:94%**	pCi/L	07/06/17 10:30	13982-63-3	
Radium-228	EPA 904.0	**0.451 ± 0.298 (0.567) C:80% T:104%**	pCi/L	07/11/17 15:22	15262-20-1	
Total Radium	Total Radium Calculation	**1.21 ± 0.751 (0.998)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-138A **Lab ID: 30222501012** Collected: 06/20/17 12:45 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0544 ± 0.413 (0.817) C:NA T:97%**	pCi/L	07/06/17 10:50	13982-63-3	
Radium-228	EPA 904.0	**0.0789 ± 0.270 (0.612) C:80% T:86%**	pCi/L	07/11/17 15:22	15262-20-1	
Total Radium	Total Radium Calculation	**0.133 ± 0.683 (1.43)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-137A **Lab ID: 30222501013** Collected: 06/20/17 13:40 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.427 ± 0.345 (0.193) C:NA T:81%**	pCi/L	07/06/17 10:50	13982-63-3	
Radium-228	EPA 904.0	**-0.0559 ± 0.267 (0.643) C:80% T:84%**	pCi/L	07/11/17 15:22	15262-20-1	
Total Radium	Total Radium Calculation	**0.427 ± 0.612 (0.836)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-117 **Lab ID: 30222501014** Collected: 06/20/17 14:30 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.238 ± 0.331 (0.553) C:NA T:88%**	pCi/L	07/06/17 10:50	13982-63-3	
Radium-228	EPA 904.0	**0.554 ± 0.326 (0.588) C:81% T:84%**	pCi/L	07/11/17 15:22	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Sample: P-117 **Lab ID: 30222501014** Collected: 06/20/17 14:30 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.792 ± 0.657 (1.14)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-75-1 **Lab ID: 30222501015** Collected: 06/20/17 15:25 Received: 06/23/17 10:00 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 ± 0.314 (0.681) C:NA T:93%**	pCi/L	07/06/17 10:50	13982-63-3	
Radium-228	EPA 904.0	**0.479 ± 0.329 (0.623) C:80% T:83%**	pCi/L	07/11/17 15:22	15262-20-1	
Total Radium	Total Radium Calculation	**0.479 ± 0.643 (1.30)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-97 **Lab ID: 30222501016** Collected: 06/20/17 16:20 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.310 ± 0.405 (0.668) C:NA T:89%**	pCi/L	07/06/17 10:50	13982-63-3	
Radium-228	EPA 904.0	**0.126 ± 0.387 (0.841) C:79% T:93%**	pCi/L	07/11/17 15:24	15262-20-1	
Total Radium	Total Radium Calculation	**0.436 ± 0.792 (1.51)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-98 **Lab ID: 30222501017** Collected: 06/20/17 17:20 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.296 ± 0.420 (0.712) C:NA T:89%**	pCi/L	07/06/17 10:50	13982-63-3	
Radium-228	EPA 904.0	**0.593 ± 0.399 (0.768) C:77% T:87%**	pCi/L	07/11/17 15:24	15262-20-1	
Total Radium	Total Radium Calculation	**0.889 ± 0.819 (1.48)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-120 **Lab ID: 30222501018** Collected: 06/20/17 18:30 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.751 ± 0.528 (0.674) C:NA T:87%**	pCi/L	07/06/17 11:05	13982-63-3	
Radium-228	EPA 904.0	**0.127 ± 0.452 (0.987) C:78% T:76%**	pCi/L	07/11/17 15:24	15262-20-1	
Total Radium	Total Radium Calculation	**0.878 ± 0.980 (1.66)**	pCi/L	07/14/17 08:10	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Sample: P-17 **Lab ID: 30222501019** Collected: 06/21/17 09:10 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.343 ± 0.358 (0.505) C:NA T:88%**	pCi/L	07/06/17 11:05	13982-63-3	
Radium-228	EPA 904.0	**0.556 ± 0.458 (0.916) C:78% T:81%**	pCi/L	07/11/17 15:24	15262-20-1	
Total Radium	Total Radium Calculation	**0.899 ± 0.816 (1.42)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-158 **Lab ID: 30222501020** Collected: 06/21/17 10:00 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.166 ± 0.254 (0.408) C:NA T:96%**	pCi/L	07/06/17 11:05	13982-63-3	
Radium-228	EPA 904.0	**0.258 ± 0.372 (0.784) C:79% T:89%**	pCi/L	07/11/17 15:24	15262-20-1	
Total Radium	Total Radium Calculation	**0.424 ± 0.626 (1.19)**	pCi/L	07/14/17 08:10	7440-14-4	

Sample: P-157 **Lab ID: 30222501021** Collected: 06/21/17 10:50 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.522 ± 0.409 (0.481) C:NA T:88%**	pCi/L	07/06/17 11:40	13982-63-3	
Radium-228	EPA 904.0	**0.458 ± 0.361 (0.716) C:78% T:82%**	pCi/L	07/11/17 11:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.980 ± 0.770 (1.20)**	pCi/L	07/14/17 08:15	7440-14-4	

Sample: P-23 **Lab ID: 30222501022** Collected: 06/21/17 12:20 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.24 ± 0.618 (0.635) C:NA T:87%**	pCi/L	07/06/17 11:40	13982-63-3	
Radium-228	EPA 904.0	**0.366 ± 0.323 (0.654) C:80% T:86%**	pCi/L	07/11/17 11:27	15262-20-1	
Total Radium	Total Radium Calculation	**1.61 ± 0.941 (1.29)**	pCi/L	07/14/17 08:15	7440-14-4	

Sample: P-22 **Lab ID: 30222501023** Collected: 06/21/17 13:30 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.132 ± 0.367 (0.713) C:NA T:80%**	pCi/L	07/06/17 11:40	13982-63-3	
Radium-228	EPA 904.0	**0.541 ± 0.386 (0.747) C:75% T:78%**	pCi/L	07/11/17 11:27	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Sample: P-22 **Lab ID: 30222501023** Collected: 06/21/17 13:30 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.673 ± 0.753 (1.46)**	pCi/L	07/14/17 08:15	7440-14-4	

Sample: P-155 **Lab ID: 30222501024** Collected: 06/21/17 14:20 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.327 ± 0.301 (0.177) C:NA T:85%**	pCi/L	07/06/17 11:40	13982-63-3	
Radium-228	EPA 904.0	**0.455 ± 0.366 (0.737) C:83% T:88%**	pCi/L	07/11/17 11:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.782 ± 0.667 (0.914)**	pCi/L	07/14/17 08:15	7440-14-4	

Sample: P-01a-1 **Lab ID: 30222501025** Collected: 06/21/17 15:00 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.124 ± 0.385 (0.746) C:NA T:87%**	pCi/L	07/06/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.152 ± 0.281 (0.617) C:79% T:86%**	pCi/L	07/11/17 11:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.276 ± 0.666 (1.36)**	pCi/L	07/14/17 08:15	7440-14-4	

Sample: P-156 **Lab ID: 30222501026** Collected: 06/21/17 15:50 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.344 ± 0.321 (0.422) C:NA T:93%**	pCi/L	07/06/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.219 ± 0.284 (0.606) C:81% T:92%**	pCi/L	07/11/17 11:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.563 ± 0.605 (1.03)**	pCi/L	07/14/17 08:15	7440-14-4	

Sample: P-151 **Lab ID: 30222501027** Collected: 06/21/17 17:00 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.161 ± 0.407 (0.756) C:NA T:97%**	pCi/L	07/06/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.200 ± 0.280 (0.599) C:85% T:84%**	pCi/L	07/11/17 11:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.361 ± 0.687 (1.36)**	pCi/L	07/14/17 08:15	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Sample: P-153 **Lab ID: 30222501028** Collected: 06/21/17 18:10 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.266 ± 0.277 (0.391) C:NA T:98%**	pCi/L	07/06/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.106 ± 0.298 (0.668) C:78% T:86%**	pCi/L	07/11/17 11:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.372 ± 0.575 (1.06)**	pCi/L	07/14/17 08:15	7440-14-4	

Sample: P-165 **Lab ID: 30222501029** Collected: 06/22/17 08:25 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.305 ± 0.318 (0.449) C:NA T:92%**	pCi/L	07/06/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.201 ± 0.300 (0.648) C:78% T:90%**	pCi/L	07/11/17 11:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.506 ± 0.618 (1.10)**	pCi/L	07/14/17 08:15	7440-14-4	

Sample: P-162 **Lab ID: 30222501030** Collected: 06/22/17 09:10 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.772 ± 0.571 (0.772) C:NA T:87%**	pCi/L	07/06/17 11:57	13982-63-3	
Radium-228	EPA 904.0	**0.364 ± 0.302 (0.600) C:84% T:81%**	pCi/L	07/11/17 11:28	15262-20-1	
Total Radium	Total Radium Calculation	**1.14 ± 0.873 (1.37)**	pCi/L	07/14/17 08:15	7440-14-4	

Sample: P-163 **Lab ID: 30222501031** Collected: 06/22/17 09:50 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.452 ± 0.339 (0.175) C:NA T:87%**	pCi/L	07/06/17 12:18	13982-63-3	
Radium-228	EPA 904.0	**0.324 ± 0.324 (0.668) C:80% T:81%**	pCi/L	07/11/17 11:28	15262-20-1	
Total Radium	Total Radium Calculation	**0.776 ± 0.663 (0.843)**	pCi/L	07/14/17 08:15	7440-14-4	

Sample: P-164 **Lab ID: 30222501032** Collected: 06/22/17 10:40 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.643 ± 0.420 (0.430) C:NA T:91%**	pCi/L	07/06/17 12:18	13982-63-3	
Radium-228	EPA 904.0	**0.164 ± 0.273 (0.593) C:83% T:83%**	pCi/L	07/11/17 11:28	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

Sample: P-164 **Lab ID: 30222501032** Collected: 06/22/17 10:40 Received: 06/23/17 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.807 ± 0.693 (1.02)**	pCi/L	07/14/17 08:15	7440-14-4	

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

QC Batch: 263239 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30222501001, 30222501002, 30222501003, 30222501004, 30222501005, 30222501006, 30222501007, 30222501008, 30222501009, 30222501010, 30222501011, 30222501012, 30222501013, 30222501014, 30222501015, 30222501016, 30222501017, 30222501018, 30222501019, 30222501020

METHOD BLANK: 1296767 Matrix: Water
Associated Lab Samples: 30222501001, 30222501002, 30222501003, 30222501004, 30222501005, 30222501006, 30222501007, 30222501008, 30222501009, 30222501010, 30222501011, 30222501012, 30222501013, 30222501014, 30222501015, 30222501016, 30222501017, 30222501018, 30222501019, 30222501020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.211 ± 0.327 (0.567) C:NA T:102%	pCi/L	07/06/17 10:15	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

QC Batch: 263240 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30222501021, 30222501022, 30222501023, 30222501024, 30222501025, 30222501026, 30222501027, 30222501028, 30222501029, 30222501030, 30222501031, 30222501032

METHOD BLANK: 1296768 Matrix: Water
Associated Lab Samples: 30222501021, 30222501022, 30222501023, 30222501024, 30222501025, 30222501026, 30222501027, 30222501028, 30222501029, 30222501030, 30222501031, 30222501032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.287 ± 0.408 (0.690) C:NA T:93%	pCi/L	07/06/17 11:05	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

QC Batch: 263420 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30222501001, 30222501002, 30222501003, 30222501004, 30222501005, 30222501006, 30222501007, 30222501008, 30222501009, 30222501010, 30222501011, 30222501012, 30222501013, 30222501014, 30222501015, 30222501016, 30222501017, 30222501018, 30222501019, 30222501020

METHOD BLANK: 1297566 Matrix: Water
Associated Lab Samples: 30222501001, 30222501002, 30222501003, 30222501004, 30222501005, 30222501006, 30222501007, 30222501008, 30222501009, 30222501010, 30222501011, 30222501012, 30222501013, 30222501014, 30222501015, 30222501016, 30222501017, 30222501018, 30222501019, 30222501020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.207 ± 0.297 (0.636) C:78% T:80%	pCi/L	07/11/17 12:10	

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Greensburg, PA 15601
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

QC Batch: 263421 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30222501021, 30222501022, 30222501023, 30222501024, 30222501025, 30222501026, 30222501027, 30222501028, 30222501029, 30222501030, 30222501031, 30222501032

METHOD BLANK: 1297573 Matrix: Water
Associated Lab Samples: 30222501021, 30222501022, 30222501023, 30222501024, 30222501025, 30222501026, 30222501027, 30222501028, 30222501029, 30222501030, 30222501031, 30222501032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	1.42 ± 0.512 (0.752) C:77% T:81%	pCi/L	07/11/17 11:27	1c

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Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 17-0684,Xcel Energy-shercoCCR,
Pace Project No.: 30222501

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

1c	Analyte detected in MB above the RL and associated MDC. Samples with results below the RL of 1.0 pCi/L or sample associated MDC are reportable without additional qualification.

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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

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2052848

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0684, Xcel Energy - Sherco CCR, June 2017
Project Number:

Section C Invoice Information:

Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Rabl
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Requested Analysis Filtered (Y/N)

WO#: 30222501

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA 903.1	RA-228 EPA 904.0	Residual C	Pace Project No./ Lab I.D.
1	P-150	WT				6/19/17	1220		2			2						✓	✓		001
2	P-152a						1335		2			2						✓	✓		002
3	P-130						1420		2			2						✓	✓		003
4	P-131						1530		2			2						✓	✓		004
5	P-154d						1640		2			2						✓	✓		005
6	P-132						1740		2			2						✓	✓		006
7	P-74-1	WT				6/20/17	0825		2			2						✓	✓		007
8	P-73a-1						0900		2			2						✓	✓		008
9	P-125						0950		2			2						✓	✓		009
10	P-141						1040		2			2						✓	✓		010
11	P-134						1135		3			2						✓	✓		011
12	P-138A						1245		2			2						✓	✓		012

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

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1) Client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson Pace	6/22/17	1335		6/23/17	1000	N/A 2 4 4
(2) RA-226 EPA 903.1 RA-228 EPA 904.0							

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 6/20/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

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CHAIN-OF-CUSTODY / Analytical Request Document

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

2125437

Section A Required Client Information:

Company: Xcel Energy
Address: C/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0684, Xcel Energy - Sherco CCR, June 2017
Project Number:

Section C Invoice Information:

Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Robl
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	RA-226 EPA 903.1	RA-228 EPA 904.0	3022 2501	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-137A		WT				6/20/17	1340		2			N					✓	✓				013
2	P-117							1430		2			N					✓	✓				014
3	P-75-1							1525		2			N					✓	✓				015
4	P-97							1620		2			N					✓	✓				016
5	P-98							1720		2			N					✓	✓				017
6	P-120		↓				↓	1830		2			N					✓	✓				018
7	P-17		WT				6-21-17	0910		2			N					✓	✓				019
8	P-158							1000		2			N					✓	✓				020
9	P-157							1050		2			N					✓	✓				021
10	P-23							1220		2			N					✓	✓				022
11	P-22							1330		2			N					✓	✓				023
12	P-155		↓				↓	1420		2			N					✓	✓				024

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
① Client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson Pace	6/22/17	1335		6/23/17	1000	N/A N Y Y

② RA-226 EPA 903.1 ORIGINAL
RA-228 EPA 904.0

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 6/21/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

2125439

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0684, Xcel Energy - Sherco CCR, June 2017
Project Number:

Section C Invoice Information:

Attention: Ciara Kuikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Rohl
Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-01a-1	WT				6/21/17	1500		2			2						Y	✓	✓		30222 01
2	P-156	↓					1550		2			2							✓	✓		025
3	P-151						1700		2			2							✓	✓		026
4	P-153						1810		2			2							✓	✓		027
5	P-165	WT				6/22/17	0825		2			2							✓	✓		028
6	P-162						0910		2			2							✓	✓		029
7	P-163						0950		2			2							✓	✓		030
8	P-164	↓				↓	1040		2			2							✓	✓		031
9																						032
10																						
11																						
12																						

DJA 6/22/17

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
① client needs to analyze for: Radium 226 + 228 pCi/L combined.	David Anderson, Pace	6/22/17	1335		6/23/17	1000
② RA-226 EPA 903.1 RA-228 EPA 904.0						

ORIGINAL

SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
N/A	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 6/22/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Sample Condition Upon Receipt Pittsburgh

30222501

Pace Analytical

Client Name: Xcel energy Project #

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 718092682903

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

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

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

Temp should be above freezing to 6°C

Date and Initials of person examining contents: PH 10/23/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT				5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Organic Samples checked for dechlorination:			✓	13.
Filtered volume received for Dissolved tests			✓	14.
All containers have been checked for preservation.	✓			15. PH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed PH Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	16.
Trip Blank Present:			✓	17.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: PH Date: 10/23/17

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

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

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS, The review is in the Status section of the Workorder Edit Screen.

July 2017

Field Datasheets and Laboratory Reports

Xcel - Sherco CCR July 2017
Field Proj.# 17-0767

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 7-17-17 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.95	25.0	0910	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.03	25.0	0910	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.04	25.0	0910	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.05	25.0	0920	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.04	31.0	1835	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value: 1000

Cond Std: 1000 umhos/cm
Ricca - Lot #: 4606B22
Exp Date: 06/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	25.0

Initial Cal. Verification (ICV)

Low Standard Value: 100

Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
96	25.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0925 / 0930
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1840 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1005 Temp (°C) 31.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

DJA 7/17/17

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 7/17/17

Xcel - Sherco CCR July 2017
Field Proj. #17-0767

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 7/17/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	231	Secondary Source Std. Value (mV)	231
Mfg.	Zobells ORP Std.	Mfg.	Zobells ORP Std.
Lot No.	YSI 5610067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	231	Meter Result (mV)	230
Temp (°C)	25.0	Temp (°C)	25.0

Meter Make MPS ID 5

IC/ICV Time 0935 / 0937

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1845	Initials DJA	Std. Value 223	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 225	Temp (°C) 31.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 7/17/17	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	25.0 (°C)	Ambient Temp:	25.0 (°C)
Barometric Pressure	28.92 (in. Hg)	Barometric Pressure	28.92 (in. Hg)
Barometric Pressure	734.57 (mm Hg)	Barometric Pressure	734.57 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)	97	ICV Meter Result (%)	96

IC/ICV Time 0905 Initials DJA

DO Meter ID MPS - 5

Barometer ID Skymaster DB-266W

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1830	Initials DJA	Barometric Pressure 733.55 (in. Hg / mm Hg)			
Calibration Value 97 (%)	Result 96 (%)	CCV: (Pass) / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 7/17/17 (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 7/17/17

Xcel – Sherco CCR July 2017
Field Proj. 17-0767

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 7/17/17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	10.0	99	999	IC Time 0940 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	99	998	ICV Time 0950 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	99	998	CCV Time 1850 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 7/17/17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 7/17/17

Form Revised 11/14/2013

Attach additional notes if necessary

Xcel - Sherco CCR July 2017
Field Proj.# 17-0767

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 7/18/17 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.94	22.0	0705	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.06	22.0	0705	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.11	22.0	0705	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.07	22.0	0715	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.06	27.0	1848	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value: 1000		Low Standard Value: 100	
Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18* Exp. Date		Cond Std: 100 umhos/cm Ricca - Lot #: 4605D87 *Exp Date: 05/31/18* Exp. Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1001	22.0	95	22.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0720 / 0723
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1851 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 100.5 Temp (°C) 27.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

DJA 7/18/17

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 7-18-17

Xcel - Sherco CCR July 2017
Field Proj. #17-0767

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 7-18-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	235	Secondary Source Std. Value (mV)	235
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI 5610067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	235	Meter Result (mV)	234
Temp (°C)	22.0	Temp (°C)	22.0

Meter Make MPS ID 5

IC/ICV Time 0725/0730

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time	Initials	Std. Value	Result (mV)	Temp (°C)	CCV	Standard
1855	DJA	228	230	27.0	(Pass) / Fail	(X) Calibration Standard ( ) Secondary Source Standard
				DJA 7/18/17	Pass / Fail	( ) Calibration Standard ( ) Secondary Source Standard
					Pass / Fail	( ) Calibration Standard ( ) Secondary Source Standard

(CCV acceptable if ± 10 mV of standard value)

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	22.0 (°C)	Ambient Temp:	22.0 (°C)
Barometric Pressure	28.96 (in. Hg)	Barometric Pressure	28.96 (in. Hg)
Barometric Pressure	735.58 (mm Hg)	Barometric Pressure	735.58 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)	97	ICV Meter Result (%)	96

IC/ICV Time 0700 Initials DJA

DO Meter ID MPS - 5

Barometer ID Skymaster DB-266W

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time	Initials	Barometric Pressure	(in. Hg / mm Hg)	Calibration Value	(%)	Result	(%)	CCV	
1845	DJA	737.11		97		95		(Pass) / Fail	*(CCV acceptable if ± 2% of Calibration Value)*
						DJA 7/18/17		Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*
								Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 7/18/17

Xcel - Sherco CCR July 2017
Field Proj. 17-0767

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 7-18-17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	99	998	IC Time 0735 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	98	998	ICV Time 0745 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	98	998	CCV Time 1900 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 7-18-17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 7/18/17

Form Revised 11/14/2013

Attach additional notes if necessary

Xcel - sherco CCR July 2017
Field Proj.# 17-0767

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 7-19-17 Page 1 of 3

Meter Make YSI Sonde Meter ID #5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.95	22.0	0810	DJA
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.07	22.0	0810	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.12	22.0	0810	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.08	22.0	0820	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100715 *Exp Date: 07/31/17*	7.04	25.0	1120	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value	1000	Low Standard Value	100
Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18* Exp. Date		Cond Std: 100 umhos/cm Ricca - Lot #: 4605D87 *Exp Date: 05/31/18* Exp. Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1000	22.0	97	22.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0825 / 0828
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1125 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 1002 Temp (°C) 25.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

DJA 7/19/17

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 7-19-17

Xcel - Sherco CCR July 2017
Field Proj. #17-0767

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 7-19-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	235	Secondary Source Std. Value (mV)	235
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI 156-100067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
235	22.0	235	22.0

Meter Make MPS ID 5

IC/ICV Time 0830/0832

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time	1130	Initials	DJA	Std. Value	231
Result (mV)	228	Temp (°C)	25.0	CCV: (Pass) / Fail	

☒ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)	DJA 7/19/17	CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)		CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	22.0 (°C)	Ambient Temp:	22.0 (°C)
Barometric Pressure	29.03 (in. Hg)	Barometric Pressure	29.03 (in. Hg)
Barometric Pressure	737.36 (mm Hg)	Barometric Pressure	737.36 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)		ICV Meter Result (%)	
97		96	

IC/ICV Time 0800 Initials DJA

DO Meter ID MPS - 5

Barometer ID Skymaster DB-266W

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time	1115	Initials	DJA	Barometric Pressure	738.38	(in. Hg / mm Hg)	
Calibration Value	97 (%)	Result	95 (%)	CCV: (Pass) / Fail			(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure		(in. Hg / mm Hg)	
Calibration Value	(%)	Result	DJA 7/19/17 (%)	CCV: Pass / Fail			(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure		(in. Hg / mm Hg)	
Calibration Value	(%)	Result	(%)	CCV: Pass / Fail			(CCV acceptable if ± 2% of Calibration Value)

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 7/19/17

Xcel - Sherco CCR July 2017
Field Proj. 17-0767

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 7/19/17 Page 3 of 3

Meter Make WTW Turb 350 IR Meter ID #1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	9.9	99	998	IC Time 0835 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.8	98	997	ICV Time 0845 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	98	998	CCV Time 1135 Initials DJA CCV: (Pass) / Fail
CCV		DJA 7/19/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 7/19/17

Form Revised 11/14/2013

Attach additional notes if necessary

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, July Project No. 17-0767

Monitoring Point ID P-01a-1 Labeled P-01A

Inside Diameter 2 (inches) Key # 2106 ☐ Locked ☒ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel cover will not close

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 80.98 Feet

Static water level measurement before purging 75.91 Feet

Static water level measurement at time of sampling 75.91 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 7-18-17 Water Column 5.07 Feet

Time Purged 1055-1113 One Casing Volume 0.8 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 2.7 Gallons

Field Sampling Data

Date Sampled 7-18-17

Time Sampled 1120

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 6.7 (mg/l)

Spec. Cond. 680 (µmhos/cm) Turbidity 2.4 (NTU)

Temp. 13.5 (°C) Eh 203 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 73° + cloudy, wind W10

Sample Description: clear + odorless

Observations:

DTA 7-18-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1101	7.7	690	13.5	7.0	NA	212	0.9
1107	7.7	680	13.5	6.8	NA	207	1.8
1113	7.7	680	13.5	6.7	NA	203	2.7

DTA 7/18/17

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: Dave Anderson Date: 7-18-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, July Project No. 17-0767

Monitoring Point ID P-17 Labeled P17

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	N/A	Feet
Well depth	58.76	Feet
Static water level measurement before purging	35.18	Feet
Static water level measurement at time of sampling	35.18	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 7-18-17 Water Column 23.58 Feet

Time Purged 1345-1442 One Casing Volume 3.8 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 11.4 Gallons

Field Sampling Data

Date Sampled 7-18-17

Time Sampled 1450

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 7.7 (mg/l)

Spec. Cond. 560 (µmhos/cm) Turbidity 2.7 (NTU)

Temp. 10.5 (°C) Eh 140 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 73°F cloudy, wind W 10

Sample Description: clear + odorless

Observations:

DTA 7/18/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1404	7.4	560	10.5	7.8	NA	147	3.8
1423	7.4	560	10.5	7.7	NA	142	7.6
1442	7.3	560	10.5	7.7	NA	140	11.4

DTA 7/18/17

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 7-18-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, July Project No. 17-0767

Monitoring Point ID P-22 Labeled P-22

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation N/A Feet

Well depth 57.85 Feet

Static water level measurement before purging 38.15 Feet

Static water level measurement at time of sampling 38.15 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 7-18-17 Water Column 19.70 Feet

Time Purged 1230 - 1318 One Casing Volume 3.2 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 7-18-17

Time Sampled 1330

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 5.8 (mg/l)

Spec. Cond. 590 (µmhos/cm) Turbidity 2.3 (NTU)

Temp. 13.5 (°C) Eh 211 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 73° + light rain, wind W 10

Sample Description: clear + odorless

Observations:

DJA 7-18-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1246	7.6	600	13.5	5.9	NA	195	3.2
1302	7.5	590	13.5	5.8	NA	206	6.4
1318	7.5	590	13.5	5.8	NA	211	9.6

DJA 7/18/17

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 7-18-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, July Project No. 17-0767

Monitoring Point ID P-23 Labeled P-23

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 67.34 Feet

Static water level measurement before purging 39.83 Feet

Static water level measurement at time of sampling 39.83 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 7-18-17 Water Column 27.51 Feet

Time Purged 1625-1734 One Casing Volume 4.5 Gallons

Pump Rate 0.2 (GPM / LPM) Volume Purged 13.8 Gallons

Field Sampling Data

Date Sampled 7-18-17

Time Sampled 1740

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 7.7 (mg/l)

Spec. Cond. 680 (µmhos/cm) Turbidity 2.6 (NTU)

Temp. 14.0 (°C) Eh 167 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 77° + partly cloudy, wind E 10

Sample Description: clear + odorless

Observations:

DTA 7/18/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1648	7.6	690	13.5	7.8	NA	175	4.6
1711	7.5	680	13.5	7.7	NA	170	9.2
1734	7.5	680	14.0	7.7	NA	167	13.8

DTA 7/18/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 7/18/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, July Project No. 17-0767

Monitoring Point ID P-152a Labeled 806318

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 42.18 Feet

Static water level measurement before purging 34.55 Feet

Static water level measurement at time of sampling 34.55 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 7-17-17 Water Column 7.63 Feet

Time Purged 1230-1248 One Casing Volume 1.2 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 3.6 Gallons

Field Sampling Data

Date Sampled 7-17-17

Time Sampled 1255

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 9.0 (mg/l)

Spec. Cond. 370 (µmhos/cm) Turbidity 2.2 (NTU)

Temp. 12.5 (°C) Eh 110 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 81° + sunny, wind S 10

Sample Description: clear + odorless

Observations: collected Rinse Blank at this well.

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1236	7.4	370	12.0	9.2	NA	130	1.2
1242	7.4	370	12.0	9.1	NA	117	2.4
1248	7.4	370	12.5	9.0	NA	110	3.6

DTA 7/17/17

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 7/17/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, July Project No. 17-0767

Monitoring Point ID P-155 Labeled 812964

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation N/A Feet

Well depth 85.47 Feet

Static water level measurement before purging 76.19 Feet

Static water level measurement at time of sampling 76.19 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 7-18-17 Water Column 9.28 Feet

Time Purged 1135-1205 One Casing Volume 1.5 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 4.5 Gallons

Field Sampling Data

Date Sampled 7-18-17

Time Sampled 1215

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 7.0 (mg/l)

Spec. Cond. 720 (µmhos/cm) Turbidity 2.5 (NTU)

Temp. 14.0 (°C) Eh 202 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 73°+ cloudy, wind W10

Sample Description: clear + odorless

Observations:

DTA 7/18/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1145	7.5	730	14.0	7.2	NA	213	1.5
1155	7.5	720	14.0	7.1	NA	207	3.0
1205	7.5	720	14.0	7.0	NA	202	4.5

DTA 7/18/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 7/18/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, July Project No. 17-0767

Monitoring Point ID P-156 Labeled 812965

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 85.53 Feet

Static water level measurement before purging 75.11 Feet

Static water level measurement at time of sampling 75.11 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 7-18-17 Water Column 10.42 Feet

Time Purged 0955-1031 One Casing Volume 1.7 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 7-18-17

Time Sampled 1040

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 6.5 (mg/l)

Spec. Cond. 620 (µmhos/cm) Turbidity 2.5 (NTU)

Temp. 14.0 (°C) Eh 182 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 72° + cloudy, wind SW 5

Sample Description: clear + odorless

Observations: DTA 7/18/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1007	7.8	630	13.5	6.8	NA	189	1.8
1019	7.8	620	14.0	6.6	NA	185	3.6
1031	7.8	620	14.0	6.5	NA	182	5.4

DTA 7/18/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 7/18/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, July Project No. 17-0767

Monitoring Point ID P-157 Labeled 812966

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	49.06	Feet
Static water level measurement before purging	40.30	Feet
Static water level measurement at time of sampling	40.30	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 7-18-17 Water Column 8.76 Feet

Time Purged 1545-1606 One Casing Volume 1.4 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 7-18-17

Time Sampled 1615

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 7.8 (mg/l)

Spec. Cond. 690 (µmhos/cm) Turbidity 2.5 (NTU)

Temp. 12.0 (°C) Eh 154 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 74° + cloudy, wind N 10

Sample Description: clear + odorless

Observations: collected duplicate at this well.

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1552	7.4	690	12.0	7.9	NA	168	1.4
1559	7.3	690	12.0	7.8	NA	160	2.8
1606	7.3	690	12.0	7.8	NA	154	4.2
			DJA 7/18/17				

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 7-18-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, July Project No. 17-0767

Monitoring Point ID P-158 Labeled 812967

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 49.16 Feet

Static water level measurement before purging 37.88 Feet

Static water level measurement at time of sampling 37.88 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 7-18-17 Water Column 11.28 Feet

Time Purged 1500-1527 One Casing Volume 1.8 Gallons

Pump Rate 0.2 (GPM / LPM) Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 7-18-17

Time Sampled 1535

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 10.0 (mg/l)

Spec. Cond. 580 (µmhos/cm) Turbidity 2.3 (NTU)

Temp. 11.5 (°C) Eh 184 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 73° + cloudy, wind W10

Sample Description: clear + odorless

Observations:

DTA 7/18/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1509	7.5	590	11.5	10.4	NA	195	1.8
1518	7.4	580	11.5	10.2	NA	190	3.6
1527	7.4	580	11.5	10.0	NA	184	5.4

DTA 7/18/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 7/18/17

Amended Report

Original Report ID: MCG0199 Xcel General Report FINAL 08 10 2017
1013 08 10 2017 0810

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification #MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

11 January 2018

Charles A Donkers

Environmental Services-Water Minneapolis

250 Marquette Plaza

Minneapolis, MN 55401

RE: Sherco CCR

cc: Laboratory report re-created to only include wells in the Bottom Ash Pond CCR Groundwater Monitoring System. HSD 1/11/18

Enclosed are the results of analyses for samples received by the laboratory on 07/19/2017 13:00. If you have any questions concerning this report, please feel free to contact me.

I certify that this analysis report was prepared under my direction or supervision under a system designed to assure that qualified personnel analyzed the submitted samples. All protocols for analysis were followed as required by Minnesota Rules and the Applicable Management Plan.

Sincerely,

Steve Davis

Project Manager

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Amended Report

Original Report ID: MCG0199 Xcel General Report FINAL 08 10 2017 1013 08 10 2017 0810

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Rinse		MCG0199-01	Water	07/17/2017 12:20	07/19/2017 13:00
P-152a		MCG0199-02	Water	07/17/2017 12:55	07/19/2017 13:00
P-156		MCG0199-11	Water	07/18/2017 10:40	07/19/2017 13:00
P-01a-1		MCG0199-12	Water	07/18/2017 11:20	07/19/2017 13:00
P-155		MCG0199-13	Water	07/18/2017 12:15	07/19/2017 13:00
P-22		MCG0199-14	Water	07/18/2017 13:30	07/19/2017 13:00
P-17		MCG0199-15	Water	07/18/2017 14:50	07/19/2017 13:00
P-158		MCG0199-16	Water	07/18/2017 15:35	07/19/2017 13:00
P-157		MCG0199-17	Water	07/18/2017 16:15	07/19/2017 13:00
Duplicate		MCG0199-18	Water	07/18/2017 16:15	07/19/2017 13:00
P-23		MCG0199-19	Water	07/18/2017 17:40	07/19/2017 13:00

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCG0199 Xcel General Report FINAL 08 10 2017 1013 08 10 2017 0810

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Rinse

MCG0199-01 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 18:54	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 18:54	EPA 300.0	CRL
Sulfate	< 1.00	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 18:54	EPA 300.0	CRL
Wet Chemistry										
pH	6.87		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:05	SM 4500-H+ B	CRL
Total Dissolved Solids	< 20.0	20.0	mg/L		1	BCG0340	7/20/17 0:00	7/20/17 0:00	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:35	EPA 200.8	CRL
Barium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:35	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:35	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:35	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:35	EPA 200.8	CRL
Chromium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:35	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:35	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:35	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:35	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:35	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:35	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:02	EPA 200.7	HRD
Calcium	< 0.500	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 13:59	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 13:59	EPA 200.7	HRD

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Amended Report

Original Report ID: MCG0199 Xcel General Report FINAL 08 10 2017 1013 08 10 2017 0810

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Rinse

MCG0199-01 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCG0357	7/20/17 7:42	7/20/17 12:57	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCG0199 Xcel General Report FINAL 08 10 2017 1013 08 10 2017 0810

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-152a

MCG0199-02 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 19:14	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 19:14	EPA 300.0	CRL
Sulfate	8.09	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 19:14	EPA 300.0	CRL
Wet Chemistry										
pH	7.78		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:12	SM 4500-H+ B	CRL
Total Dissolved Solids	182	20.0	mg/L		1	BCG0340	7/20/17 0:00	7/20/17 0:00	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:39	EPA 200.8	CRL
Barium	36.6	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:39	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:39	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:39	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:39	EPA 200.8	CRL
Chromium	0.600	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:39	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:39	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:39	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:39	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:39	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:39	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:07	EPA 200.7	HRD
Calcium	48.6	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:05	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:05	EPA 200.7	HRD

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Minneapolis Testing Laboratory
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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-152a

MCG0199-02 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCG0357	7/20/17 7:42	7/20/17 13:03	EPA 245.1, 7470A	HRD

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Amended Report

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-156

MCG0199-11 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	1.92	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 13:50	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 13:50	EPA 300.0	CRL
Sulfate	20.5	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 13:50	EPA 300.0	CRL
Wet Chemistry										
pH	7.83		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:48	SM 4500-H+ B	CRL
Total Dissolved Solids	194	20.0	mg/L		1	BCG0383	7/21/17 9:04	7/21/17 9:04	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:22	EPA 200.8	CRL
Barium	52.7	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:22	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:22	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:22	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:22	EPA 200.8	CRL
Chromium	0.827	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:22	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:22	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:22	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:22	EPA 200.8	CRL
Selenium	0.938	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:22	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:22	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.169	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:10	EPA 200.7	HRD
Calcium	60.4	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:08	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:08	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-156

MCG0199-11 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCG0357	7/20/17 7:42	7/20/17 13:18	EPA 245.1, 7470A	HRD

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Amended Report

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Minneapolis Testing Laboratory
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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-01a-1

MCG0199-12 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	9.29	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 14:10	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 14:10	EPA 300.0	CRL
Sulfate	98.0	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 14:10	EPA 300.0	CRL
Wet Chemistry										
pH	7.63		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:52	SM 4500-H+ B	CRL
Total Dissolved Solids	396	20.0	mg/L		1	BCG0383	7/21/17 9:04	7/21/17 9:04	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:26	EPA 200.8	CRL
Barium	36.4	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:26	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:26	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:26	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:26	EPA 200.8	CRL
Chromium	0.914	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:26	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:26	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:26	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:26	EPA 200.8	CRL
Selenium	5.63	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:26	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:26	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.841	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:16	EPA 200.7	HRD
Calcium	83.7	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:14	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:14	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-01a-1

MCG0199-12 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCG0357	7/20/17 7:42	7/20/17 13:23	EPA 245.1, 7470A	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-155

MCG0199-13 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	14.6	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 14:31	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 14:31	EPA 300.0	CRL
Sulfate	172	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 14:31	EPA 300.0	CRL
Wet Chemistry										
pH	7.67		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:55	SM 4500-H+ B	CRL
Total Dissolved Solids	484	20.0	mg/L		1	BCG0383	7/21/17 9:04	7/21/17 9:04	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:38	EPA 200.8	CRL
Barium	70.2	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:38	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:38	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:38	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:38	EPA 200.8	CRL
Chromium	0.966	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:38	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:38	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:38	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:38	EPA 200.8	CRL
Selenium	4.48	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:38	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:38	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.75	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:33	EPA 200.7	HRD
Calcium	88.6	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:31	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:31	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-155

MCG0199-13 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCG0357	7/20/17 7:42	7/20/17 13:25	EPA 245.1, 7470A	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-22

MCG0199-14 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	14.2	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 14:51	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 14:51	EPA 300.0	CRL
Sulfate	173	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 14:51	EPA 300.0	CRL
Wet Chemistry										
pH	7.74		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:59	SM 4500-H+ B	CRL
Total Dissolved Solids	512	20.0	mg/L		1	BCG0383	7/21/17 9:04	7/21/17 9:04	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:42	EPA 200.8	CRL
Barium	68.0	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:42	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:42	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:42	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:42	EPA 200.8	CRL
Chromium	0.958	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:42	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:42	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:42	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:42	EPA 200.8	CRL
Selenium	7.60	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:42	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:42	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.35	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:39	EPA 200.7	HRD
Calcium	94.2	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:37	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:37	EPA 200.7	HRD

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Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-22

MCG0199-14 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCG0357	7/20/17 7:42	7/20/17 13:26	EPA 245.1, 7470A	HRD

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-17

MCG0199-15 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	26.6	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 15:11	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 15:11	EPA 300.0	CRL
Sulfate	33.8	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 15:11	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 15:03	SM 4500-H+ B	CRL
Total Dissolved Solids	300	20.0	mg/L		1	BCG0383	7/21/17 9:04	7/21/17 9:04	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:46	EPA 200.8	CRL
Barium	43.5	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:46	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:46	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:46	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:46	EPA 200.8	CRL
Chromium	0.873	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:46	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:46	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:46	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:46	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:46	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:46	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:45	EPA 200.7	HRD
Calcium	71.9	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:43	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:43	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-17

MCG0199-15 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCG0357	7/20/17 7:42	7/20/17 13:28	EPA 245.1, 7470A	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-158

MCG0199-16 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	3.20	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 15:32	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 15:32	EPA 300.0	CRL
Sulfate	131	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 15:32	EPA 300.0	CRL
Wet Chemistry										
pH	7.67		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 15:06	SM 4500-H+ B	CRL
Total Dissolved Solids	384	20.0	mg/L		1	BCG0383	7/21/17 9:04	7/21/17 9:04	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:49	EPA 200.8	CRL
Barium	78.9	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:49	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:49	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:49	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:49	EPA 200.8	CRL
Chromium	0.740	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:49	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:49	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:49	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:49	EPA 200.8	CRL
Selenium	1.97	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:49	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:49	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.666	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:51	EPA 200.7	HRD
Calcium	93.3	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:48	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:49	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-158

MCG0199-16 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCG0357	7/20/17 7:42	7/20/17 13:30	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCG0199 Xcel General Report FINAL 08 10 2017 1013 08 10 2017 0810

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-157

MCG0199-17 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	12.4	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 15:52	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 15:52	EPA 300.0	CRL
Sulfate	93.6	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 15:52	EPA 300.0	CRL
Wet Chemistry										
pH	7.63		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 15:10	SM 4500-H+ B	CRL
Total Dissolved Solids	432	20.0	mg/L		1	BCG0383	7/21/17 9:04	7/21/17 9:04	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:53	EPA 200.8	CRL
Barium	52.7	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:53	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:53	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:53	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:53	EPA 200.8	CRL
Chromium	1.51	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:53	EPA 200.8	CRL
Molybdenum	0.955	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:53	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:53	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:53	EPA 200.8	CRL
Selenium	2.46	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:53	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:53	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.249	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:56	EPA 200.7	HRD
Calcium	88.2	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:54	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:54	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-157

MCG0199-17 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCG0357	7/20/17 7:42	7/20/17 13:31	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Duplicate

MCG0199-18 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	12.5	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 16:14	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 16:14	EPA 300.0	CRL
Sulfate	94.1	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 16:14	EPA 300.0	CRL
Wet Chemistry										
pH	7.64		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 15:13	SM 4500-H+ B	CRL
Total Dissolved Solids	436	20.0	mg/L		1	BCG0383	7/21/17 9:04	7/21/17 9:04	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:57	EPA 200.8	CRL
Barium	52.1	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:57	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:57	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:57	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:57	EPA 200.8	CRL
Chromium	1.42	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:57	EPA 200.8	CRL
Molybdenum	0.908	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:57	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:57	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:57	EPA 200.8	CRL
Selenium	2.53	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:57	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:57	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.247	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 16:02	EPA 200.7	HRD
Calcium	88.2	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:59	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:59	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Duplicate

MCG0199-18 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCG0357	7/20/17 7:42	7/20/17 13:33	EPA 245.1, 7470A	HRD

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCG0199 Xcel General Report FINAL 08 10 2017 1013 08 10 2017 0810

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-23

MCG0199-19 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	22.3	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 18:17	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 18:17	EPA 300.0	CRL
Sulfate	93.7	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 18:17	EPA 300.0	CRL
Wet Chemistry										
pH	7.78		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 15:17	SM 4500-H+ B	CRL
Total Dissolved Solids	400	20.0	mg/L		1	BCG0383	7/21/17 9:04	7/21/17 9:04	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.566	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 10:01	EPA 200.8	CRL
Barium	61.8	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 10:01	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 10:01	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 10:01	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 10:01	EPA 200.8	CRL
Chromium	1.08	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 10:01	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 10:01	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 10:01	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 10:01	EPA 200.8	CRL
Selenium	0.886	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 10:01	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 10:01	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.292	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 16:07	EPA 200.7	HRD
Calcium	81.3	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 16:05	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 16:05	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

P-23

MCG0199-19 (Water) - Chain of Custody Number: 1698342/2125456

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCG0357	7/20/17 7:42	7/20/17 13:35	EPA 245.1, 7470A	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0001 - Wet Prep										
Blank (BCH0001-BLK1)				Prepared & Analyzed: 08/01/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCH0001-BLK2)				Prepared & Analyzed: 08/01/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCH0001-BS1)				Prepared & Analyzed: 08/01/2017						
Chloride	25.1	1.00	mg/L	25.000		100	90-110			
Fluoride	5.20	0.750	mg/L	5.0000		104	90-110			
Sulfate	107	1.00	mg/L	100.00		107	90-110			
LCS (BCH0001-BS2)				Prepared & Analyzed: 08/01/2017						
Chloride	24.8	1.00	mg/L	25.000		99.4	90-110			
Fluoride	4.93	0.750	mg/L	5.0000		98.6	90-110			
Sulfate	104	1.00	mg/L	100.00		104	90-110			
LCS (BCH0001-BS3)				Prepared & Analyzed: 08/01/2017						
Chloride	24.7	1.00	mg/L	25.000		98.7	90-110			
Fluoride	4.96	0.750	mg/L	5.0000		99.2	90-110			
Sulfate	104	1.00	mg/L	100.00		104	90-110			
Duplicate (BCH0001-DUP1)		**Source: MCG0199-02**		Prepared & Analyzed: 08/01/2017						
Chloride	0.511	1.00	mg/L		0.481			6.05	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	8.16	1.00	mg/L		8.09			0.972	20	

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0001 - Wet Prep										
Duplicate (BCH0001-DUP2)		**Source: MCG0199-03**		Prepared & Analyzed: 08/01/2017						
Chloride	0.847	1.00	mg/L		0.846			0.118	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	10.0	1.00	mg/L		9.93			0.693	20	
Matrix Spike (BCH0001-MS1)		**Source: MCG0199-02**		Prepared & Analyzed: 08/01/2017						
Chloride	12.2	1.00	mg/L	12.500	0.481	93.6	80-120			
Fluoride	2.37	0.750	mg/L	2.5000	<0.750	94.7	80-120			
Sulfate	61.9	1.00	mg/L	50.000	8.09	108	80-120			
Matrix Spike (BCH0001-MS2)		**Source: MCG0199-03**		Prepared & Analyzed: 08/01/2017						
Chloride	13.4	1.00	mg/L	12.500	0.846	101	80-120			
Fluoride	2.27	0.750	mg/L	2.5000	<0.750	91.0	80-120			
Sulfate	63.9	1.00	mg/L	50.000	9.93	108	80-120			
Matrix Spike Dup (BCH0001-MSD1)		**Source: MCG0199-02**		Prepared & Analyzed: 08/01/2017						
Chloride	12.4	1.00	mg/L	12.500	0.481	95.2	80-120	1.69	20	
Fluoride	2.43	0.750	mg/L	2.5000	<0.750	97.2	80-120	2.58	20	
Sulfate	62.5	1.00	mg/L	50.000	8.09	109	80-120	1.01	20	
Matrix Spike Dup (BCH0001-MSD2)		**Source: MCG0199-03**		Prepared & Analyzed: 08/01/2017						
Chloride	13.3	1.00	mg/L	12.500	0.846	99.7	80-120	0.994	20	
Fluoride	2.34	0.750	mg/L	2.5000	<0.750	93.5	80-120	2.73	20	
Sulfate	64.0	1.00	mg/L	50.000	9.93	108	80-120	0.191	20	
Batch BCH0027 - Wet Prep										
Blank (BCH0027-BLK1)				Prepared: 08/01/2017 Analyzed: 08/02/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0027 - Wet Prep										
Blank (BCH0027-BLK2)				Prepared: 08/01/2017 Analyzed: 08/02/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCH0027-BS1)				Prepared: 08/01/2017 Analyzed: 08/02/2017						
Chloride	23.7	1.00	mg/L	25.000		94.7	90-110			
Fluoride	4.74	0.750	mg/L	5.0000		94.8	90-110			
Sulfate	102	1.00	mg/L	100.00		102	90-110			
LCS (BCH0027-BS2)				Prepared: 08/01/2017 Analyzed: 08/02/2017						
Chloride	23.7	1.00	mg/L	25.000		94.9	90-110			
Fluoride	4.61	0.750	mg/L	5.0000		92.1	90-110			
Sulfate	101	1.00	mg/L	100.00		101	90-110			
LCS (BCH0027-BS3)				Prepared: 08/01/2017 Analyzed: 08/02/2017						
Chloride	24.5	1.00	mg/L	25.000		97.9	90-110			
Fluoride	4.74	0.750	mg/L	5.0000		94.9	90-110			
Sulfate	104	1.00	mg/L	100.00		104	90-110			
Duplicate (BCH0027-DUP1)		**Source: MCG0214-01**		Prepared: 08/01/2017 Analyzed: 08/02/2017						
Chloride	11.4	1.00	mg/L		11.3			1.10	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	9.32	1.00	mg/L		9.26			0.613	20	
Duplicate (BCH0027-DUP2)		**Source: MCG0214-02**		Prepared: 08/01/2017 Analyzed: 08/02/2017						
Chloride	11.1	1.00	mg/L		11.1			0.595	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	8.28	1.00	mg/L		8.18			1.21	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0027 - Wet Prep										
Matrix Spike (BCH0027-MS1)		**Source: MCG0214-01**		Prepared: 08/01/2017 Analyzed: 08/02/2017						
Chloride	23.7	1.00	mg/L	12.500	11.3	99.4	80-120			
Fluoride	2.49	0.750	mg/L	2.5000	<0.750	99.6	80-120			
Sulfate	62.2	1.00	mg/L	50.000	9.26	106	80-120			
Matrix Spike (BCH0027-MS2)		**Source: MCG0214-02**		Prepared: 08/01/2017 Analyzed: 08/02/2017						
Chloride	23.3	1.00	mg/L	12.500	11.1	98.2	80-120			
Fluoride	2.44	0.750	mg/L	2.5000	<0.750	97.4	80-120			
Sulfate	59.4	1.00	mg/L	50.000	8.18	102	80-120			
Matrix Spike Dup (BCH0027-MSD1)		**Source: MCG0214-01**		Prepared: 08/01/2017 Analyzed: 08/02/2017						
Chloride	23.9	1.00	mg/L	12.500	11.3	101	80-120	0.829	20	
Fluoride	2.42	0.750	mg/L	2.5000	<0.750	96.8	80-120	2.81	20	
Sulfate	62.0	1.00	mg/L	50.000	9.26	105	80-120	0.314	20	
Matrix Spike Dup (BCH0027-MSD2)		**Source: MCG0214-02**		Prepared: 08/01/2017 Analyzed: 08/02/2017						
Chloride	23.5	1.00	mg/L	12.500	11.1	99.1	80-120	0.513	20	
Fluoride	2.41	0.750	mg/L	2.5000	<0.750	96.5	80-120	0.990	20	
Sulfate	60.7	1.00	mg/L	50.000	8.18	105	80-120	2.26	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0340 - Wet Prep										
Blank (BCG0340-BLK1)				Prepared & Analyzed: 07/20/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCG0340-DUP1)			**Source: MCG0199-02**	Prepared & Analyzed: 07/20/2017						
Total Dissolved Solids	198	20.0	mg/L		182			8.42	20	
Batch BCG0341 - Wet Prep										
LCS (BCG0341-BS1)				Prepared & Analyzed: 07/19/2017						
pH	7.04		pH Units	7.0000		101	90-110			
LCS (BCG0341-BS2)				Prepared & Analyzed: 07/19/2017						
pH	7.08		pH Units	7.0000		101	90-110			
Duplicate (BCG0341-DUP1)			**Source: MCG0199-02**	Prepared & Analyzed: 07/19/2017						
pH	7.73		pH Units		7.78			0.645	20	
Duplicate (BCG0341-DUP2)			**Source: MCG0199-11**	Prepared & Analyzed: 07/19/2017						
pH	7.83		pH Units		7.83			0.00	20	
Duplicate (BCG0341-DUP3)			**Source: MCG0199-21**	Prepared & Analyzed: 07/19/2017						
pH	8.03		pH Units		8.04			0.124	20	
Batch BCG0383 - Wet Prep										
Blank (BCG0383-BLK1)				Prepared & Analyzed: 07/21/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0383 - Wet Prep										
Duplicate (BCG0383-DUP1)		**Source: MCG0199-11**		Prepared & Analyzed: 07/21/2017						
Total Dissolved Solids	216	20.0	mg/L		194			10.7	20	
Batch BCG0426 - Wet Prep										
Blank (BCG0426-BLK1)				Prepared & Analyzed: 07/24/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCG0426-DUP1)		**Source: MCG0199-21**		Prepared & Analyzed: 07/24/2017						
Total Dissolved Solids	456	20.0	mg/L		462			1.31	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0328 - EPA 200.2, EPA 3005										
Blank (BCG0328-BLK1)				Prepared: 07/20/2017 Analyzed: 07/21/2017						
Arsenic	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
LCS (BCG0328-BS1)				Prepared: 07/20/2017 Analyzed: 07/21/2017						
Beryllium	98.8	0.500	ug/L	100.00		98.8	85-115			
Antimony	99.5	0.500	ug/L	100.00		99.5	85-115			
Thallium	99.4	0.500	ug/L	100.00		99.4	85-115			
Selenium	99.1	0.500	ug/L	100.00		99.1	85-115			
Arsenic	101	0.500	ug/L	100.00		101	85-115			
Lead	98.3	0.500	ug/L	100.00		98.3	85-115			
Cadmium	102	0.500	ug/L	100.00		102	85-115			
Chromium	104	0.500	ug/L	100.00		104	85-115			
Barium	103	0.500	ug/L	100.00		103	85-115			
Cobalt	104	0.500	ug/L	100.00		104	85-115			
Molybdenum	101	0.500	ug/L	100.00		101	85-115			
Duplicate (BCG0328-DUP1)		**Source: MCG0199-04**		Prepared: 07/20/2017 Analyzed: 07/21/2017						
Cadmium	0.0411	0.500	ug/L		<0.500				20	
Barium	48.4	0.500	ug/L		48.8			0.936	20	
Lead	0.100	0.500	ug/L		0.0162			144	20	M_D-RL
Beryllium	0.255	0.500	ug/L		<0.500				20	
Thallium	0.162	0.500	ug/L		0.00502			188	20	M_D-RL
Antimony	0.167	0.500	ug/L		0.0421			119	20	M_D-RL
Selenium	0.306	0.500	ug/L		0.339			10.5	20	
Cobalt	0.0511	0.500	ug/L		<0.500				20	
Chromium	0.728	0.500	ug/L		0.684			6.22	20	
Arsenic	0.619	0.500	ug/L		0.529			15.6	20	
Molybdenum	0.297	0.500	ug/L		0.161			59.0	20	M_D-RL

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0328 - EPA 200.2, EPA 3005										
Duplicate (BCG0328-DUP2)		**Source: MCG0199-05**		Prepared: 07/20/2017 Analyzed: 07/21/2017						
Arsenic	0.546	0.500	ug/L		0.607			10.6	20	
Antimony	0.0690	0.500	ug/L		0.0639			7.67	20	
Thallium	0.0153	0.500	ug/L		0.00810			61.8	20	M_D-RL
Beryllium	<0.500	0.500	ug/L		<0.500				20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Cobalt	0.0314	0.500	ug/L		0.0366			15.5	20	
Selenium	0.322	0.500	ug/L		0.347			7.35	20	
Molybdenum	0.325	0.500	ug/L		0.313			3.85	20	
Barium	80.6	0.500	ug/L		80.2			0.613	20	
Chromium	0.892	0.500	ug/L		0.917			2.82	20	
Lead	<0.500	0.500	ug/L		0.0156				20	
Matrix Spike (BCG0328-MS1)		**Source: MCG0199-04**		Prepared: 07/20/2017 Analyzed: 07/21/2017						
Molybdenum	98.9	0.500	ug/L	100.00	0.161	98.8	70-130			
Beryllium	99.7	0.500	ug/L	100.00	<0.500	99.7	70-130			
Cobalt	103	0.500	ug/L	100.00	<0.500	103	70-130			
Antimony	99.4	0.500	ug/L	100.00	0.0421	99.4	70-130			
Thallium	93.1	0.500	ug/L	100.00	0.00502	93.1	70-130			
Arsenic	103	0.500	ug/L	100.00	0.529	102	70-130			
Chromium	105	0.500	ug/L	100.00	0.684	105	70-130			
Cadmium	104	0.500	ug/L	100.00	<0.500	104	70-130			
Barium	152	0.500	ug/L	100.00	48.8	103	70-130			
Selenium	99.5	0.500	ug/L	100.00	0.339	99.1	70-130			
Lead	91.1	0.500	ug/L	100.00	0.0162	91.1	70-130			
Matrix Spike (BCG0328-MS2)		**Source: MCG0199-05**		Prepared: 07/20/2017 Analyzed: 07/21/2017						
Molybdenum	104	0.500	ug/L	100.00	0.313	104	70-130			
Cadmium	98.9	0.500	ug/L	100.00	<0.500	98.9	70-130			
Lead	91.9	0.500	ug/L	100.00	0.0156	91.9	70-130			
Thallium	94.5	0.500	ug/L	100.00	0.00810	94.5	70-130			
Antimony	102	0.500	ug/L	100.00	0.0639	102	70-130			
Arsenic	104	0.500	ug/L	100.00	0.607	103	70-130			
Cobalt	101	0.500	ug/L	100.00	0.0366	101	70-130			
Selenium	100	0.500	ug/L	100.00	0.347	99.7	70-130			
Beryllium	99.6	0.500	ug/L	100.00	<0.500	99.6	70-130			
Chromium	104	0.500	ug/L	100.00	0.917	103	70-130			
Barium	187	0.500	ug/L	100.00	80.2	107	70-130			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0328 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCG0328-MSD1)	**Source: MCG0199-04**			Prepared: 07/20/2017 Analyzed: 07/21/2017						
Cadmium	104	0.500	ug/L	100.00	<0.500	104	70-130	0.305	20	
Arsenic	104	0.500	ug/L	100.00	0.529	103	70-130	1.29	20	
Cobalt	102	0.500	ug/L	100.00	<0.500	102	70-130	0.563	20	
Beryllium	99.8	0.500	ug/L	100.00	<0.500	99.8	70-130	0.0405	20	
Chromium	104	0.500	ug/L	100.00	0.684	104	70-130	0.819	20	
Barium	152	0.500	ug/L	100.00	48.8	103	70-130	0.125	20	
Antimony	99.9	0.500	ug/L	100.00	0.0421	99.9	70-130	0.502	20	
Lead	92.5	0.500	ug/L	100.00	0.0162	92.5	70-130	1.55	20	
Molybdenum	101	0.500	ug/L	100.00	0.161	101	70-130	2.13	20	
Thallium	94.1	0.500	ug/L	100.00	0.00502	94.1	70-130	1.06	20	
Selenium	99.2	0.500	ug/L	100.00	0.339	98.9	70-130	0.264	20	
Matrix Spike Dup (BCG0328-MSD2)	**Source: MCG0199-05**			Prepared: 07/20/2017 Analyzed: 07/21/2017						
Chromium	104	0.500	ug/L	100.00	0.917	103	70-130	0.103	20	
Lead	91.7	0.500	ug/L	100.00	0.0156	91.7	70-130	0.166	20	
Beryllium	97.0	0.500	ug/L	100.00	<0.500	97.0	70-130	2.64	20	
Thallium	95.0	0.500	ug/L	100.00	0.00810	95.0	70-130	0.493	20	
Antimony	100	0.500	ug/L	100.00	0.0639	100	70-130	1.25	20	
Arsenic	106	0.500	ug/L	100.00	0.607	106	70-130	2.10	20	
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130	1.69	20	
Molybdenum	99.8	0.500	ug/L	100.00	0.313	99.5	70-130	4.37	20	
Cobalt	102	0.500	ug/L	100.00	0.0366	102	70-130	0.935	20	
Barium	184	0.500	ug/L	100.00	80.2	104	70-130	1.67	20	
Selenium	98.3	0.500	ug/L	100.00	0.347	98.0	70-130	1.76	20	
Batch BCG0428 - EPA 200.2, EPA 3005										
Blank (BCG0428-BLK1)				Prepared: 07/24/2017 Analyzed: 07/25/2017						
Molybdenum	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0428 - EPA 200.2, EPA 3005										
LCS (BCG0428-BS1)				Prepared: 07/24/2017 Analyzed: 07/25/2017						
Selenium	98.9	0.500	ug/L	100.00		98.9	85-115			
Antimony	100	0.500	ug/L	100.00		100	85-115			
Arsenic	99.6	0.500	ug/L	100.00		99.6	85-115			
Beryllium	102	0.500	ug/L	100.00		102	85-115			
Molybdenum	101	0.500	ug/L	100.00		101	85-115			
Barium	99.7	0.500	ug/L	100.00		99.7	85-115			
Thallium	100	0.500	ug/L	100.00		100	85-115			
Cadmium	96.7	0.500	ug/L	100.00		96.7	85-115			
Lead	99.1	0.500	ug/L	100.00		99.1	85-115			
Cobalt	101	0.500	ug/L	100.00		101	85-115			
Chromium	102	0.500	ug/L	100.00		102	85-115			
Duplicate (BCG0428-DUP1)		**Source: MCG0199-21**		Prepared: 07/24/2017 Analyzed: 07/25/2017						
Cobalt	0.305	0.500	ug/L		0.275			10.1	20	
Thallium	0.125	0.500	ug/L		0.134			7.56	20	
Selenium	2.66	0.500	ug/L		2.70			1.64	20	
Molybdenum	8.97	0.500	ug/L		8.84			1.48	20	
Lead	0.126	0.500	ug/L		0.137			8.10	20	
Chromium	5.70	0.500	ug/L		6.03			5.55	20	
Arsenic	0.728	0.500	ug/L		0.716			1.62	20	
Cadmium	0.0644	0.500	ug/L		0.0726			11.9	20	
Beryllium	0.244	0.500	ug/L		0.203			18.5	20	
Barium	45.3	0.500	ug/L		44.6			1.69	20	
Antimony	0.177	0.500	ug/L		0.168			5.16	20	
Duplicate (BCG0428-DUP2)		**Source: MCG0199-22**		Prepared: 07/24/2017 Analyzed: 07/25/2017						
Cadmium	0.0549	0.500	ug/L		0.0405			30.4	20	M_D-RL
Chromium	5.99	0.500	ug/L		6.14			2.36	20	
Beryllium	0.00883	0.500	ug/L		0.00866			1.89	20	
Barium	98.5	0.500	ug/L		100			1.75	20	
Molybdenum	0.739	0.500	ug/L		0.696			5.99	20	
Arsenic	0.501	0.500	ug/L		0.519			3.43	20	
Cobalt	0.230	0.500	ug/L		0.241			4.61	20	
Lead	0.0208	0.500	ug/L		0.0229			9.54	20	
Antimony	<0.500	0.500	ug/L		<0.500				20	
Thallium	<0.500	0.500	ug/L		<0.500				20	
Selenium	52.0	0.500	ug/L		52.8			1.68	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0428 - EPA 200.2, EPA 3005										
Matrix Spike (BCG0428-MS1)		**Source: MCG0199-21**		Prepared: 07/24/2017 Analyzed: 07/25/2017						
Beryllium	98.5	0.500	ug/L	100.00	0.203	98.3	70-130			
Chromium	109	0.500	ug/L	100.00	6.03	103	70-130			
Molybdenum	109	0.500	ug/L	100.00	8.84	100	70-130			
Barium	150	0.500	ug/L	100.00	44.6	105	70-130			
Cobalt	101	0.500	ug/L	100.00	0.275	100	70-130			
Cadmium	97.2	0.500	ug/L	100.00	0.0726	97.1	70-130			
Arsenic	106	0.500	ug/L	100.00	0.716	106	70-130			
Antimony	101	0.500	ug/L	100.00	0.168	101	70-130			
Lead	92.2	0.500	ug/L	100.00	0.137	92.0	70-130			
Selenium	103	0.500	ug/L	100.00	2.70	99.8	70-130			
Thallium	95.6	0.500	ug/L	100.00	0.134	95.5	70-130			
Matrix Spike (BCG0428-MS2)		**Source: MCG0199-22**		Prepared: 07/24/2017 Analyzed: 07/25/2017						
Chromium	112	0.500	ug/L	100.00	6.14	106	70-130			
Thallium	96.4	0.500	ug/L	100.00	<0.500	96.4	70-130			
Lead	92.2	0.500	ug/L	100.00	0.0229	92.2	70-130			
Barium	206	0.500	ug/L	100.00	100	106	70-130			
Selenium	154	0.500	ug/L	100.00	52.8	101	70-130			
Antimony	104	0.500	ug/L	100.00	<0.500	104	70-130			
Cobalt	102	0.500	ug/L	100.00	0.241	102	70-130			
Arsenic	107	0.500	ug/L	100.00	0.519	107	70-130			
Cadmium	95.4	0.500	ug/L	100.00	0.0405	95.4	70-130			
Molybdenum	103	0.500	ug/L	100.00	0.696	102	70-130			
Beryllium	97.1	0.500	ug/L	100.00	0.00866	97.1	70-130			
Matrix Spike Dup (BCG0428-MSD1)		**Source: MCG0199-21**		Prepared: 07/24/2017 Analyzed: 07/25/2017						
Molybdenum	114	0.500	ug/L	100.00	8.84	105	70-130	3.97	20	
Barium	147	0.500	ug/L	100.00	44.6	102	70-130	2.14	20	
Cobalt	99.1	0.500	ug/L	100.00	0.275	98.8	70-130	1.56	20	
Chromium	105	0.500	ug/L	100.00	6.03	99.3	70-130	3.34	20	
Beryllium	98.9	0.500	ug/L	100.00	0.203	98.7	70-130	0.434	20	
Arsenic	103	0.500	ug/L	100.00	0.716	102	70-130	3.25	20	
Cadmium	95.3	0.500	ug/L	100.00	0.0726	95.3	70-130	1.88	20	
Selenium	102	0.500	ug/L	100.00	2.70	99.0	70-130	0.748	20	
Thallium	93.6	0.500	ug/L	100.00	0.134	93.5	70-130	2.12	20	
Lead	90.8	0.500	ug/L	100.00	0.137	90.6	70-130	1.51	20	
Antimony	100	0.500	ug/L	100.00	0.168	99.9	70-130	1.39	20	

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0428 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCG0428-MSD2)		**Source: MCG0199-22**		Prepared: 07/24/2017 Analyzed: 07/25/2017						
Barium	208	0.500	ug/L	100.00	100	107	70-130	0.848	20	
Arsenic	110	0.500	ug/L	100.00	0.519	110	70-130	2.93	20	
Beryllium	100	0.500	ug/L	100.00	0.00866	100	70-130	3.41	20	
Cadmium	95.9	0.500	ug/L	100.00	0.0405	95.9	70-130	0.465	20	
Thallium	97.5	0.500	ug/L	100.00	<0.500	97.5	70-130	1.10	20	
Antimony	103	0.500	ug/L	100.00	<0.500	103	70-130	0.507	20	
Cobalt	107	0.500	ug/L	100.00	0.241	107	70-130	4.54	20	
Molybdenum	107	0.500	ug/L	100.00	0.696	106	70-130	3.49	20	
Lead	93.0	0.500	ug/L	100.00	0.0229	93.0	70-130	0.842	20	
Selenium	152	0.500	ug/L	100.00	52.8	98.8	70-130	1.48	20	
Chromium	117	0.500	ug/L	100.00	6.14	111	70-130	4.15	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0327 - EPA 200.2, EPA 3005										
Blank (BCG0327-BLK1)				Prepared: 07/20/2017 Analyzed: 07/25/2017						
Lithium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Boron	<0.0500	0.0500	mg/L							
LCS (BCG0327-BS1)				Prepared: 07/20/2017 Analyzed: 07/25/2017						
Calcium	102	0.500	mg/L	100.00		102	85-115			
Lithium	1.00	0.0500	mg/L	1.0000		100	85-115			
Boron	0.988	0.0500	mg/L	1.0000		98.8	85-115			
Duplicate (BCG0327-DUP1)		**Source: MCG0199-02**		Prepared: 07/20/2017 Analyzed: 07/25/2017						
Boron	0.0468	0.0500	mg/L		0.0458			2.20	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	48.1	0.500	mg/L		48.6			0.997	20	
Duplicate (BCG0327-DUP2)		**Source: MCG0199-03**		Prepared: 07/20/2017 Analyzed: 07/25/2017						
Calcium	115	0.500	mg/L		115			0.210	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Boron	<0.0500	0.0500	mg/L		<0.0500				20	
Matrix Spike (BCG0327-MS1)		**Source: MCG0199-02**		Prepared: 07/20/2017 Analyzed: 07/25/2017						
Calcium	153	0.500	mg/L	100.00	48.6	105	70-130			
Boron	1.06	0.0500	mg/L	1.0000	0.0458	101	70-130			
Lithium	1.01	0.0500	mg/L	1.0000	<0.0500	101	75-125			
Matrix Spike (BCG0327-MS2)		**Source: MCG0199-03**		Prepared: 07/20/2017 Analyzed: 07/25/2017						
Boron	1.05	0.0500	mg/L	1.0000	<0.0500	105	70-130			
Calcium	221	0.500	mg/L	100.00	115	107	70-130			
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0327 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCG0327-MSD1)		**Source: MCG0199-02**		Prepared: 07/20/2017 Analyzed: 07/25/2017						
Boron	1.07	0.0500	mg/L	1.0000	0.0458	102	70-130	0.920	20	
Calcium	154	0.500	mg/L	100.00	48.6	105	70-130	0.471	20	
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125	0.643	20	
Matrix Spike Dup (BCG0327-MSD2)		**Source: MCG0199-03**		Prepared: 07/20/2017 Analyzed: 07/25/2017						
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125	1.71	20	
Calcium	224	0.500	mg/L	100.00	115	110	70-130	1.29	20	
Boron	1.07	0.0500	mg/L	1.0000	<0.0500	107	70-130	2.17	20	
Batch BCG0427 - EPA 200.2, EPA 3005										
Blank (BCG0427-BLK1)				Prepared: 07/24/2017 Analyzed: 07/26/2017						
Boron	<0.0500	0.0500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
LCS (BCG0427-BS1)				Prepared: 07/24/2017 Analyzed: 07/26/2017						
Lithium	1.01	0.0500	mg/L	1.0000		101	85-115			
Calcium	102	0.500	mg/L	100.00		102	85-115			
Boron	1.03	0.0500	mg/L	1.0000		103	85-115			
Duplicate (BCG0427-DUP1)		**Source: MCG0186-01**		Prepared: 07/24/2017 Analyzed: 07/26/2017						
Boron	0.0989	0.0500	mg/L		0.103			4.34	20	
Calcium	94.8	0.500	mg/L		96.7			1.98	20	
Lithium	0.0429	0.0500	mg/L		0.0443			3.01	20	
Duplicate (BCG0427-DUP2)		**Source: MCG0186-03**		Prepared: 07/24/2017 Analyzed: 07/26/2017						
Calcium	21.7	0.500	mg/L		22.0			1.33	20	
Boron	0.0635	0.0500	mg/L		0.0641			1.00	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0427 - EPA 200.2, EPA 3005										
Matrix Spike (BCG0427-MS1)		**Source: MCG0186-01**		Prepared: 07/24/2017 Analyzed: 07/26/2017						
Lithium	1.06	0.0500	mg/L	1.0000	0.0443	102	75-125			
Calcium	199	0.500	mg/L	100.00	96.7	102	70-130			
Boron	1.13	0.0500	mg/L	1.0000	0.103	102	70-130			
Matrix Spike (BCG0427-MS2)		**Source: MCG0186-03**		Prepared: 07/24/2017 Analyzed: 07/26/2017						
Calcium	124	0.500	mg/L	100.00	22.0	102	70-130			
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125			
Boron	1.09	0.0500	mg/L	1.0000	0.0641	102	70-130			
Matrix Spike Dup (BCG0427-MSD1)		**Source: MCG0186-01**		Prepared: 07/24/2017 Analyzed: 07/26/2017						
Calcium	203	0.500	mg/L	100.00	96.7	106	70-130	1.74	20	
Lithium	1.07	0.0500	mg/L	1.0000	0.0443	102	75-125	0.263	20	
Boron	1.14	0.0500	mg/L	1.0000	0.103	104	70-130	1.19	20	
Matrix Spike Dup (BCG0427-MSD2)		**Source: MCG0186-03**		Prepared: 07/24/2017 Analyzed: 07/26/2017						
Calcium	127	0.500	mg/L	100.00	22.0	105	70-130	2.07	20	
Lithium	1.06	0.0500	mg/L	1.0000	<0.0500	106	75-125	1.65	20	
Boron	1.10	0.0500	mg/L	1.0000	0.0641	104	70-130	1.57	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCG0357 - EPA 245.1, EPA 7470A										
Blank (BCG0357-BLK1)				Prepared & Analyzed: 07/20/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCG0357-BS1)				Prepared & Analyzed: 07/20/2017						
Mercury	2.80	0.200	ug/L	3.0000		93.3	85-115			
Duplicate (BCG0357-DUP1)		**Source: MCG0199-06**		Prepared & Analyzed: 07/20/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCG0357-DUP2)		**Source: MCG0199-07**		Prepared & Analyzed: 07/20/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCG0357-MS1)		**Source: MCG0199-06**		Prepared & Analyzed: 07/20/2017						
Mercury	2.71	0.200	ug/L	3.0000	<0.200	90.4	70-130			
Matrix Spike (BCG0357-MS2)		**Source: MCG0199-07**		Prepared & Analyzed: 07/20/2017						
Mercury	2.87	0.200	ug/L	3.0000	<0.200	95.5	70-130			
Matrix Spike Dup (BCG0357-MSD1)		**Source: MCG0199-06**		Prepared & Analyzed: 07/20/2017						
Mercury	2.77	0.200	ug/L	3.0000	<0.200	92.2	70-130	1.93	20	
Matrix Spike Dup (BCG0357-MSD2)		**Source: MCG0199-07**		Prepared & Analyzed: 07/20/2017						
Mercury	2.70	0.200	ug/L	3.0000	<0.200	90.0	70-130	5.92	20	
Batch BCH0102 - EPA 245.1, EPA 7470A										
Blank (BCH0102-BLK1)				Prepared & Analyzed: 08/03/2017						
Mercury	<0.200	0.200	ug/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0102 - EPA 245.1, EPA 7470A										
LCS (BCH0102-BS1)				Prepared & Analyzed: 08/03/2017						
Mercury	2.65	0.200	ug/L	3.0000		88.2	85-115			
Duplicate (BCH0102-DUP1)		**Source: MCG0199-23**		Prepared & Analyzed: 08/03/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCH0102-DUP2)		**Source: MCG0214-01**		Prepared & Analyzed: 08/03/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCH0102-MS1)		**Source: MCG0199-23**		Prepared & Analyzed: 08/03/2017						
Mercury	2.90	0.200	ug/L	3.0000	<0.200	96.5	70-130			
Matrix Spike (BCH0102-MS2)		**Source: MCG0214-01**		Prepared & Analyzed: 08/03/2017						
Mercury	2.72	0.200	ug/L	3.0000	<0.200	90.7	70-130			
Matrix Spike Dup (BCH0102-MSD1)		**Source: MCG0199-23**		Prepared & Analyzed: 08/03/2017						
Mercury	2.76	0.200	ug/L	3.0000	<0.200	92.0	70-130	4.82	20	
Matrix Spike Dup (BCH0102-MSD2)		**Source: MCG0214-01**		Prepared & Analyzed: 08/03/2017						
Mercury	2.74	0.200	ug/L	3.0000	<0.200	91.5	70-130	0.831	20	

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:34

Qualifiers and Definitions

M_TTT	Sample received at the lab outside of required hold time.
M_D-RL	The RPD for the sample duplicate was outside of QC acceptance limits due to<RL.
Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 2

1698342

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, July 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Rinse	WT				7/17/17	1220		4	1	1	2							✓		
2	P-152a						1255		4	1	1	2							✓		
3	P-130						1350		4	1	1	2							✓		
4	P-150						1435		4	1	1	2							✓		
5	P-131						1540		4	1	1	2							✓		
6	P-154a						1650		4	1	1	2							✓		
7	P-132						1730		4	1	1	2							✓		
8	P-165						1820		4	1	1	2							✓		
9	P-151	WT				7/18/17	0835		4	1	1	2							✓		
10	P-153						0940		4	1	1	2							✓		
11	P-156						1040		4	1	1	2							✓		
12	P-01a-1						1120		4	1	1	2							✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
(1) marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	7/19/17	1210	[signature] / Xcel	7/19/17	~~1210~~ 1305

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
M400841.49	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 7-18-17

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 2

2125456

Section A Required Client Information:
Company: Xcel Energy
Address: Environmental Services MP-7
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:
Report To: Chuck Donkers
Copy To:
Purchase Order No.:
Project Name: Sherco CCR, July 2017
Project Number:

Section C Invoice Information:
Attention: Steve Davis
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-155	WT				7/18/17	1215		4	1	1	2							✓		
2	P-22						1330		4	1	1	2							✓		
3	P-17						1450		4	1	1	2							✓		
4	P-158						1535		4	1	1	2							✓		
5	P-157						1615		4	1	1	2							✓		
6	Duplicate						1615		4	1	1	2							✓		
7	P-23						1740		4	1	1	2							✓		
8	P-141						1840		4	1	1	2							✓		
9	P-162	WT				7/19/17	0925		4	1	1	2							✓		
10	P-163						1020		4	1	1	2							✓		
11	P-164						1105		4	1	1	2							✓		
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
① marked HNO3 bottles filtered and unfiltered	David Anderson / Pace	7/19/17	1210	W / Xcel	7/19/17	~~1210~~ BDJ 7/19/17

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
M400 841.4 SC	Y	Y	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 7/19/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

August 07, 2017

Dave Anderson
Pace Analytical Services - Field Svcs Division
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

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

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

Sincerely,

Robbin Robl
robbin.robl@pacelabs.com
(724)850-5613
Project Manager

Enclosures

cc: Harry S. Davis III, Xcel Energy
Charles A. Donkers, Xcel Energy
Sylvia Hunter, Pace Analytical Services - Field Svcs Division
Christine M. Keefe, Xcel Energy
Ciara Ruikkie, Pace Analytical Services - Field Svcs Division

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Greensburg, PA 15601
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CERTIFICATIONS

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30224831001	**P-74-1**	Water	07/10/17 14:35	07/21/17 09:30
30224831002	**P-73a-1**	Water	07/10/17 15:30	07/21/17 09:30
30224831003	**P-125**	Water	07/10/17 17:10	07/21/17 09:30
30224831004	**P-134**	Water	07/10/17 18:00	07/21/17 09:30
30224831005	**P-138A**	Water	07/11/17 08:10	07/21/17 09:30
30224831006	**P-137A**	Water	07/11/17 09:45	07/21/17 09:30
30224831007	**P-117**	Water	07/11/17 12:00	07/21/17 09:30
30224831008	**P-75-1**	Water	07/11/17 12:50	07/21/17 09:30
30224831009	**P-97**	Water	07/11/17 13:40	07/21/17 09:30
30224831010	**P-98**	Water	07/11/17 16:30	07/21/17 09:30
30224831011	**P-120**	Water	07/11/17 17:40	07/21/17 09:30
30224831012	**P-152a**	Water	07/17/17 12:55	07/21/17 09:30
30224831013	**P-130**	Water	07/17/17 13:50	07/21/17 09:30
30224831014	**P-150**	Water	07/17/17 14:35	07/21/17 09:30
30224831015	**P-131**	Water	07/17/17 15:40	07/21/17 09:30
30224831016	**P-154a**	Water	07/17/17 16:50	07/21/17 09:30
30224831017	**P-132**	Water	07/17/17 17:30	07/21/17 09:30
30224831018	**P-165**	Water	07/17/17 18:20	07/21/17 09:30
30224831019	**P-151**	Water	07/18/17 08:35	07/21/17 09:30
30224831020	**P-153**	Water	07/18/17 09:40	07/21/17 09:30
30224831021	**P-156**	Water	07/18/17 10:40	07/21/17 09:30
30224831022	**P-01a-1**	Water	07/18/17 11:20	07/21/17 09:30
30224831023	**P-155**	Water	07/18/17 12:15	07/21/17 09:30
30224831024	**P-22**	Water	07/18/17 13:30	07/21/17 09:30
30224831025	**P-17**	Water	07/18/17 14:50	07/21/17 09:30
30224831026	**P-158**	Water	07/18/17 15:35	07/21/17 09:30
30224831027	**P-157**	Water	07/18/17 16:15	07/21/17 09:30
30224831028	**P-23**	Water	07/18/17 17:40	07/21/17 09:30
30224831029	**P-141**	Water	07/18/17 18:40	07/21/17 09:30
30224831030	**P-162**	Water	07/19/17 09:25	07/21/17 09:30
30224831031	**P-163**	Water	07/19/17 10:20	07/21/17 09:30
30224831032	**P-164**	Water	07/19/17 11:05	07/21/17 09:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30224831001	**P-74-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831002	**P-73a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831003	**P-125**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831004	**P-134**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831005	**P-138A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831006	**P-137A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831007	**P-117**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831008	**P-75-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831009	**P-97**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831010	**P-98**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831011	**P-120**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831012	**P-152a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831013	**P-130**	EPA 903.1	WRR	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831014	**P-150**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831015	**P-131**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831016	**P-154a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831017	**P-132**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831018	**P-165**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831019	**P-151**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831020	**P-153**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831021	**P-156**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831022	**P-01a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831023	**P-155**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831024	**P-22**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831025	**P-17**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Total Radium Calculation	RMK	1	PASI-PA
30224831026	**P-158**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831027	**P-157**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831028	**P-23**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831029	**P-141**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831030	**P-162**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831031	**P-163**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
30224831032	**P-164**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Pace-MN Field Services Division
Date: August 07, 2017

General Information:
32 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Pace-MN Field Services Division
Date: August 07, 2017

General Information:
32 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Pace-MN Field Services Division
Date: August 07, 2017

General Information:
32 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Sample: P-74-1 **Lab ID: 30224831001** Collected: 07/10/17 14:35 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.659 ± 0.582 (0.863) C:NA T:89%**	pCi/L	08/03/17 12:14	13982-63-3	
Radium-228	EPA 904.0	**0.199 ± 0.325 (0.705) C:81% T:86%**	pCi/L	08/03/17 15:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.858 ± 0.907 (1.57)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-73a-1 **Lab ID: 30224831002** Collected: 07/10/17 15:30 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.182 ± 0.278 (0.447) C:NA T:97%**	pCi/L	08/03/17 12:31	13982-63-3	
Radium-228	EPA 904.0	**0.164 ± 0.365 (0.809) C:75% T:88%**	pCi/L	08/03/17 15:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.346 ± 0.643 (1.26)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-125 **Lab ID: 30224831003** Collected: 07/10/17 17:10 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.209 ± 0.318 (0.512) C:NA T:88%**	pCi/L	08/03/17 12:49	13982-63-3	
Radium-228	EPA 904.0	**0.246 ± 0.345 (0.740) C:77% T:87%**	pCi/L	08/03/17 15:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.455 ± 0.663 (1.25)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-134 **Lab ID: 30224831004** Collected: 07/10/17 18:00 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.187 ± 0.405 (0.747) C:NA T:95%**	pCi/L	08/03/17 12:31	13982-63-3	
Radium-228	EPA 904.0	**-0.00626 ± 0.373 (0.855) C:79% T:96%**	pCi/L	08/03/17 15:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.187 ± 0.778 (1.60)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-138A **Lab ID: 30224831005** Collected: 07/11/17 08:10 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.670 ± 0.444 (0.202) C:NA T:84%**	pCi/L	08/03/17 12:31	13982-63-3	
Radium-228	EPA 904.0	**0.0951 ± 0.336 (0.760) C:77% T:87%**	pCi/L	08/03/17 15:08	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Sample: P-138A **Lab ID: 30224831005** Collected: 07/11/17 08:10 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.765 ± 0.780 (0.962)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-137A **Lab ID: 30224831006** Collected: 07/11/17 09:45 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.343 ± 0.487 (0.825) C:NA T:92%**	pCi/L	08/03/17 12:31	13982-63-3	
Radium-228	EPA 904.0	**0.559 ± 0.419 (0.823) C:75% T:80%**	pCi/L	08/03/17 15:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.902 ± 0.906 (1.65)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-117 **Lab ID: 30224831007** Collected: 07/11/17 12:00 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.123 ± 0.341 (0.661) C:NA T:97%**	pCi/L	08/03/17 12:31	13982-63-3	
Radium-228	EPA 904.0	**0.403 ± 0.406 (0.841) C:73% T:84%**	pCi/L	08/03/17 15:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.526 ± 0.747 (1.50)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-75-1 **Lab ID: 30224831008** Collected: 07/11/17 12:50 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.210 ± 0.495 (0.918) C:NA T:86%**	pCi/L	08/03/17 12:51	13982-63-3	
Radium-228	EPA 904.0	**0.529 ± 0.354 (0.673) C:73% T:93%**	pCi/L	08/03/17 15:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.739 ± 0.849 (1.59)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-97 **Lab ID: 30224831009** Collected: 07/11/17 13:40 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.287 ± 0.598 (1.08) C:NA T:86%**	pCi/L	08/03/17 12:51	13982-63-3	
Radium-228	EPA 904.0	**0.366 ± 0.321 (0.647) C:74% T:94%**	pCi/L	08/03/17 15:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.653 ± 0.919 (1.73)**	pCi/L	08/07/17 14:10	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Sample: P-98 **Lab ID: 30224831010** Collected: 07/11/17 16:30 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.270 ± 0.376 (0.627) C:NA T:87%**	pCi/L	08/03/17 12:51	13982-63-3	
Radium-228	EPA 904.0	**0.409 ± 0.352 (0.717) C:99% T:81%**	pCi/L	08/03/17 15:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.679 ± 0.728 (1.34)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-120 **Lab ID: 30224831011** Collected: 07/11/17 17:40 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.130 ± 0.361 (0.700) C:NA T:87%**	pCi/L	08/03/17 13:00	13982-63-3	
Radium-228	EPA 904.0	**-0.0187 ± 0.304 (0.716) C:76% T:83%**	pCi/L	08/03/17 15:08	15262-20-1	
Total Radium	Total Radium Calculation	**0.130 ± 0.665 (1.42)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-152a **Lab ID: 30224831012** Collected: 07/17/17 12:55 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.196 ± 0.299 (0.481) C:NA T:96%**	pCi/L	08/03/17 12:51	13982-63-3	
Radium-228	EPA 904.0	**0.180 ± 0.341 (0.748) C:76% T:91%**	pCi/L	08/03/17 15:09	15262-20-1	
Total Radium	Total Radium Calculation	**0.376 ± 0.640 (1.23)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-130 **Lab ID: 30224831013** Collected: 07/17/17 13:50 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0715 ± 0.326 (0.526) C:NA T:88%**	pCi/L	08/03/17 12:51	13982-63-3	
Radium-228	EPA 904.0	**0.383 ± 0.330 (0.663) C:79% T:87%**	pCi/L	08/03/17 15:09	15262-20-1	
Total Radium	Total Radium Calculation	**0.455 ± 0.656 (1.19)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-150 **Lab ID: 30224831014** Collected: 07/17/17 14:35 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.326 ± 0.300 (0.177) C:NA T:88%**	pCi/L	08/03/17 13:06	13982-63-3	
Radium-228	EPA 904.0	**0.516 ± 0.374 (0.728) C:77% T:85%**	pCi/L	08/03/17 15:09	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Sample: P-150 **Lab ID: 30224831014** Collected: 07/17/17 14:35 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.842 ± 0.674 (0.905)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-131 **Lab ID: 30224831015** Collected: 07/17/17 15:40 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.425 ± 0.483 (1.18) C:NA T:83%**	pCi/L	08/03/17 13:06	13982-63-3	
Radium-228	EPA 904.0	**-0.0109 ± 0.239 (0.560) C:99% T:85%**	pCi/L	08/03/17 15:09	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.722 (1.74)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-154a **Lab ID: 30224831016** Collected: 07/17/17 16:50 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.200 ± 0.471 (0.873) C:NA T:88%**	pCi/L	08/03/17 13:06	13982-63-3	
Radium-228	EPA 904.0	**0.189 ± 0.299 (0.649) C:78% T:91%**	pCi/L	08/03/17 15:10	15262-20-1	
Total Radium	Total Radium Calculation	**0.389 ± 0.770 (1.52)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-132 **Lab ID: 30224831017** Collected: 07/17/17 17:30 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.618 ± 0.610 (0.928) C:NA T:78%**	pCi/L	08/03/17 13:06	13982-63-3	
Radium-228	EPA 904.0	**0.284 ± 0.361 (0.767) C:73% T:86%**	pCi/L	08/03/17 15:10	15262-20-1	
Total Radium	Total Radium Calculation	**0.902 ± 0.971 (1.70)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-165 **Lab ID: 30224831018** Collected: 07/17/17 18:20 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.415 ± 0.433 (0.610) C:NA T:81%**	pCi/L	08/03/17 13:06	13982-63-3	
Radium-228	EPA 904.0	**-0.183 ± 0.270 (0.679) C:76% T:85%**	pCi/L	08/03/17 15:10	15262-20-1	
Total Radium	Total Radium Calculation	**0.415 ± 0.703 (1.29)**	pCi/L	08/07/17 14:10	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Sample: P-151 **Lab ID: 30224831019** Collected: 07/18/17 08:35 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.553 ± 0.562 (0.851) C:NA T:78%**	pCi/L	08/03/17 13:06	13982-63-3	
Radium-228	EPA 904.0	**0.856 ± 0.438 (0.773) C:75% T:85%**	pCi/L	08/03/17 15:10	15262-20-1	
Total Radium	Total Radium Calculation	**1.41 ± 1.000 (1.62)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-153 **Lab ID: 30224831020** Collected: 07/18/17 09:40 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.069 ± 0.406 (0.904) C:NA T:92%**	pCi/L	08/03/17 13:26	13982-63-3	
Radium-228	EPA 904.0	**-0.0227 ± 0.310 (0.726) C:79% T:88%**	pCi/L	08/03/17 15:10	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.716 (1.63)**	pCi/L	08/07/17 14:10	7440-14-4	

Sample: P-156 **Lab ID: 30224831021** Collected: 07/18/17 10:40 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.08 ± 0.596 (0.531) C:NA T:94%**	pCi/L	08/02/17 10:14	13982-63-3	
Radium-228	EPA 904.0	**0.709 ± 0.404 (0.748) C:73% T:93%**	pCi/L	08/03/17 11:29	15262-20-1	
Total Radium	Total Radium Calculation	**1.79 ± 1.000 (1.28)**	pCi/L	08/07/17 14:13	7440-14-4	

Sample: P-01a-1 **Lab ID: 30224831022** Collected: 07/18/17 11:20 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.325 ± 0.299 (0.176) C:NA T:97%**	pCi/L	08/02/17 10:14	13982-63-3	
Radium-228	EPA 904.0	**0.681 ± 0.435 (0.832) C:78% T:78%**	pCi/L	08/03/17 11:29	15262-20-1	
Total Radium	Total Radium Calculation	**1.01 ± 0.734 (1.01)**	pCi/L	08/07/17 14:13	7440-14-4	

Sample: P-155 **Lab ID: 30224831023** Collected: 07/18/17 12:15 Received: 07/21/17 09:30 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 ± 0.468 (0.990) C:NA T:85%**	pCi/L	08/02/17 10:14	13982-63-3	
Radium-228	EPA 904.0	**0.797 ± 0.377 (0.642) C:82% T:85%**	pCi/L	08/03/17 11:29	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Sample: P-155 **Lab ID: 30224831023** Collected: 07/18/17 12:15 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.797 ± 0.845 (1.63)**	pCi/L	08/07/17 14:13	7440-14-4	

Sample: P-22 **Lab ID: 30224831024** Collected: 07/18/17 13:30 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.135 ± 0.324 (0.626) C:NA T:98%**	pCi/L	08/02/17 10:32	13982-63-3	
Radium-228	EPA 904.0	**1.09 ± 0.434 (0.692) C:79% T:93%**	pCi/L	08/03/17 11:29	15262-20-1	
Total Radium	Total Radium Calculation	**1.23 ± 0.758 (1.32)**	pCi/L	08/07/17 14:13	7440-14-4	

Sample: P-17 **Lab ID: 30224831025** Collected: 07/18/17 14:50 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.640 ± 0.579 (0.854) C:NA T:93%**	pCi/L	08/02/17 10:32	13982-63-3	
Radium-228	EPA 904.0	**0.852 ± 0.397 (0.678) C:78% T:90%**	pCi/L	08/03/17 11:29	15262-20-1	
Total Radium	Total Radium Calculation	**1.49 ± 0.976 (1.53)**	pCi/L	08/07/17 14:13	7440-14-4	

Sample: P-158 **Lab ID: 30224831026** Collected: 07/18/17 15:35 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.497 ± 0.402 (0.225) C:NA T:83%**	pCi/L	08/02/17 10:32	13982-63-3	
Radium-228	EPA 904.0	**0.979 ± 0.475 (0.835) C:78% T:78%**	pCi/L	08/03/17 11:30	15262-20-1	
Total Radium	Total Radium Calculation	**1.48 ± 0.877 (1.06)**	pCi/L	08/07/17 14:13	7440-14-4	

Sample: P-157 **Lab ID: 30224831027** Collected: 07/18/17 16:15 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.640 ± 0.475 (0.594) C:NA T:101%**	pCi/L	08/02/17 10:32	13982-63-3	
Radium-228	EPA 904.0	**-0.143 ± 0.309 (0.743) C:80% T:85%**	pCi/L	08/03/17 11:30	15262-20-1	
Total Radium	Total Radium Calculation	**0.640 ± 0.784 (1.34)**	pCi/L	08/07/17 14:13	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Sample: P-23 **Lab ID: 30224831028** Collected: 07/18/17 17:40 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.393 ± 0.361 (0.213) C:NA T:95%**	pCi/L	08/02/17 10:32	13982-63-3	
Radium-228	EPA 904.0	**0.162 ± 0.369 (0.816) C:82% T:77%**	pCi/L	08/03/17 11:30	15262-20-1	
Total Radium	Total Radium Calculation	**0.555 ± 0.730 (1.03)**	pCi/L	08/07/17 14:13	7440-14-4	

Sample: P-141 **Lab ID: 30224831029** Collected: 07/18/17 18:40 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.298 ± 0.754 (1.40) C:NA T:69%**	pCi/L	08/02/17 10:32	13982-63-3	
Radium-228	EPA 904.0	**0.488 ± 0.351 (0.687) C:80% T:86%**	pCi/L	08/03/17 11:30	15262-20-1	
Total Radium	Total Radium Calculation	**0.786 ± 1.11 (2.09)**	pCi/L	08/07/17 14:13	7440-14-4	

Sample: P-162 **Lab ID: 30224831030** Collected: 07/19/17 09:25 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.293 ± 0.455 (0.789) C:NA T:90%**	pCi/L	08/02/17 10:52	13982-63-3	
Radium-228	EPA 904.0	**0.230 ± 0.333 (0.716) C:82% T:82%**	pCi/L	08/03/17 11:30	15262-20-1	
Total Radium	Total Radium Calculation	**0.523 ± 0.788 (1.51)**	pCi/L	08/07/17 14:13	7440-14-4	

Sample: P-163 **Lab ID: 30224831031** Collected: 07/19/17 10:20 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.883 ± 0.491 (0.184) C:NA T:94%**	pCi/L	08/02/17 10:52	13982-63-3	
Radium-228	EPA 904.0	**0.187 ± 0.345 (0.755) C:81% T:85%**	pCi/L	08/03/17 11:30	15262-20-1	
Total Radium	Total Radium Calculation	**1.07 ± 0.836 (0.939)**	pCi/L	08/07/17 14:13	7440-14-4	

Sample: P-164 **Lab ID: 30224831032** Collected: 07/19/17 11:05 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.236 ± 0.359 (0.578) C:NA T:89%**	pCi/L	08/02/17 10:52	13982-63-3	
Radium-228	EPA 904.0	**0.226 ± 0.295 (0.628) C:79% T:86%**	pCi/L	08/03/17 11:31	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

Sample: P-164 **Lab ID: 30224831032** Collected: 07/19/17 11:05 Received: 07/21/17 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.462 ± 0.654 (1.21)**	pCi/L	08/07/17 14:13	7440-14-4	

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

QC Batch: 266279 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30224831001, 30224831002, 30224831003, 30224831004, 30224831005, 30224831006, 30224831007, 30224831008, 30224831009, 30224831010, 30224831011, 30224831012, 30224831013, 30224831014, 30224831015, 30224831016, 30224831017, 30224831018, 30224831019, 30224831020

METHOD BLANK: 1311267 Matrix: Water
Associated Lab Samples: 30224831001, 30224831002, 30224831003, 30224831004, 30224831005, 30224831006, 30224831007, 30224831008, 30224831009, 30224831010, 30224831011, 30224831012, 30224831013, 30224831014, 30224831015, 30224831016, 30224831017, 30224831018, 30224831019, 30224831020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.254 ± 0.431 (0.761) C:NA T:97%	pCi/L	08/03/17 12:14	

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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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

QC Batch: 266486 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30224831021, 30224831022, 30224831023, 30224831024, 30224831025, 30224831026, 30224831027, 30224831028, 30224831029, 30224831030, 30224831031, 30224831032

METHOD BLANK: 1312195 Matrix: Water
Associated Lab Samples: 30224831021, 30224831022, 30224831023, 30224831024, 30224831025, 30224831026, 30224831027, 30224831028, 30224831029, 30224831030, 30224831031, 30224831032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.574 ± 0.324 (0.573) C:80% T:82%	pCi/L	08/03/17 11:30	

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

QC Batch: 266478 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30224831021, 30224831022, 30224831023, 30224831024, 30224831025, 30224831026, 30224831027, 30224831028, 30224831029, 30224831030, 30224831031, 30224831032

METHOD BLANK: 1312118 Matrix: Water
Associated Lab Samples: 30224831021, 30224831022, 30224831023, 30224831024, 30224831025, 30224831026, 30224831027, 30224831028, 30224831029, 30224831030, 30224831031, 30224831032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.567 ± 0.425 (0.219) C:NA T:81%	pCi/L	08/02/17 10:14	

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

QC Batch: 266285 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30224831001, 30224831002, 30224831003, 30224831004, 30224831005, 30224831006, 30224831007, 30224831008, 30224831009, 30224831010, 30224831011, 30224831012, 30224831013, 30224831014, 30224831015, 30224831016, 30224831017, 30224831018, 30224831019, 30224831020

METHOD BLANK: 1311276 Matrix: Water
Associated Lab Samples: 30224831001, 30224831002, 30224831003, 30224831004, 30224831005, 30224831006, 30224831007, 30224831008, 30224831009, 30224831010, 30224831011, 30224831012, 30224831013, 30224831014, 30224831015, 30224831016, 30224831017, 30224831018, 30224831019, 30224831020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0301 ± 0.299 (0.703) C:73% T:93%	pCi/L	08/03/17 15:05	

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 17-0767,Xcel Energy-Sherco CCR
Pace Project No.: 30224831

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical®
www.pacelabs.com

Page: 1 of 3

1698339

Section A Required Client Information:
Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:
Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0736, Xcel Energy - Sherco CCR, July 2017
Project Number:

Section C Invoice Information:
Attention: Ciara Ruickie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Rabl
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER
Site Location STATE:

Requested Analysis Filtered (Y/N)

WO#: 30224831

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA 903.1	RA-228 EPA 904.0	Residual	Pace Project No./ Lab I.D.
1	P-74-1	WT	WT				7-10-17	1435		2			2						✓	✓	001
2	P-73A-1							1530		2			2						✓	✓	002
3	P-125							1710		2			2						✓	✓	003
4	P-134		↓				↓	1800		2			2						✓	✓	004
5	P-138A		WT				7-11-17	0810		2			2						✓	✓	005
6	P-137A							0943		2			2						✓	✓	006
7	P-117							1200		2			2						✓	✓	007
8	P-75-1							1250		2			2						✓	✓	008
9	P-97							1340		2			2						✓	✓	009
10	P-98							1630		2			2						✓	✓	010
11	P-120		↓				↓	1740		2			2						✓	✓	011
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
(1) Client needs to analyze for: Radium 226 + 228 pCi/L combined.	David Anderson, Pace	7/19/17	1435		7/21/17	0930	N/A	N	Y	Y
(2) RA-226 EPA 903.1 RA-228 EPA 904.0										

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 7-11-17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

CHAIN-OF-CUSTODY / Analytical Request Document

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

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www.pacelabs.com

1698341

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0767, Xcel Energy - Sherco CCR, July 2017
Project Number:

Section C Invoice Information:

Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Rabl
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																					30224831
1	P-152d	WT				7/17/17	1255		2			2						✓	✓		012
2	P-130						1350		2			2						✓	✓		013
3	P-150						1435		2			2						✓	✓		014
4	P-131						1540		2			2						✓	✓		015
5	P-154d						1650		2			2						✓	✓		016
6	P-132						1730		2			2						✓	✓		017
7	P-165	↓				↓	1820		2			2						✓	✓		018
8	P-151	WT				7/18/17	0835		2			2						✓	✓		019
9	P-153						0940		2			2						✓	✓		020
10	P-156						1040		2			2						✓	✓		021
11	P-01d-1						1120		2			2						✓	✓		022
12	P-155	↓				↓	1215		2			2						✓	✓		023

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1) client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson Pace	7/19/17	1435		7/21/17	0930	N/A	N	Y	Y

(2) RA-226 EPA 903.1
RA-228 EPA 904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 7-18-17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

CHAIN-OF-CUSTODY / Analytical Request Document

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2125457

Section A Required Client Information:
Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:
Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0767, Xcel Energy - Shafco CCR, July 2017
Project Number:

Section C Invoice Information:
Attention: Clara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halvorson
Pace Project Manager: Robbin Robl
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER
Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-22	WT				7/18/17	1330		2			2						✓	✓		30224831 024
2	P-17						1450		2			2						✓	✓		025
3	P-158						1535		2			2						✓	✓		026
4	P-157						1615		2			2						✓	✓		027
5	P-23						1740		2			2						✓	✓		028
6	P-141						1840		2			2						✓	✓		029
7	P-162	WT				7/19/17	0925		2			2						✓	✓		030
8	P-163						1020		2			2						✓	✓		031
9	P-164						1105		2			2						✓	✓		032
10																					
11				DOA	7/19/17																
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
(1) client needs to analyze for: Radium 226 + 228 pCi/L combined.	David Anderson/Pace	7/19/17	1435		7/21/17	0930	NA	N	Y	Y
(2) RA-226 EPA 903.1 RA-228 EPA 904.0										

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 7-19-17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Sample Condition Upon Receipt Pittsburgh

30224831

Pace Analytical

Client Name: Xcel energy Project # _____

Label Z.H.
LIMS Login [illegible]

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 718092688132

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals Intact: ☑ yes ☐ no

Thermometer Used _____ Type of Ice: Wet Blue None

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

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ZH 7/21/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC:	✓			5.
-Includes date/time/ID Matrix: wt				
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered				12.
Organic Samples checked for dechlorination:			✓	13.
Filtered volume received for Dissolved tests			✓	14.
All containers have been checked for preservation.	✓			15. PH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed ZH Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	16.
Trip Blank Present:			✓	17.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: ZH Date: 7/21/17

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

August 2017

Field Datasheets and Laboratory Reports

Xcel - Sherco CCR, August 2017
Field Proj. # 17-0921

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 8/21/17 Page 1 of 3

pH

Meter Make YSI 556 MPS Meter ID MPS-5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.98	25.0	0900	DJA
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.01	25.0	0900	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.00	25.0	0900	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.02	25.0	0910	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.02	22.0	1815	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value: 1000		Low Standard Value: 100	
Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18* Exp. Date:		Cond Std: 100 umhos/cm Ricca - Lot #: 4605D87 *Exp Date: 05/31/18* Exp. Date:	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
1000	25.0	99	25.0

Meter Make YSI 556 MPS ID MPS-5
IC/ICV Time 0915 / 0917
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1820 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 999 Temp (°C) 22.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA Initials 8/21/17 Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 8/21/17

Xcel - Sherco CCR, August 2017
Field Proj. #17-0921

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 8/21/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)		Meter Make YSI 556 MPS ID MPS-5
Calibration Std. Value (mV)	231	Secondary Source Std. Value (mV)	231	
Mfg.	Zobells ORP Std.	Mfg.	Zobells ORP Std.	IC/ICV Time 0920/0922
Lot No.	YSI 16L100067	Lot No.	YSI 16L100376	Initials DJA
Exp Date	07/2017	Exp. Date	11/2017	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)	ICV: (Pass) / Fail
231	25.0	231	25.0	ICV acceptable if ± 10 mV of standard value.

CCV Time 1825	Initials DJA	Std. Value 235	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 236	Temp (°C) 22.0	CCV: (Pass) / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 8/21/17	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation		IC/ICV Time 0850 Initials DJA
Ambient Temp: 25.0 (°C)		Ambient Temp: 25.0 (°C)		DO Meter ID YSI 556 MPS-5
Barometric Pressure 29.02 (in. Hg)		Barometric Pressure 29.02 (in. Hg)		Barometer ID Skymaster DB-26 GW
Barometric Pressure 737.11 (mm Hg)		Barometric Pressure 737.11 (mm Hg)		
Calibration Value[1] 97 (%)		Calibration Value[1] 97 (%)		ICV: (Pass) / Fail
IC Meter Result (%)		ICV Meter Result (%)		(ICV/CCV acceptable if ± 2% of Calibration Value)
97		97		

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1810	Initials DJA	Barometric Pressure 734.57 (in. Hg / mm Hg)			
Calibration Value 97 (%)	Result 97 (%)	CCV: (Pass) / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 8/21/17 (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 8/21/17

Xcel - Sherco CCR, August 2017
Field Proj. # 17-0921

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 8/21/17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	10.0	100	999	IC Time 0830 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.02	9.9	100	999	ICV Time 0840 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	10.0	99	1000	CCV Time 1830 Initials DJA CCV: (Pass) / Fail
CCV		DJA 8/21/17			CCV Time _____ Initials _____ CCV: Pass / Fail
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 8/21/17

Form Revised 11/14/2013

Attach additional notes if necessary

Xcel - Sherco CCR, August 2017
Field Proj. # 17-0921

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 8-22-17 Page 1 of 3

pH

Meter Make YSI 556 MPS Meter ID MPS-5

Initial Calibration (IC)

Buffer Value	Manufacturer	Lot No	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units	ERA	Lot #: 060915	Exp Date: 09/30/17	3.98	18.0	0810	DJA
Buffer: 7.0 units	ERA	Lot #: 100716	Exp Date: 07/31/18	7.03	18.0	0810	DJA
Buffer: 10.0 units	ERA	Lot #: 241015	Exp Date: 11/30/17	10.05	18.0	0810	DJA

IC Slope (%) NA (Pass) / Fail (Acceptable Slope: 92-102%)

Initial Calibration Verification (ICV)

Buffer Value	Manufacturer	Lot No	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	Ricca	Lot #: 4508D35	Exp Date: 08/30/17	7.03	18.0	0815	DJA

(Pass) / Fail (ICV acceptable if ± 0.1 s.u. of buffer value)

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value	Manufacturer	Lot No	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	ERA	Lot #: 100716	Exp Date: 07/31/18	7.01	23.0	1835	DJA

(Pass) / Fail (CCV acceptable if ± 0.1 s.u. of buffer value)

Conductivity

Initial Calibration (IC)

High Standard Value 1000

Cond Std: 1000 umhos/cm
Ricca - Lot #: 4606B22
Exp Date: 06/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	18.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
100	18.0

Meter Make YSI 556 MPS ID MPS-5
IC/ICV Time 0820 / 0822
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1840 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 999 Temp (°C) 23.0 CCV: (Pass) / Fail (CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time DJA Initials 8-22-17 Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail (CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail (CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 8/22/17

Xcel - Sherco CCR, August 2017
Field Proj. # 17-0921

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 8-22-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	240	Secondary Source Std. Value (mV)	240
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI 156 100067	Lot No.	YSI 16L 100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
241	18.0	240	18.0

Meter Make YSI 556 MPS ID MPS-5

IC/ICV Time 0825/0827

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1845	Initials DJA	Std. Value 233	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 233	Temp (°C) 23.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 8-22-17	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	20.0 (°C)	Ambient Temp:	20.0 (°C)
Barometric Pressure	29.03 (in. Hg)	Barometric Pressure	29.03 (in. Hg)
Barometric Pressure	737.36 (mm Hg)	Barometric Pressure	737.36 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)		ICV Meter Result (%)	
97		97	

IC/ICV Time 0800 Initials DJA

DO Meter ID YSI 556 MPS-5

Barometer ID Skymaster DB-26 GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1830	Initials DJA	Barometric Pressure 29.03 (737.36 in. Hg / mm Hg)			
Calibration Value 97 (%)	Result 96 (%)	CCV: (Pass) / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 8-22-17 (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 8/22/17

Xcel - Sherco CCR, August 2017
Field Proj. # 17-0921

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 8-22-17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	10.0	99	999	IC Time 0745 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.02	10.0	99	1000	ICV Time 0755 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	99	999	CCV Time 1850 Initials DJA CCV: (Pass) / Fail
CCV		DJA 8/22/17			CCV Time _____ Initials _____ CCV: Pass / Fail
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 8/22/17

Form Revised 11/14/2013

Attach additional notes if necessary

Xcel - Sherco CCR, August 2017
Field Proj. # 17-0921

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 8/23/17 Page 1 of 3

pH

Meter Make YSI 556 MPS Meter ID MPS-5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	4.00	16.0	0750	DJA
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.07	16.0	0750	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.09	16.0	0750	DJA

IC Slope (%) N/A (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.08	16.0	0800	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.06	24.0	1920	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
High Standard Value	1000	Low Standard Value	100
Cond Std: 1000 umhos/cm Ricca - Lot #: 4606B22 *Exp Date: 06/31/18* Exp. Date		Cond Std: 100 umhos/cm Ricca - Lot #: 4605D87 *Exp Date: 05/31/18* Exp. Date	
Meter Result (µS/cm)	Temp (°C)	Meter Result (µS/cm)	Temp (°C)
999	16.0	98	16.0

Meter Make YSI 556 MPS ID MPS-5
IC/ICV Time 0805 / 0807
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1925 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 998 Temp (°C) 24.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA Initials 8/23/17 Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 8/23/17

Xcel - Sherco CCR, August 2017
Field Proj. # 17-0921

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 8/23/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	242	Secondary Source Std. Value (mV)	242
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI 15G100067	Lot No.	YSI 16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
241	16.0	241	16.0

Meter Make YSI 556 MPS ID MPS-5

IC/ICV Time 0810 / 0812

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time	1930	Initials	DJA	Std. Value	232
Result (mV)	234	Temp (°C)	24.0	CCV: (Pass) / Fail	

☒ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)	DJA 8/23/17	CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)		CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	18.0 (°C)	Ambient Temp:	18.0 (°C)
Barometric Pressure	29.11 (in. Hg)	Barometric Pressure	29.11 (in. Hg)
Barometric Pressure	739.39 (mm Hg)	Barometric Pressure	739.39 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)		ICV Meter Result (%)	
98		98	

IC/ICV Time 0745 Initials DJA

DO Meter ID YSI 556 MPS-5

Barometer ID Skymaster DB-26 GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time	1915	Initials	DJA	Barometric Pressure	738.38 (in. Hg / mm Hg)
Calibration Value	97 (%)	Result	97 (%)	CCV: (Pass) / Fail	

(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure	(in. Hg / mm Hg)
Calibration Value	(%)	Result	DJA 8/23/17 (%)	CCV: Pass / Fail	

(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure	(in. Hg / mm Hg)
Calibration Value	(%)	Result	(%)	CCV: Pass / Fail	

(CCV acceptable if ± 2% of Calibration Value)

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 8/23/17

Xcel - Sherco CCR, August 2017
Field Proj. # 17-0921

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 8/23/17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	9.9	100	999	IC Time 0815 Initials DJA IC: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	99	999	ICV Time 0825 Initials DJA ICV: Pass / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	10.0	100	999	CCV Time 1935 Initials DJA CCV: (Pass) / Fail
CCV		DJA 8/23/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 8/23/17

Form Revised: 11/14/2013

Attach additional notes if necessary

Xcel - Sherco CCR, August 2017
Field Proj. # 17-0921

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 8/24/17 Page 1 of 3

pH

Meter Make YSI 556 MPS Meter ID MPS-5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No. / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	4.00	17.0	0740	DJA
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.06	17.0	0740	DJA
Buffer: 10.0 units ERA - Lot #: 241015 *Exp Date: 11/30/17*	10.10	17.0	0740	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No. / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.05	17.0	0750	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No. / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.02	21.0	1145	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 1000

Cond Std: 1000 umhos/cm
Ricca - Lot #: 4606B22
Exp Date: 06/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
999	17.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
98	17.0

Meter Make YSI 556 MPS ID MPS-5
IC/ICV Time 0755 / 0758
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1150 Initials DJA Std. Value 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 997 Temp (°C) 21.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time DJA Initials 8/24/17 Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 8/24/17

Xcel - Sherco CCR, August 2017
Field Proj. #17-0921

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 8/24/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)		Meter Make YSI 556 MPS ID MPS-5
Calibration Std. Value (mV)	241	Secondary Source Std. Value (mV)	241	
Mfg.	Zobells ORP Std.	Mfg.	Zobells ORP Std.	IC/ICV Time 0800 / 0802
Lot No.	YSI 16L100067	Lot No.	YSI 16L100376	Initials DJA
Exp Date	07/2017	Exp. Date	11/2017	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)	ICV: (Pass) / Fail
241	17.0	242	17.0	ICV acceptable if ± 10 mV of standard value.

CCV Time 1155	Initials DJA	Std. Value 236	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 234	Temp (°C) 21.0	CCV: (Pass) / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 8/24/17	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation		IC/ICV Time 0735 Initials DJA
Ambient Temp:	14.0 (°C)	Ambient Temp:	14.0 (°C)	DO Meter ID YSI 556 MPS - 5
Barometric Pressure	29.13 (in. Hg)	Barometric Pressure	29.13 (in. Hg)	Barometer ID Skymaster DB-26 GW
Barometric Pressure	739.90 (mm Hg)	Barometric Pressure	739.90 (mm Hg)	
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)	ICV: (Pass) / Fail
IC Meter Result (%)		ICV Meter Result (%)		(ICV/CCV acceptable if ± 2% of Calibration Value)
97		98		

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1140	Initials DJA	Barometric Pressure 740.41 (in. Hg / mm Hg)			
Calibration Value 97 (%)	Result 95 (%)	CCV: (Pass) / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 8/24/17 (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 8/24/17

Xcel - Sherco CCR, August 2017
Field Proj. # 17-0921

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 8/24/17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	9.9	100	999	IC Time 0720 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	99	1000	ICV Time 0730 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	10.0	100	999	CCV Time 1200 Initials DJA CCV: Pass / Fail
CCV		DJA 8/24/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 8/24/17

Form Revised: 11/14/2013

Attach additional notes if necessary

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Aug. Project No. 17-0921

Monitoring Point ID P-01a-1 Labeled P-01A

Inside Diameter 2 (inches) Key # 2106 ☐ Locked ☒ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel cover will not close

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	80.98	Feet
Static water level measurement before purging	76.49	Feet
Static water level measurement at time of sampling	76.49	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 8-22-17 Water Column 4.49 Feet

Time Purged 1700-1715 One Casing Volume 0.7 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 2.25 Gallons

Field Sampling Data

Date Sampled 8-22-17

Time Sampled 1725

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 6.9 (mg/l)

Spec. Cond. 650 (µmhos/cm) Turbidity 4.1 (NTU)

Temp. 13.5 (°C) Eh 60 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 76° & sunny, wind W 15

Sample Description: clear & odorless

Observations: DTA 8-22-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1705	7.4	650	13.5	6.9	NA	57	0.75
1710	7.4	650	13.5	6.9	NA	59	1.50
1715	7.4	650	13.5	6.9	NA	60	2.25
			DTA	8-22	-17		

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 8-22-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Aug. Project No. 17-0921

Monitoring Point ID P-17 Labeled P17

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	58.76	Feet
Static water level measurement before purging	35.85	Feet
Static water level measurement at time of sampling	35.85	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 8-22-17 Water Column 22.91 Feet

Time Purged 1025-1122 One Casing Volume 3.7 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 11.4 Gallons

Field Sampling Data

Date Sampled 8-22-17

Time Sampled 1130

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 9.1 (mg/l)

Spec. Cond. 350 (µmhos/cm) Turbidity 1.0 (NTU)

Temp. 11.5 (°C) Eh 74 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 68° + sunny, wind NW 10

Sample Description: clear + odorless

Observations: DTA 8/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp. (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1044	7.3	350	11.5	10.2	NA	77	3.8
1103	7.3	356	11.5	9.5	NA	76	7.6
1122	7.3	350	11.5	9.1	NA	74	11.4
			DTA 8/22/17				

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 8/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Aug. Project No. 17-0921

Monitoring Point ID P-22 Labeled P-22

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	57.85	Feet
Static water level measurement before purging	38.76	Feet
Static water level measurement at time of sampling	38.76	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 8-22-17 Water Column 19.09 Feet

Time Purged 1440-1528 One Casing Volume 3.1 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 8-22-17

Time Sampled 1540

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 8.8 (mg/l)

Spec. Cond. 780 (µmhos/cm) Turbidity 1.6 (NTU)

Temp. 12.0 (°C) Eh 86 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 75°+ sunny, wind W 15

Sample Description: clear + odorless

Observations:

DJA 8/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1456	7.4	780	12.0	9.0	NA	80	3.2
1512	7.4	780	12.0	8.9	NA	83	6.4
1528	7.4	780	12.0	8.8	NA	86	9.6

DJA 8/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 8/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Aug. Project No. 17-0921

Monitoring Point ID P-23 Labeled P-23

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	67.34	Feet
Static water level measurement before purging	40.40	Feet
Static water level measurement at time of sampling	40.40	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 8-22-17 Water Column 26.94 Feet

Time Purged 1310-1416 One Casing Volume 4.4 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 13.2 Gallons

Field Sampling Data

Date Sampled 8-22-17

Time Sampled 1425

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 8.4 (mg/l)

Spec. Cond. 640 (µmhos/cm) Turbidity 0.9 (NTU)

Temp. 13.0 (°C) Eh 91 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 74° + sunny, wind W 15

Sample Description: clear + odorless

Observations:

DJA 8/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1332	7.5	640	13.0	8.8	NA	70	4.4
1354	7.4	640	13.0	8.5	NA	86	8.8
1416	7.4	640	13.0	8.4	NA	91	13.2

DJA 8/22/17

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 8/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Aug. Project No. 17-0921

Monitoring Point ID P-152a Labeled 806318

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	42.18	Feet
Static water level measurement before purging	35.41	Feet
Static water level measurement at time of sampling	35.41	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 8-22-17 Water Column 6.77 Feet

Time Purged 0835-0859 One Casing Volume 1.1 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 3.6 Gallons

Field Sampling Data

Date Sampled 8-22-17

Time Sampled 0910

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 6.7 (units) D.O 11.7 (mg/l)

Spec. Cond. 350 (µmhos/cm) Turbidity 2.5 (NTU)

Temp. 11.0 (°C) Eh 146 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 62° + sunny, wind NW 10

Sample Description: clear + odorless

Observations: DTA 8/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0843	6.6	350	11.0	11.7	NA	160	1.2
0851	6.7	350	11.0	11.8	NA	148	2.4
0859	6.7	350	11.0	11.7	NA	146	3.6

DTA 8/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 8/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Aug. Project No. 17-0921

Monitoring Point ID P-155 Labeled 812964

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 85.47 Feet

Static water level measurement before purging 76.78 Feet

Static water level measurement at time of sampling 76.78 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 8-22-17 Water Column 8.69 Feet

Time Purged 1555-1625 One Casing Volume 1.4 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 4.5 Gallons

Field Sampling Data

Date Sampled 8-22-17

Time Sampled 1640

Sampling Equip. above pump

Analyzed by

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 7.9 (mg/l)

Spec. Cond. 800 (µmhos/cm) Turbidity 6.5 (NTU)

Temp. 13.5 (°C) Eh 61 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 76° + Sunny, Wind W 15

Sample Description: clear + odorless

Observations: DTA 8/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1605	7.4	790	13.5	8.0	NA	54	1.5
1615	7.4	800	13.5	7.9	NA	58	3.0
1625	7.4	800	13.5	7.9	NA	61	4.5
			DTA 8/22/17				

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 8/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Aug. Project No. 17-0921

Monitoring Point ID P-156 Labeled 812965

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	85.53	Feet
Static water level measurement before purging	75.66	Feet
Static water level measurement at time of sampling	75.66	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 8-22-17 Water Column 9.87 Feet

Time Purged 1745 - 1809 One Casing Volume 1.6 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 8-22-17

Time Sampled 1820

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 7.6 (mg/l)

Spec. Cond. 450 (µmhos/cm) Turbidity 6.3 (NTU)

Temp. 14.5 (°C) Eh 167 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 75° + partly cloudy, wind WNW 5

Sample Description: clear + odorless

Observations: DJA 8/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1753	7.5	440	14.5	8.1	NA	168	1.6
1801	7.6	450	14.5	7.8	NA	167	3.2
1809	7.6	450	14.5	7.6	NA	167	4.8
				DJA 8/22/17			

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 8/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Aug. Project No. 17-0921

Monitoring Point ID P-157 Labeled 8/2966

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 49.06 Feet

Static water level measurement before purging 40.90 Feet

Static water level measurement at time of sampling 40.90 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 8-22-17 Water Column 8.16 Feet

Time Purged 1225 - 1246 One Casing Volume 1.3 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 8-22-17

Time Sampled 1306

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 8.3 (mg/l)

Spec. Cond. 710 (µmhos/cm) Turbidity 1.4 (NTU)

Temp. 12.0 (°C) Eh 105 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 72° + sunny, wind NW 10

Sample Description: clear + odorless

Observations: DJA 8-22-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1232	7.3	710	12.0	7.5	NA	86	1.4
1239	7.3	710	12.0	8.2	NA	97	2.8
1246	7.3	710	12.0	8.3	NA	105	4.2

DJA 8/22/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 8/22/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Aug. Project No. 17-0921

Monitoring Point ID P-158 Labeled 812967

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 49.16 Feet

Static water level measurement before purging 38.52 Feet

Static water level measurement at time of sampling 38.52 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 8-22-17 Water Column 10.64 Feet

Time Purged 1140-1207 One Casing Volume 1.7 Gallons

Pump Rate 0.2 (GPM) LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 8-22-16

Time Sampled 1215

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 9.7 (mg/l)

Spec. Cond. 1000 (µmhos/cm) Turbidity 1.5 (NTU)

Temp. 11.5 (°C) Eh 93 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 70° + sunny, wind NW 10

Sample Description: clear + odorless

Observations: DJA 8/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1149	7.2	1000	11.5	9.9	NA	83	1.8
1158	7.2	1000	11.5	9.8	NA	88	3.6
1207	7.2	1000	11.5	9.7	NA	93	5.4
				DJA	8/22/17		

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 03/10/2016

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 8/22/17

Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification #MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

11 January 2018

Charles A Donkers

Environmental Services-Water Minneapolis

250 Marquette Plaza

Minneapolis, MN 55401

RE: Sherco CCR

cc: Laboratory report re-created to only include wells in the Bottom Ash Pond CCR Groundwater Monitoring System. HSD 1/11/18

Enclosed are the results of analyses for samples received by the laboratory on 08/24/2017 13:30. If you have any questions concerning this report, please feel free to contact me.

I certify that this analysis report was prepared under my direction or supervision under a system designed to assure that qualified personnel analyzed the submitted samples. All protocols for analysis were followed as required by Minnesota Rules and the Applicable Management Plan.

Sincerely,

Steve Davis

Project Manager

Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Rinse		MCH0292-01	Water	08/21/2017 11:30	08/24/2017 13:30
P-152a		MCH0292-09	Water	08/22/2017 9:10	08/24/2017 13:30
P-17		MCH0292-11	Water	08/22/2017 11:30	08/24/2017 13:30
P-158		MCH0292-12	Water	08/22/2017 12:15	08/24/2017 13:30
P-157		MCH0292-13	Water	08/22/2017 13:00	08/24/2017 13:30
P-23		MCH0292-14	Water	08/22/2017 14:25	08/24/2017 13:30
P-22		MCH0292-15	Water	08/22/2017 15:40	08/24/2017 13:30
P-155		MCH0292-16	Water	08/22/2017 16:40	08/24/2017 13:30
P-01a-1		MCH0292-17	Water	08/22/2017 17:25	08/24/2017 13:30
P-156		MCH0292-18	Water	08/22/2017 18:20	08/24/2017 13:30
Duplicate		MCH0292-30	Water	08/23/2017 19:05	08/24/2017 13:30

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Rinse

MCH0292-01 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCI0039	9/5/17 11:35	9/5/17 20:02	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0039	9/5/17 11:35	9/5/17 20:02	EPA 300.0	CRL
Sulfate	< 1.00	1.00	mg/L		1	BCI0039	9/5/17 11:35	9/5/17 20:02	EPA 300.0	CRL
Wet Chemistry										
pH	6.73		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 14:32	SM 4500-H+ B	CRL
Total Dissolved Solids	< 20.0	20.0	mg/L		1	BCH0654	8/25/17 9:15	8/25/17 9:15	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 8:26	EPA 200.8	CRL
Barium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 8:26	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 8:26	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 8:26	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 8:26	EPA 200.8	CRL
Chromium	0.540	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 8:26	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 8:26	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 8:26	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 8:26	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 8:26	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 8:26	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 12:45	EPA 200.7	HRD
Calcium	< 0.500	0.500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 12:42	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 12:42	EPA 200.7	HRD

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Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Rinse

MCH0292-01 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0185	9/11/17 8:33	9/11/17 13:43	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-152a

MCH0292-09 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCI0039	9/5/17 11:35	9/5/17 22:45	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0039	9/5/17 11:35	9/5/17 22:45	EPA 300.0	CRL
Sulfate	8.10	1.00	mg/L		1	BCI0039	9/5/17 11:35	9/5/17 22:45	EPA 300.0	CRL
Wet Chemistry										
pH	7.83		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 15:05	SM 4500-H+ B	CRL
Total Dissolved Solids	188	20.0	mg/L		1	BCH0654	8/25/17 9:15	8/25/17 9:15	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:05	EPA 200.8	CRL
Barium	34.2	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:05	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:05	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:05	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:05	EPA 200.8	CRL
Chromium	0.808	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:05	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:05	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:05	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:05	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:05	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:05	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0555	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:13	EPA 200.7	HRD
Calcium	48.9	0.500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:11	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:11	EPA 200.7	HRD

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Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-152a

MCH0292-09 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0185	9/11/17 8:33	9/11/17 14:00	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-17

MCH0292-11 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	23.9	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 12:50	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 12:50	EPA 300.0	CRL
Sulfate	30.3	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 12:50	EPA 300.0	CRL
Wet Chemistry										
pH	7.83		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 15:15	SM 4500-H+ B	CRL
Total Dissolved Solids	302	20.0	mg/L		1	BCH0676	8/28/17 9:32	8/28/17 9:32	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:13	EPA 200.8	CRL
Barium	41.9	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:13	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:13	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:13	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:13	EPA 200.8	CRL
Chromium	1.08	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:13	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:13	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:13	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:13	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:13	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:13	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:23	EPA 200.7	HRD
Calcium	75.7	0.500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:21	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:21	EPA 200.7	HRD

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Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-17

MCH0292-11 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0185	9/11/17 8:33	9/11/17 14:04	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-158

MCH0292-12 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	6.60	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 13:10	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 13:10	EPA 300.0	CRL
Sulfate	269	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 13:10	EPA 300.0	CRL
Wet Chemistry										
pH	7.58		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 15:19	SM 4500-H+ B	CRL
Total Dissolved Solids	688	20.0	mg/L		1	BCH0676	8/28/17 9:32	8/28/17 9:32	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:17	EPA 200.8	CRL
Barium	116	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:17	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:17	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:17	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:17	EPA 200.8	CRL
Chromium	0.853	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:17	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:17	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:17	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:17	EPA 200.8	CRL
Selenium	3.26	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:17	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:17	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.34	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:28	EPA 200.7	HRD
Calcium	145	0.500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:26	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:26	EPA 200.7	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-158

MCH0292-12 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0185	9/11/17 8:33	9/11/17 14:09	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-157

MCH0292-13 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	13.1	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 13:30	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 13:30	EPA 300.0	CRL
Sulfate	86.8	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 13:30	EPA 300.0	CRL
Wet Chemistry										
pH	7.62		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 15:23	SM 4500-H+ B	CRL
Total Dissolved Solids	384	20.0	mg/L		1	BCH0676	8/28/17 9:32	8/28/17 9:32	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:29	EPA 200.8	CRL
Barium	50.6	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:29	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:29	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:29	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:29	EPA 200.8	CRL
Chromium	1.39	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:29	EPA 200.8	CRL
Molybdenum	0.693	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:29	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:29	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:29	EPA 200.8	CRL
Selenium	2.51	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:29	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:29	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.274	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:44	EPA 200.7	HRD
Calcium	90.9	0.500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:42	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:42	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-157

MCH0292-13 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0185	9/11/17 8:33	9/11/17 14:11	EPA 245.1, 7470A	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-23

MCH0292-14 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	23.3	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 13:51	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 13:51	EPA 300.0	CRL
Sulfate	79.5	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 13:51	EPA 300.0	CRL
Wet Chemistry										
pH	7.75		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 15:26	SM 4500-H+ B	CRL
Total Dissolved Solids	424	20.0	mg/L		1	BCH0676	8/28/17 9:32	8/28/17 9:32	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:33	EPA 200.8	CRL
Barium	58.1	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:33	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:33	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:33	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:33	EPA 200.8	CRL
Chromium	0.922	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:33	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:33	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:33	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:33	EPA 200.8	CRL
Selenium	0.924	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:33	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:33	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.307	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:49	EPA 200.7	HRD
Calcium	81.9	0.500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:47	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:47	EPA 200.7	HRD

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Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-23

MCH0292-14 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0185	9/11/17 8:33	9/11/17 14:12	EPA 245.1, 7470A	HRD

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-22

MCH0292-15 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	13.1	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 14:11	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 14:11	EPA 300.0	CRL
Sulfate	151	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 14:11	EPA 300.0	CRL
Wet Chemistry										
pH	7.74		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 15:30	SM 4500-H+ B	CRL
Total Dissolved Solids	508	20.0	mg/L		1	BCH0676	8/28/17 9:32	8/28/17 9:32	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:37	EPA 200.8	CRL
Barium	66.1	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:37	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:37	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:37	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:37	EPA 200.8	CRL
Chromium	1.17	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:37	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:37	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:37	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:37	EPA 200.8	CRL
Selenium	7.90	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:37	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:37	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.52	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:54	EPA 200.7	HRD
Calcium	101	0.500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:52	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:52	EPA 200.7	HRD

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Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-22

MCH0292-15 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0185	9/11/17 8:33	9/11/17 14:14	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-155

MCH0292-16 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	14.9	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 14:32	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 14:32	EPA 300.0	CRL
Sulfate	152	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 14:32	EPA 300.0	CRL
Wet Chemistry										
pH	7.62		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 15:33	SM 4500-H+ B	CRL
Total Dissolved Solids	514	20.0	mg/L		1	BCH0676	8/28/17 9:32	8/28/17 9:32	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:40	EPA 200.8	CRL
Barium	72.9	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:40	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:40	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:40	EPA 200.8	CRL
Cobalt	0.614	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:40	EPA 200.8	CRL
Chromium	8.43	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:40	EPA 200.8	CRL
Molybdenum	1.06	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:40	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:40	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:40	EPA 200.8	CRL
Selenium	4.29	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:40	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:40	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.74	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:59	EPA 200.7	HRD
Calcium	94.2	0.500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:57	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:58	EPA 200.7	HRD

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Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-155

MCH0292-16 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0187	9/11/17 8:40	9/11/17 14:58	EPA 245.1, 7470A	HRD

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Amended Report

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-01a-1

MCH0292-17 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	10.9	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 14:52	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 14:52	EPA 300.0	CRL
Sulfate	84.3	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 14:52	EPA 300.0	CRL
Wet Chemistry										
pH	7.63		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 15:37	SM 4500-H+ B	CRL
Total Dissolved Solids	412	20.0	mg/L		1	BCH0676	8/28/17 9:32	8/28/17 9:32	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:44	EPA 200.8	CRL
Barium	34.8	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:44	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:44	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:44	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:44	EPA 200.8	CRL
Chromium	3.11	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:44	EPA 200.8	CRL
Molybdenum	0.519	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:44	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:44	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:44	EPA 200.8	CRL
Selenium	4.77	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:44	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:44	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.684	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 17:04	EPA 200.7	HRD
Calcium	78.9	0.500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 17:03	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 17:03	EPA 200.7	HRD

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Amended Report

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-01a-1

MCH0292-17 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0187	9/11/17 8:40	9/11/17 15:00	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-156

MCH0292-18 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	2.41	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 15:13	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 15:13	EPA 300.0	CRL
Sulfate	21.5	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 15:13	EPA 300.0	CRL
Wet Chemistry										
pH	7.80		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 15:41	SM 4500-H+ B	CRL
Total Dissolved Solids	246	20.0	mg/L		1	BCH0676	8/28/17 9:32	8/28/17 9:32	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.559	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:48	EPA 200.8	CRL
Barium	54.6	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:48	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:48	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:48	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:48	EPA 200.8	CRL
Chromium	3.89	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:48	EPA 200.8	CRL
Molybdenum	0.644	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:48	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:48	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:48	EPA 200.8	CRL
Selenium	1.23	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:48	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:48	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.202	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 17:09	EPA 200.7	HRD
Calcium	64.2	0.500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 17:08	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 17:08	EPA 200.7	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

P-156

MCH0292-18 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0187	9/11/17 8:40	9/11/17 15:02	EPA 245.1, 7470A	HRD

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Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Duplicate

MCH0292-30 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	2.32	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 21:00	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 21:00	EPA 300.0	CRL
Sulfate	77.3	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 21:00	EPA 300.0	CRL
Wet Chemistry										
pH	7.69		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 16:27	SM 4500-H+ B	CRL
Total Dissolved Solids	446	20.0	mg/L		1	BCH0709	8/29/17 9:11	8/29/17 9:11	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:26	EPA 200.8	CRL
Barium	45.2	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:26	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:26	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:26	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:26	EPA 200.8	CRL
Chromium	2.34	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:26	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:26	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:26	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:26	EPA 200.8	CRL
Selenium	1.60	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:26	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:26	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0666	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:48	EPA 200.7	HRD
Calcium	98.5	0.500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:46	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:46	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Duplicate

MCH0292-30 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0235	9/13/17 8:27	9/13/17 13:29	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0039 - Wet Prep										
Blank (BCI0039-BLK1)				Prepared & Analyzed: 09/05/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCI0039-BLK2)				Prepared & Analyzed: 09/05/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCI0039-BS1)				Prepared & Analyzed: 09/05/2017						
Chloride	25.7	1.00	mg/L	25.000		103	90-110			
Fluoride	5.19	0.750	mg/L	5.0000		104	90-110			
Sulfate	94.6	1.00	mg/L	100.00		94.6	90-110			
LCS (BCI0039-BS2)				Prepared & Analyzed: 09/05/2017						
Chloride	25.3	1.00	mg/L	25.000		101	90-110			
Fluoride	5.02	0.750	mg/L	5.0000		100	90-110			
Sulfate	94.4	1.00	mg/L	100.00		94.4	90-110			
LCS (BCI0039-BS3)				Prepared & Analyzed: 09/05/2017						
Chloride	23.9	1.00	mg/L	25.000		95.7	90-110			
Fluoride	4.71	0.750	mg/L	5.0000		94.2	90-110			
Sulfate	99.8	1.00	mg/L	100.00		99.8	90-110			
Duplicate (BCI0039-DUP1)		**Source: MCH0292-09**		Prepared & Analyzed: 09/05/2017						
Chloride	0.759	1.00	mg/L		0.772			1.70	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	8.22	1.00	mg/L		8.10			1.47	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0039 - Wet Prep										
Duplicate (BCI0039-DUP2)		**Source: MCH0292-10**		Prepared & Analyzed: 09/05/2017						
Chloride	1.09	1.00	mg/L		1.08			0.276	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	10.1	1.00	mg/L		9.56			5.09	20	
Matrix Spike (BCI0039-MS1)		**Source: MCH0292-09**		Prepared & Analyzed: 09/05/2017						
Chloride	13.2	1.00	mg/L	12.500	0.772	99.7	80-120			
Fluoride	2.63	0.750	mg/L	2.5000	<0.750	105	80-120			
Sulfate	54.9	1.00	mg/L	50.000	8.10	93.7	80-120			
Matrix Spike (BCI0039-MS2)		**Source: MCH0292-10**		Prepared & Analyzed: 09/05/2017						
Chloride	12.7	1.00	mg/L	12.500	1.08	92.8	80-120			
Fluoride	2.16	0.750	mg/L	2.5000	<0.750	86.2	80-120			
Sulfate	55.3	1.00	mg/L	50.000	9.56	91.5	80-120			
Matrix Spike Dup (BCI0039-MSD1)		**Source: MCH0292-09**		Prepared & Analyzed: 09/05/2017						
Chloride	12.5	1.00	mg/L	12.500	0.772	94.0	80-120	5.54	20	
Fluoride	2.34	0.750	mg/L	2.5000	<0.750	93.5	80-120	11.9	20	
Sulfate	54.9	1.00	mg/L	50.000	8.10	93.6	80-120	0.102	20	
Matrix Spike Dup (BCI0039-MSD2)		**Source: MCH0292-10**		Prepared & Analyzed: 09/05/2017						
Chloride	12.9	1.00	mg/L	12.500	1.08	94.5	80-120	1.74	20	
Fluoride	2.08	0.750	mg/L	2.5000	<0.750	83.2	80-120	3.54	20	
Sulfate	55.9	1.00	mg/L	50.000	9.56	92.6	80-120	1.01	20	
Batch BCI0058 - Wet Prep										
Blank (BCI0058-BLK1)				Prepared & Analyzed: 09/06/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0058 - Wet Prep										
Blank (BCI0058-BLK2)				Prepared & Analyzed: 09/06/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCI0058-BS1)				Prepared & Analyzed: 09/06/2017						
Chloride	25.7	1.00	mg/L	25.000		103	90-110			
Fluoride	5.41	0.750	mg/L	5.0000		108	90-110			
Sulfate	95.2	1.00	mg/L	100.00		95.2	90-110			
LCS (BCI0058-BS2)				Prepared & Analyzed: 09/06/2017						
Chloride	25.4	1.00	mg/L	25.000		102	90-110			
Fluoride	5.22	0.750	mg/L	5.0000		104	90-110			
Sulfate	101	1.00	mg/L	100.00		101	90-110			
LCS (BCI0058-BS3)				Prepared & Analyzed: 09/06/2017						
Chloride	23.4	1.00	mg/L	25.000		93.5	90-110			
Fluoride	4.78	0.750	mg/L	5.0000		95.5	90-110			
Sulfate	93.7	1.00	mg/L	100.00		93.7	90-110			
Duplicate (BCI0058-DUP1)		**Source: MCH0292-18**		Prepared & Analyzed: 09/06/2017						
Chloride	2.45	1.00	mg/L		2.41			1.98	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	21.7	1.00	mg/L		21.5			1.34	20	
Duplicate (BCI0058-DUP2)		**Source: MCH0292-27**		Prepared & Analyzed: 09/06/2017						
Chloride	0.568	1.00	mg/L		0.568			0.00	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	2.81	1.00	mg/L		2.69			4.47	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0058 - Wet Prep										
Matrix Spike (BCI0058-MS1)		**Source: MCH0292-18**		Prepared & Analyzed: 09/06/2017						
Chloride	15.3	1.00	mg/L	12.500	2.41	103	80-120			
Fluoride	2.66	0.750	mg/L	2.5000	<0.750	106	80-120			
Sulfate	69.2	1.00	mg/L	50.000	21.5	95.5	80-120			
Matrix Spike (BCI0058-MS2)		**Source: MCH0292-27**		Prepared & Analyzed: 09/06/2017						
Chloride	11.5	1.00	mg/L	12.500	0.568	87.2	80-120			
Fluoride	2.46	0.750	mg/L	2.5000	<0.750	98.4	80-120			
Sulfate	51.9	1.00	mg/L	50.000	2.69	98.4	80-120			
Matrix Spike Dup (BCI0058-MSD1)		**Source: MCH0292-18**		Prepared & Analyzed: 09/06/2017						
Chloride	14.8	1.00	mg/L	12.500	2.41	99.5	80-120	3.12	20	
Fluoride	2.33	0.750	mg/L	2.5000	<0.750	93.1	80-120	13.2	20	
Sulfate	69.2	1.00	mg/L	50.000	21.5	95.5	80-120	0.0101	20	
Matrix Spike Dup (BCI0058-MSD2)		**Source: MCH0292-27**		Prepared & Analyzed: 09/06/2017						
Chloride	11.6	1.00	mg/L	12.500	0.568	88.6	80-120	1.52	20	
Fluoride	2.53	0.750	mg/L	2.5000	<0.750	101	80-120	2.88	20	
Sulfate	49.9	1.00	mg/L	50.000	2.69	94.5	80-120	3.86	20	
Batch BCI0061 - Wet Prep										
Blank (BCI0061-BLK1)				Prepared: 09/06/2017 Analyzed: 09/07/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCI0061-BLK2)				Prepared: 09/06/2017 Analyzed: 09/07/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0061 - Wet Prep										
LCS (BCI0061-BS1)				Prepared: 09/06/2017 Analyzed: 09/07/2017						
Chloride	24.4	1.00	mg/L	25.000		97.6	90-110			
Fluoride	4.60	0.750	mg/L	5.0000		91.9	90-110			
Sulfate	93.7	1.00	mg/L	100.00		93.7	90-110			
LCS (BCI0061-BS2)				Prepared: 09/06/2017 Analyzed: 09/07/2017						
Chloride	24.4	1.00	mg/L	25.000		97.8	90-110			
Fluoride	4.52	0.750	mg/L	5.0000		90.5	90-110			
Sulfate	92.9	1.00	mg/L	100.00		92.9	90-110			
LCS (BCI0061-BS3)				Prepared: 09/06/2017 Analyzed: 09/07/2017						
Chloride	25.4	1.00	mg/L	25.000		101	90-110			
Fluoride	5.02	0.750	mg/L	5.0000		100	90-110			
Sulfate	98.7	1.00	mg/L	100.00		98.7	90-110			
Duplicate (BCI0061-DUP1)		**Source: MCH0292-31**		Prepared: 09/06/2017 Analyzed: 09/07/2017						
Chloride	1.68	1.00	mg/L		1.67			0.715	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	10.8	1.00	mg/L		10.7			0.511	20	
Duplicate (BCI0061-DUP2)		**Source: MCH0292-34**		Prepared: 09/06/2017 Analyzed: 09/07/2017						
Chloride	9.73	1.00	mg/L		9.71			0.195	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	39.0	1.00	mg/L		36.8			5.97	20	
Matrix Spike (BCI0061-MS1)		**Source: MCH0292-31**		Prepared: 09/06/2017 Analyzed: 09/07/2017						
Chloride	14.0	1.00	mg/L	12.500	1.67	98.3	80-120			
Fluoride	2.25	0.750	mg/L	2.5000	<0.750	90.0	80-120			
Sulfate	58.0	1.00	mg/L	50.000	10.7	94.6	80-120			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0061 - Wet Prep										
Matrix Spike (BCI0061-MS2)		**Source: MCH0292-34**		Prepared: 09/06/2017 Analyzed: 09/07/2017						
Chloride	21.8	1.00	mg/L	12.500	9.71	96.5	80-120			
Fluoride	2.18	0.750	mg/L	2.5000	<0.750	87.2	80-120			
Sulfate	82.5	1.00	mg/L	50.000	36.8	91.5	80-120			
Matrix Spike Dup (BCI0061-MSD1)		**Source: MCH0292-31**		Prepared: 09/06/2017 Analyzed: 09/07/2017						
Chloride	14.0	1.00	mg/L	12.500	1.67	98.8	80-120	0.465	20	
Fluoride	2.33	0.750	mg/L	2.5000	<0.750	93.2	80-120	3.41	20	
Sulfate	58.4	1.00	mg/L	50.000	10.7	95.3	80-120	0.642	20	
Matrix Spike Dup (BCI0061-MSD2)		**Source: MCH0292-34**		Prepared: 09/06/2017 Analyzed: 09/07/2017						
Chloride	22.0	1.00	mg/L	12.500	9.71	98.0	80-120	0.887	20	
Fluoride	2.25	0.750	mg/L	2.5000	<0.750	90.1	80-120	3.29	20	
Sulfate	83.2	1.00	mg/L	50.000	36.8	92.9	80-120	0.803	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0651 - Wet Prep										
LCS (BCH0651-BS1)				Prepared & Analyzed: 08/24/2017						
pH	7.03		pH Units	7.0000		100	90-110			
LCS (BCH0651-BS2)				Prepared & Analyzed: 08/24/2017						
pH	7.06		pH Units	7.0000		101	90-110			
Duplicate (BCH0651-DUP1)		**Source: MCH0292-02**		Prepared & Analyzed: 08/24/2017						
pH	7.50		pH Units		7.55			0.664	20	
Duplicate (BCH0651-DUP2)		**Source: MCH0292-11**		Prepared & Analyzed: 08/24/2017						
pH	7.82		pH Units		7.83			0.128	20	
Duplicate (BCH0651-DUP3)		**Source: MCH0292-21**		Prepared & Analyzed: 08/24/2017						
pH	7.68		pH Units		7.68			0.00	20	
Duplicate (BCH0651-DUP4)		**Source: MCH0292-31**		Prepared & Analyzed: 08/24/2017						
pH	7.88		pH Units		7.90			0.253	20	
Batch BCH0654 - Wet Prep										
Blank (BCH0654-BLK1)				Prepared & Analyzed: 08/25/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCH0654-DUP1)		**Source: MCH0292-02**		Prepared & Analyzed: 08/25/2017						
Total Dissolved Solids	320	20.0	mg/L		330			3.08	20	
Batch BCH0676 - Wet Prep										
Blank (BCH0676-BLK1)				Prepared & Analyzed: 08/28/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0676 - Wet Prep										
Duplicate (BCH0676-DUP1)		**Source: MCH0292-11**		Prepared & Analyzed: 08/28/2017						
Total Dissolved Solids	300	20.0	mg/L		302			0.664	20	
Batch BCH0709 - Wet Prep										
Blank (BCH0709-BLK1)				Prepared & Analyzed: 08/29/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCH0709-DUP1)		**Source: MCH0292-21**		Prepared & Analyzed: 08/29/2017						
Total Dissolved Solids	354	20.0	mg/L		356			0.563	20	
Batch BCH0729 - Wet Prep										
Blank (BCH0729-BLK1)				Prepared & Analyzed: 08/30/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCH0729-DUP1)		**Source: MCH0292-31**		Prepared & Analyzed: 08/30/2017						
Total Dissolved Solids	230	20.0	mg/L		214			7.21	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0684 - EPA 200.2, EPA 3005										
Blank (BCH0684-BLK1)				Prepared: 08/28/2017 Analyzed: 08/29/2017						
Chromium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
LCS (BCH0684-BS1)				Prepared: 08/28/2017 Analyzed: 08/29/2017						
Beryllium	102	0.500	ug/L	100.00		102	85-115			
Arsenic	100	0.500	ug/L	100.00		100	85-115			
Chromium	99.8	0.500	ug/L	100.00		99.8	85-115			
Cobalt	99.1	0.500	ug/L	100.00		99.1	85-115			
Molybdenum	99.0	0.500	ug/L	100.00		99.0	85-115			
Antimony	96.8	0.500	ug/L	100.00		96.8	85-115			
Thallium	97.1	0.500	ug/L	100.00		97.1	85-115			
Lead	96.4	0.500	ug/L	100.00		96.4	85-115			
Barium	101	0.500	ug/L	100.00		101	85-115			
Cadmium	95.7	0.500	ug/L	100.00		95.7	85-115			
Selenium	93.9	0.500	ug/L	100.00		93.9	85-115			
Duplicate (BCH0684-DUP1)		**Source: MCH0292-04**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Molybdenum	0.151	0.500	ug/L		0.130			14.6	20	
Chromium	0.761	0.500	ug/L		0.788			3.58	20	
Antimony	0.0446	0.500	ug/L		<0.500				20	
Cadmium	0.0286	0.500	ug/L		<0.500				20	
Lead	0.0264	0.500	ug/L		<0.500				20	
Barium	58.4	0.500	ug/L		57.5			1.61	20	
Arsenic	0.553	0.500	ug/L		0.601			8.23	20	
Selenium	0.234	0.500	ug/L		0.268			13.4	20	
Thallium	0.0491	0.500	ug/L		0.00460			166	20	M_D-RL
Cobalt	0.0538	0.500	ug/L		0.0387			32.7	20	M_D-RL
Beryllium	0.0361	0.500	ug/L		<0.500				20	

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Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0684 - EPA 200.2, EPA 3005										
Duplicate (BCH0684-DUP2)		**Source: MCH0292-05**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Beryllium	<0.500	0.500	ug/L		0.00753				20	
Antimony	0.0347	0.500	ug/L		<0.500				20	
Molybdenum	0.148	0.500	ug/L		0.128			14.3	20	
Chromium	0.957	0.500	ug/L		0.808			16.8	20	
Thallium	0.00969	0.500	ug/L		0.00748			25.7	20	M_D-RL
Barium	74.9	0.500	ug/L		73.3			2.28	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Arsenic	0.638	0.500	ug/L		0.653			2.47	20	
Lead	<0.500	0.500	ug/L		0.0231				20	
Selenium	0.376	0.500	ug/L		0.412			9.13	20	
Cobalt	0.256	0.500	ug/L		0.266			3.91	20	
Matrix Spike (BCH0684-MS1)		**Source: MCH0292-04**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Thallium	92.5	0.500	ug/L	100.00	0.00460	92.5	70-130			
Arsenic	104	0.500	ug/L	100.00	0.601	103	70-130			
Molybdenum	101	0.500	ug/L	100.00	0.130	101	70-130			
Cobalt	101	0.500	ug/L	100.00	0.0387	101	70-130			
Chromium	102	0.500	ug/L	100.00	0.788	101	70-130			
Barium	162	0.500	ug/L	100.00	57.5	105	70-130			
Cadmium	94.1	0.500	ug/L	100.00	<0.500	94.1	70-130			
Lead	90.8	0.500	ug/L	100.00	<0.500	90.8	70-130			
Antimony	98.7	0.500	ug/L	100.00	<0.500	98.7	70-130			
Beryllium	99.9	0.500	ug/L	100.00	<0.500	99.9	70-130			
Selenium	95.9	0.500	ug/L	100.00	0.268	95.6	70-130			
Matrix Spike (BCH0684-MS2)		**Source: MCH0292-05**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Thallium	90.4	0.500	ug/L	100.00	0.00748	90.4	70-130			
Cobalt	103	0.500	ug/L	100.00	0.266	103	70-130			
Chromium	106	0.500	ug/L	100.00	0.808	105	70-130			
Lead	87.5	0.500	ug/L	100.00	0.0231	87.5	70-130			
Arsenic	101	0.500	ug/L	100.00	0.653	101	70-130			
Cadmium	95.0	0.500	ug/L	100.00	<0.500	95.0	70-130			
Molybdenum	98.3	0.500	ug/L	100.00	0.128	98.2	70-130			
Antimony	95.9	0.500	ug/L	100.00	<0.500	95.9	70-130			
Selenium	97.1	0.500	ug/L	100.00	0.412	96.6	70-130			
Beryllium	101	0.500	ug/L	100.00	0.00753	101	70-130			
Barium	173	0.500	ug/L	100.00	73.3	99.4	70-130			

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0684 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCH0684-MSD1)		**Source: MCH0292-04**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Cadmium	96.8	0.500	ug/L	100.00	<0.500	96.8	70-130	2.82	20	
Antimony	100	0.500	ug/L	100.00	<0.500	100	70-130	1.38	20	
Barium	163	0.500	ug/L	100.00	57.5	105	70-130	0.271	20	
Thallium	95.3	0.500	ug/L	100.00	0.00460	95.3	70-130	2.95	20	
Molybdenum	101	0.500	ug/L	100.00	0.130	101	70-130	0.0939	20	
Arsenic	106	0.500	ug/L	100.00	0.601	106	70-130	2.33	20	
Lead	92.2	0.500	ug/L	100.00	<0.500	92.2	70-130	1.50	20	
Selenium	95.9	0.500	ug/L	100.00	0.268	95.6	70-130	0.0332	20	
Cobalt	102	0.500	ug/L	100.00	0.0387	101	70-130	0.616	20	
Chromium	105	0.500	ug/L	100.00	0.788	104	70-130	2.61	20	
Beryllium	96.9	0.500	ug/L	100.00	<0.500	96.9	70-130	3.09	20	
Matrix Spike Dup (BCH0684-MSD2)		**Source: MCH0292-05**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Molybdenum	103	0.500	ug/L	100.00	0.128	103	70-130	4.74	20	
Cobalt	101	0.500	ug/L	100.00	0.266	101	70-130	2.21	20	
Selenium	97.3	0.500	ug/L	100.00	0.412	96.8	70-130	0.199	20	
Chromium	105	0.500	ug/L	100.00	0.808	104	70-130	1.20	20	
Beryllium	101	0.500	ug/L	100.00	0.00753	100	70-130	0.512	20	
Cadmium	95.1	0.500	ug/L	100.00	<0.500	95.1	70-130	0.0768	20	
Thallium	95.0	0.500	ug/L	100.00	0.00748	95.0	70-130	4.95	20	
Antimony	103	0.500	ug/L	100.00	<0.500	103	70-130	6.67	20	
Lead	93.0	0.500	ug/L	100.00	0.0231	93.0	70-130	6.06	20	
Barium	183	0.500	ug/L	100.00	73.3	109	70-130	5.57	20	
Arsenic	109	0.500	ug/L	100.00	0.653	108	70-130	7.00	20	
Batch BCH0701 - EPA 200.2, EPA 3005										
Blank (BCH0701-BLK1)				Prepared: 08/28/2017 Analyzed: 08/29/2017						
Barium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0701 - EPA 200.2, EPA 3005										
LCS (BCH0701-BS1)				Prepared: 08/28/2017 Analyzed: 08/29/2017						
Selenium	95.1	0.500	ug/L	100.00		95.1	85-115			
Barium	102	0.500	ug/L	100.00		102	85-115			
Antimony	98.3	0.500	ug/L	100.00		98.3	85-115			
Beryllium	99.4	0.500	ug/L	100.00		99.4	85-115			
Chromium	98.9	0.500	ug/L	100.00		98.9	85-115			
Thallium	95.8	0.500	ug/L	100.00		95.8	85-115			
Cobalt	98.6	0.500	ug/L	100.00		98.6	85-115			
Lead	97.3	0.500	ug/L	100.00		97.3	85-115			
Molybdenum	98.0	0.500	ug/L	100.00		98.0	85-115			
Cadmium	95.5	0.500	ug/L	100.00		95.5	85-115			
Arsenic	101	0.500	ug/L	100.00		101	85-115			
Duplicate (BCH0701-DUP1)		**Source: MCH0292-23**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Cadmium	0.0248	0.500	ug/L		0.0557			76.6	20	M_D-RL
Cobalt	0.344	0.500	ug/L		0.294			15.5	20	
Chromium	5.03	0.500	ug/L		4.98			1.03	20	
Arsenic	0.802	0.500	ug/L		0.680			16.5	20	
Selenium	0.739	0.500	ug/L		0.712			3.75	20	
Antimony	0.152	0.500	ug/L		<0.500				20	
Lead	0.199	0.500	ug/L		0.109			58.1	20	M_D-RL
Thallium	0.119	0.500	ug/L		0.00923			171	20	M_D-RL
Barium	83.7	0.500	ug/L		82.2			1.80	20	
Beryllium	0.206	0.500	ug/L		0.0120			178	20	M_D-RL
Molybdenum	0.982	0.500	ug/L		0.833			16.3	20	
Duplicate (BCH0701-DUP2)		**Source: MCH0292-24**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Barium	49.2	0.500	ug/L		49.1			0.168	20	
Beryllium	0.00722	0.500	ug/L		<0.500				20	
Lead	0.0302	0.500	ug/L		<0.500				20	
Chromium	1.15	0.500	ug/L		1.10			4.18	20	
Arsenic	0.524	0.500	ug/L		0.552			5.12	20	
Thallium	0.0113	0.500	ug/L		<0.500				20	
Antimony	0.0507	0.500	ug/L		0.0394			25.0	20	M_D-RL
Molybdenum	0.234	0.500	ug/L		0.208			11.6	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Selenium	0.439	0.500	ug/L		0.465			5.78	20	
Cobalt	<0.500	0.500	ug/L		0.0373				20	

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0701 - EPA 200.2, EPA 3005										
Matrix Spike (BCH0701-MS1)		**Source: MCH0292-23**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Molybdenum	98.8	0.500	ug/L	100.00	0.833	97.9	70-130			
Antimony	99.0	0.500	ug/L	100.00	<0.500	99.0	70-130			
Chromium	103	0.500	ug/L	100.00	4.98	98.5	70-130			
Selenium	96.4	0.500	ug/L	100.00	0.712	95.7	70-130			
Lead	90.5	0.500	ug/L	100.00	0.109	90.4	70-130			
Thallium	91.9	0.500	ug/L	100.00	0.00923	91.9	70-130			
Arsenic	104	0.500	ug/L	100.00	0.680	103	70-130			
Barium	183	0.500	ug/L	100.00	82.2	101	70-130			
Beryllium	97.3	0.500	ug/L	100.00	0.0120	97.3	70-130			
Cadmium	93.2	0.500	ug/L	100.00	0.0557	93.1	70-130			
Cobalt	97.3	0.500	ug/L	100.00	0.294	97.0	70-130			
Matrix Spike (BCH0701-MS2)		**Source: MCH0292-24**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Molybdenum	101	0.500	ug/L	100.00	0.208	101	70-130			
Arsenic	105	0.500	ug/L	100.00	0.552	104	70-130			
Lead	91.3	0.500	ug/L	100.00	<0.500	91.3	70-130			
Antimony	100	0.500	ug/L	100.00	0.0394	100	70-130			
Thallium	92.1	0.500	ug/L	100.00	<0.500	92.1	70-130			
Cobalt	96.9	0.500	ug/L	100.00	0.0373	96.8	70-130			
Chromium	98.3	0.500	ug/L	100.00	1.10	97.2	70-130			
Beryllium	101	0.500	ug/L	100.00	<0.500	101	70-130			
Barium	156	0.500	ug/L	100.00	49.1	107	70-130			
Selenium	94.8	0.500	ug/L	100.00	0.465	94.3	70-130			
Cadmium	95.5	0.500	ug/L	100.00	<0.500	95.5	70-130			
Matrix Spike Dup (BCH0701-MSD1)		**Source: MCH0292-23**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Thallium	90.3	0.500	ug/L	100.00	0.00923	90.3	70-130	1.72	20	
Arsenic	107	0.500	ug/L	100.00	0.680	106	70-130	2.74	20	
Selenium	96.7	0.500	ug/L	100.00	0.712	96.0	70-130	0.358	20	
Chromium	107	0.500	ug/L	100.00	4.98	102	70-130	3.35	20	
Antimony	98.6	0.500	ug/L	100.00	<0.500	98.6	70-130	0.400	20	
Molybdenum	101	0.500	ug/L	100.00	0.833	100	70-130	2.51	20	
Beryllium	96.0	0.500	ug/L	100.00	0.0120	96.0	70-130	1.38	20	
Cobalt	101	0.500	ug/L	100.00	0.294	101	70-130	4.07	20	
Barium	188	0.500	ug/L	100.00	82.2	106	70-130	2.80	20	
Lead	89.5	0.500	ug/L	100.00	0.109	89.4	70-130	1.14	20	
Cadmium	97.0	0.500	ug/L	100.00	0.0557	96.9	70-130	4.01	20	

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0701 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCH0701-MSD2)		**Source: MCH0292-24**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Selenium	95.5	0.500	ug/L	100.00	0.465	95.0	70-130	0.695	20	
Barium	153	0.500	ug/L	100.00	49.1	104	70-130	1.60	20	
Beryllium	97.7	0.500	ug/L	100.00	<0.500	97.7	70-130	3.73	20	
Antimony	98.5	0.500	ug/L	100.00	0.0394	98.4	70-130	1.95	20	
Thallium	90.7	0.500	ug/L	100.00	<0.500	90.7	70-130	1.60	20	
Molybdenum	100	0.500	ug/L	100.00	0.208	100	70-130	1.05	20	
Arsenic	105	0.500	ug/L	100.00	0.552	105	70-130	0.457	20	
Chromium	98.3	0.500	ug/L	100.00	1.10	97.2	70-130	0.0361	20	
Lead	89.3	0.500	ug/L	100.00	<0.500	89.3	70-130	2.16	20	
Cobalt	97.2	0.500	ug/L	100.00	0.0373	97.1	70-130	0.339	20	
Cadmium	94.9	0.500	ug/L	100.00	<0.500	94.9	70-130	0.659	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0683 - EPA 200.2, EPA 3005										
Blank (BCH0683-BLK1)				Prepared: 08/28/2017 Analyzed: 09/07/2017						
Boron	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
LCS (BCH0683-BS1)				Prepared: 08/28/2017 Analyzed: 09/07/2017						
Lithium	1.03	0.0500	mg/L	1.0000		103	85-115			
Boron	1.01	0.0500	mg/L	1.0000		101	85-115			
Calcium	103	0.500	mg/L	100.00		103	85-115			
Duplicate (BCH0683-DUP1)		**Source: MCH0292-02**		Prepared: 08/28/2017 Analyzed: 09/07/2017						
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	82.4	0.500	mg/L		84.8			2.92	20	
Boron	0.124	0.0500	mg/L		0.125			0.367	20	
Duplicate (BCH0683-DUP2)		**Source: MCH0292-03**		Prepared: 08/28/2017 Analyzed: 09/07/2017						
Boron	0.0557	0.0500	mg/L		0.0613			9.57	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	61.8	0.500	mg/L		61.4			0.494	20	
Matrix Spike (BCH0683-MS1)		**Source: MCH0292-02**		Prepared: 08/28/2017 Analyzed: 09/07/2017						
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125			
Calcium	193	0.500	mg/L	100.00	84.8	108	70-130			
Boron	1.16	0.0500	mg/L	1.0000	0.125	104	70-130			
Matrix Spike (BCH0683-MS2)		**Source: MCH0292-03**		Prepared: 08/28/2017 Analyzed: 09/07/2017						
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125			
Calcium	171	0.500	mg/L	100.00	61.4	110	70-130			
Boron	1.10	0.0500	mg/L	1.0000	0.0613	104	70-130			

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0683 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCH0683-MSD1)		**Source: MCH0292-02**		Prepared: 08/28/2017 Analyzed: 09/07/2017						
Calcium	193	0.500	mg/L	100.00	84.8	108	70-130	0.122	20	
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125	0.125	20	
Boron	1.21	0.0500	mg/L	1.0000	0.125	108	70-130	3.71	20	
Matrix Spike Dup (BCH0683-MSD2)		**Source: MCH0292-03**		Prepared: 08/28/2017 Analyzed: 09/07/2017						
Lithium	1.05	0.0500	mg/L	1.0000	<0.0500	105	75-125	0.726	20	
Boron	1.10	0.0500	mg/L	1.0000	0.0613	104	70-130	0.194	20	
Calcium	171	0.500	mg/L	100.00	61.4	110	70-130	0.152	20	
Batch BCH0700 - EPA 200.2, EPA 3005										
Blank (BCH0700-BLK1)				Prepared: 08/28/2017 Analyzed: 09/06/2017						
Boron	<0.0500	0.0500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
LCS (BCH0700-BS1)				Prepared: 08/28/2017 Analyzed: 09/06/2017						
Lithium	1.01	0.0500	mg/L	1.0000		101	85-115			
Boron	0.990	0.0500	mg/L	1.0000		99.0	85-115			
Calcium	103	0.500	mg/L	100.00		103	85-115			
Duplicate (BCH0700-DUP1)		**Source: MCH0292-21**		Prepared: 08/28/2017 Analyzed: 09/06/2017						
Boron	0.0549	0.0500	mg/L		0.0511			7.19	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	82.7	0.500	mg/L		84.3			1.88	20	
Duplicate (BCH0700-DUP2)		**Source: MCH0292-22**		Prepared: 08/28/2017 Analyzed: 09/06/2017						
Boron	0.0317	0.0500	mg/L		<0.0500				20	
Calcium	70.8	0.500	mg/L		71.3			0.672	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCH0700 - EPA 200.2, EPA 3005										
Matrix Spike (BCH0700-MS1)		**Source: MCH0292-21**		Prepared: 08/28/2017 Analyzed: 09/06/2017						
Calcium	190	0.500	mg/L	100.00	84.3	106	70-130			
Boron	1.05	0.0500	mg/L	1.0000	0.0511	99.8	70-130			
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125			
Matrix Spike (BCH0700-MS2)		**Source: MCH0292-22**		Prepared: 08/28/2017 Analyzed: 09/06/2017						
Calcium	177	0.500	mg/L	100.00	71.3	106	70-130			
Boron	1.04	0.0500	mg/L	1.0000	<0.0500	104	70-130			
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125			
Matrix Spike Dup (BCH0700-MSD1)		**Source: MCH0292-21**		Prepared: 08/28/2017 Analyzed: 09/06/2017						
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125	0.127	20	
Boron	1.06	0.0500	mg/L	1.0000	0.0511	101	70-130	0.713	20	
Calcium	188	0.500	mg/L	100.00	84.3	104	70-130	1.00	20	
Matrix Spike Dup (BCH0700-MSD2)		**Source: MCH0292-22**		Prepared: 08/28/2017 Analyzed: 09/06/2017						
Calcium	174	0.500	mg/L	100.00	71.3	103	70-130	1.62	20	
Boron	1.04	0.0500	mg/L	1.0000	<0.0500	104	70-130	0.0554	20	
Lithium	1.01	0.0500	mg/L	1.0000	<0.0500	101	75-125	1.45	20	

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0185 - EPA 245.1, EPA 7470A										
Blank (BCI0185-BLK1)				Prepared & Analyzed: 09/11/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCI0185-BS1)				Prepared & Analyzed: 09/11/2017						
Mercury	2.92	0.200	ug/L	3.0000		97.4	85-115			
Duplicate (BCI0185-DUP1)		**Source: MCH0292-06**		Prepared & Analyzed: 09/11/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCI0185-DUP2)		**Source: MCH0292-07**		Prepared & Analyzed: 09/11/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCI0185-MS1)		**Source: MCH0292-06**		Prepared & Analyzed: 09/11/2017						
Mercury	2.95	0.200	ug/L	3.0000	<0.200	98.2	70-130			
Matrix Spike (BCI0185-MS2)		**Source: MCH0292-07**		Prepared & Analyzed: 09/11/2017						
Mercury	2.87	0.200	ug/L	3.0000	<0.200	95.5	70-130			
Matrix Spike Dup (BCI0185-MSD1)		**Source: MCH0292-06**		Prepared & Analyzed: 09/11/2017						
Mercury	2.84	0.200	ug/L	3.0000	<0.200	94.7	70-130	3.67	20	
Matrix Spike Dup (BCI0185-MSD2)		**Source: MCH0292-07**		Prepared & Analyzed: 09/11/2017						
Mercury	2.85	0.200	ug/L	3.0000	<0.200	94.9	70-130	0.609	20	
Batch BCI0187 - EPA 245.1, EPA 7470A										
Blank (BCI0187-BLK1)				Prepared & Analyzed: 09/11/2017						
Mercury	<0.200	0.200	ug/L							

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0187 - EPA 245.1, EPA 7470A										
LCS (BCI0187-BS1)				Prepared & Analyzed: 09/11/2017						
Mercury	2.76	0.200	ug/L	3.0000		92.0	85-115			
Duplicate (BCI0187-DUP1)		**Source: MCH0292-16**		Prepared & Analyzed: 09/11/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCI0187-MS1)		**Source: MCH0292-16**		Prepared & Analyzed: 09/11/2017						
Mercury	2.78	0.200	ug/L	3.0000	<0.200	92.8	70-130			
Matrix Spike Dup (BCI0187-MSD1)		**Source: MCH0292-16**		Prepared & Analyzed: 09/11/2017						
Mercury	2.55	0.200	ug/L	3.0000	<0.200	84.9	70-130	8.95	20	
Batch BCI0235 - EPA 245.1, EPA 7470A										
Blank (BCI0235-BLK1)				Prepared & Analyzed: 09/13/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCI0235-BS1)				Prepared & Analyzed: 09/13/2017						
Mercury	2.73	0.200	ug/L	3.0000		91.1	85-115			
Duplicate (BCI0235-DUP1)		**Source: MCH0292-26**		Prepared & Analyzed: 09/13/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCI0235-MS1)		**Source: MCH0292-26**		Prepared & Analyzed: 09/13/2017						
Mercury	2.79	0.200	ug/L	3.0000	<0.200	92.9	70-130			
Matrix Spike Dup (BCI0235-MSD1)		**Source: MCH0292-26**		Prepared & Analyzed: 09/13/2017						
Mercury	2.72	0.200	ug/L	3.0000	<0.200	90.7	70-130	2.42	20	

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:40

Qualifiers and Definitions

M_TTT	Sample received at the lab outside of required hold time.
M_D-RL	The RPD for the sample duplicate was outside of QC acceptance limits due to<RL.
Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 3

2125444

Section A Required Client Information:

Company: Xcel Energy
Address: Environmental Services MP-7
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Chuck Donkers
Copy To:
Purchase Order No.:
Project Name: Sherco CCR, August 2017
Project Number:

Section C Invoice Information:

Attention: Steve Davis
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Rinse	WT				8/21/17	1130		4	1	1	2							✓		
2	P-74-1						1210		4	1	1	2							✓		
3	P-73d-1						1315		4	1	1	2							✓		
4	P-125						1420		4	1	1	2							✓		
5	P-141						1515		4	1	1	2							✓		
6	P-134						1605		4	1	1	2							✓		
7	P-138A						1700		4	1	1	2							✓		
8	P-137A						1800		4	1	1	2							✓		
9	P-152d	WT				8/22/17	0910		4	1	1	2							✓		
10	P-130						1010		4	1	1	2							✓		
11	P-17						1130		4	1	1	2							✓		
12	P-158						1215		4	1	1	2							✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
(1) Marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	8/24/17	1325	Lab: W Xcel	8/24/17	1330

pH strips: MB0050G

ORIGINAL

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
M400841.472	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 8/22/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 2 of 3

2125483

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, August 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-157	WT				8/23/17	1300		4	1	1	2							✓		
2	P-23						1425		4	1	1	2							✓		
3	P-22						1540		4	1	1	2							✓		
4	P-155						1640		4	1	1	2							✓		
5	P-01a-1						1725		4	1	1	2							✓		
6	P-156						1820		4	1	1	2							✓		
7	P-117	WT				8/23/17	0905		4	1	1	2							✓		
8	P-75-1						0945		4	1	1	2							✓		
9	P-97						1025		4	1	1	2							✓		
10	P-98						1120		4	1	1	2							✓		
11	P-120						1210		4	1	1	2							✓		
12	P-150						1320		4	1	1	2							✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1) marked HNO3 bottles filtered and unfiltered.	David Anderson/Pace	8/24/17	1325	Lab: W / Xcel	8/24/17	1330	MY00841 4.72

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	X	X	X

ORIGINAL

pH strip, MB00508

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 8/23/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 3 of 3

2125484

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, August 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-131	WT				8/23/17	1420		4	1	1	2							✓		
2	P-151						1550		4	1	1	2							✓		
3	P-153						1650		4	1	1	2							✓		
4	P-154a						1820		4	1	1	2							✓		
5	P-132						1905		4	1	1	2							✓		
6	Duplicate						1905		4	1	1	2							✓		
7	P-165	WT				8/24/17	0845		4	1	1	2							✓		
8	P-162						0940		4	1	1	2							✓		
9	P-163						1035		4	1	1	2							✓		
10	P-164						1130		4	1	1	2							✓		- Filtered @ Lab
11																					⊥
12				DTA 8/24/17																	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1) marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	8/24/17	1325	W / Xcel	8/24/17	1330	MB0084 14.7°C

pH strips: MB0050 G

ORIGINAL

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	David Anderson
SIGNATURE of SAMPLER:	David Anderson
DATE Signed (MM/DD/YY):	8/24/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	Y	Y

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

September 19, 2017

Dave Anderson
Pace Analytical Services - Field Svcs Division
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Dear Dave Anderson:
Enclosed are the analytical results for sample(s) received by the laboratory on August 28, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Robbin Robl
robbin.robl@pacelabs.com
(724)850-5613
Project Manager

Enclosures

cc: Harry S. Davis III, Xcel Energy
Charles A. Donkers, Xcel Energy
Christine M. Keefe, Xcel Energy
Ciara Ruikkie, Pace Analytical Services - Field Svcs Division

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30228379001	**P-74-1**	Water	08/21/17 12:10	08/28/17 08:45
30228379002	**P-73a-1**	Water	08/21/17 13:15	08/28/17 08:45
30228379003	**P-125**	Water	08/21/17 14:20	08/28/17 08:45
30228379004	**P-141**	Water	08/21/17 15:15	08/28/17 08:45
30228379005	**P-134**	Water	08/21/17 16:05	08/28/17 08:45
30228379006	**P-138A**	Water	08/21/17 17:00	08/28/17 08:45
30228379007	**P-137A**	Water	08/21/17 18:00	08/28/17 08:45
30228379008	**P-152a**	Water	08/22/17 09:10	08/28/17 08:45
30228379009	**P-130**	Water	08/22/17 10:10	08/28/17 08:45
30228379010	**P-17**	Water	08/22/17 11:30	08/28/17 08:45
30228379011	**P-158**	Water	08/22/17 12:15	08/28/17 08:45
30228379012	**P-157**	Water	08/22/17 13:00	08/28/17 08:45
30228379013	**P-23**	Water	08/22/17 14:25	08/28/17 08:45
30228379014	**P-22**	Water	08/22/17 15:40	08/28/17 08:45
30228379015	**P-155**	Water	08/22/17 16:40	08/28/17 08:45
30228379016	**P-01a-1**	Water	08/22/17 17:25	08/28/17 08:45
30228379017	**P-156**	Water	08/22/17 18:20	08/28/17 08:45
30228379018	**P-117**	Water	08/23/17 09:05	08/28/17 08:45
30228379019	**P-75-1**	Water	08/23/17 09:45	08/28/17 08:45
30228379020	**P-97**	Water	08/23/17 10:25	08/28/17 08:45
30228379021	**P-98**	Water	08/23/17 11:20	08/28/17 08:45
30228379022	**P-120**	Water	08/23/17 12:10	08/28/17 08:45
30228379023	**P-150**	Water	08/23/17 13:20	08/28/17 08:45
30228379024	**P-131**	Water	08/23/17 14:20	08/28/17 08:45
30228379025	**P-151**	Water	08/23/17 15:50	08/28/17 08:45
30228379026	**P-153**	Water	08/23/17 16:50	08/28/17 08:45
30228379027	**P-154a**	Water	08/23/17 18:20	08/28/17 08:45
30228379028	**P-132**	Water	08/23/17 19:05	08/28/17 08:45
30228379029	**P-165**	Water	08/24/17 08:45	08/28/17 08:45
30228379030	**P-162**	Water	08/24/17 09:40	08/28/17 08:45
30228379031	**P-163**	Water	08/24/17 10:35	08/28/17 08:45
30228379032	**P-164**	Water	08/24/17 11:30	08/28/17 08:45

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30228379001	**P-74-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379002	**P-73a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379003	**P-125**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379004	**P-141**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379005	**P-134**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379006	**P-138A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379007	**P-137A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379008	**P-152a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379009	**P-130**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379010	**P-17**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379011	**P-158**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379012	**P-157**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379013	**P-23**	EPA 903.1	WRR	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379014	**P-22**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379015	**P-155**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379016	**P-01a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379017	**P-156**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379018	**P-117**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379019	**P-75-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379020	**P-97**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379021	**P-98**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379022	**P-120**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379023	**P-150**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379024	**P-131**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379025	**P-151**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Total Radium Calculation	JAL	1	PASI-PA
30228379026	**P-153**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379027	**P-154a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379028	**P-132**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379029	**P-165**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379030	**P-162**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379031	**P-163**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30228379032	**P-164**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

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PROJECT NARRATIVE

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Pace-MN Field Services Division
Date: September 19, 2017

General Information:
32 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Pace-MN Field Services Division
Date: September 19, 2017

General Information:
32 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Pace-MN Field Services Division
Date: September 19, 2017

General Information:
32 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Sample: P-74-1 **Lab ID: 30228379001** Collected: 08/21/17 12:10 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.189 ± 0.288 (0.464) C:NA T:77%**	pCi/L	09/07/17 20:43	13982-63-3	
Radium-228	EPA 904.0	**0.719 ± 0.404 (0.745) C:77% T:86%**	pCi/L	09/11/17 11:06	15262-20-1	
Total Radium	Total Radium Calculation	**0.908 ± 0.692 (1.21)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-73a-1 **Lab ID: 30228379002** Collected: 08/21/17 13:15 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.465 ± 0.430 (0.626) C:NA T:85%**	pCi/L	09/07/17 20:43	13982-63-3	
Radium-228	EPA 904.0	**0.193 ± 0.354 (0.777) C:75% T:82%**	pCi/L	09/12/17 15:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.658 ± 0.784 (1.40)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-125 **Lab ID: 30228379003** Collected: 08/21/17 14:20 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.414 ± 0.310 (0.160) C:NA T:83%**	pCi/L	09/07/17 20:43	13982-63-3	
Radium-228	EPA 904.0	**0.00411 ± 0.325 (0.760) C:70% T:93%**	pCi/L	09/12/17 15:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.418 ± 0.635 (0.920)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-141 **Lab ID: 30228379004** Collected: 08/21/17 15:15 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.322 ± 0.421 (0.694) C:NA T:75%**	pCi/L	09/07/17 20:43	13982-63-3	
Radium-228	EPA 904.0	**0.363 ± 0.391 (0.815) C:69% T:83%**	pCi/L	09/12/17 15:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.685 ± 0.812 (1.51)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-134 **Lab ID: 30228379005** Collected: 08/21/17 16:05 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.318 ± 0.375 (0.590) C:NA T:78%**	pCi/L	09/07/17 20:43	13982-63-3	
Radium-228	EPA 904.0	**0.166 ± 0.444 (0.987) C:70% T:91%**	pCi/L	09/12/17 15:00	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Sample: P-134 **Lab ID: 30228379005** Collected: 08/21/17 16:05 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.484 ± 0.819 (1.58)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-138A **Lab ID: 30228379006** Collected: 08/21/17 17:00 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.119 ± 0.286 (0.553) C:NA T:81%**	pCi/L	09/07/17 20:59	13982-63-3	
Radium-228	EPA 904.0	**-0.0762 ± 0.362 (0.865) C:73% T:78%**	pCi/L	09/12/17 15:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.119 ± 0.648 (1.42)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-137A **Lab ID: 30228379007** Collected: 08/21/17 18:00 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.132 ± 0.318 (0.614) C:NA T:78%**	pCi/L	09/07/17 20:59	13982-63-3	
Radium-228	EPA 904.0	**-0.228 ± 0.376 (0.929) C:63% T:80%**	pCi/L	09/12/17 15:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.132 ± 0.694 (1.54)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-152a **Lab ID: 30228379008** Collected: 08/22/17 09:10 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.593 ± 0.374 (0.161) C:NA T:84%**	pCi/L	09/07/17 20:59	13982-63-3	
Radium-228	EPA 904.0	**0.235 ± 0.381 (0.827) C:73% T:81%**	pCi/L	09/12/17 15:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.828 ± 0.755 (0.988)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-130 **Lab ID: 30228379009** Collected: 08/22/17 10:10 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.121 ± 0.409 (0.790) C:NA T:81%**	pCi/L	09/07/17 20:59	13982-63-3	
Radium-228	EPA 904.0	**0.508 ± 0.382 (0.749) C:69% T:89%**	pCi/L	09/12/17 15:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.629 ± 0.791 (1.54)**	pCi/L	09/19/17 08:24	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Sample: P-17 **Lab ID: 30228379010** Collected: 08/22/17 11:30 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.522 ± 0.438 (0.627) C:NA T:93%**	pCi/L	09/07/17 20:59	13982-63-3	
Radium-228	EPA 904.0	**0.0416 ± 0.361 (0.833) C:70% T:78%**	pCi/L	09/12/17 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.564 ± 0.799 (1.46)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-158 **Lab ID: 30228379011** Collected: 08/22/17 12:15 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.110 ± 0.252 (0.594) C:NA T:85%**	pCi/L	09/07/17 20:59	13982-63-3	
Radium-228	EPA 904.0	**0.414 ± 0.402 (0.829) C:67% T:94%**	pCi/L	09/12/17 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.414 ± 0.654 (1.42)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-157 **Lab ID: 30228379012** Collected: 08/22/17 13:00 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.186 ± 0.283 (0.168) C:NA T:81%**	pCi/L	09/07/17 21:14	13982-63-3	
Radium-228	EPA 904.0	**-0.000773 ± 0.361 (0.841) C:66% T:87%**	pCi/L	09/12/17 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.186 ± 0.644 (1.01)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-23 **Lab ID: 30228379013** Collected: 08/22/17 14:25 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.477 ± 0.358 (0.185) C:NA T:73%**	pCi/L	09/07/17 21:14	13982-63-3	
Radium-228	EPA 904.0	**0.202 ± 0.338 (0.737) C:68% T:92%**	pCi/L	09/12/17 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.679 ± 0.696 (0.922)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-22 **Lab ID: 30228379014** Collected: 08/22/17 15:40 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.199 ± 0.344 (0.615) C:NA T:76%**	pCi/L	09/07/17 21:14	13982-63-3	
Radium-228	EPA 904.0	**0.0656 ± 0.413 (0.950) C:63% T:72%**	pCi/L	09/12/17 15:01	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Sample: P-22 **Lab ID: 30228379014** Collected: 08/22/17 15:40 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.265 ± 0.757 (1.57)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-155 **Lab ID: 30228379015** Collected: 08/22/17 16:40 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.273 ± 0.313 (0.185) C:NA T:76%**	pCi/L	09/07/17 21:14	13982-63-3	
Radium-228	EPA 904.0	**0.312 ± 0.368 (0.775) C:68% T:84%**	pCi/L	09/12/17 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.585 ± 0.681 (0.960)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-01a-1 **Lab ID: 30228379016** Collected: 08/22/17 17:25 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.119 ± 0.368 (0.837) C:NA T:79%**	pCi/L	09/07/17 21:14	13982-63-3	
Radium-228	EPA 904.0	**0.443 ± 0.339 (0.665) C:74% T:91%**	pCi/L	09/12/17 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.443 ± 0.707 (1.50)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-156 **Lab ID: 30228379017** Collected: 08/22/17 18:20 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.441 ± 0.448 (0.678) C:NA T:80%**	pCi/L	09/07/17 21:14	13982-63-3	
Radium-228	EPA 904.0	**0.356 ± 0.348 (0.713) C:68% T:90%**	pCi/L	09/12/17 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.797 ± 0.796 (1.39)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-117 **Lab ID: 30228379018** Collected: 08/23/17 09:05 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.246 ± 0.343 (0.572) C:NA T:79%**	pCi/L	09/07/17 21:31	13982-63-3	
Radium-228	EPA 904.0	**0.161 ± 0.384 (0.855) C:65% T:80%**	pCi/L	09/12/17 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.407 ± 0.727 (1.43)**	pCi/L	09/19/17 08:24	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Sample: P-75-1 **Lab ID: 30228379019** Collected: 08/23/17 09:45 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.683 ± 0.432 (0.488) C:NA T:86%**	pCi/L	09/08/17 10:13	13982-63-3	
Radium-228	EPA 904.0	**0.614 ± 0.395 (0.739) C:70% T:83%**	pCi/L	09/12/17 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**1.30 ± 0.827 (1.23)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-97 **Lab ID: 30228379020** Collected: 08/23/17 10:25 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.577 ± 0.422 (0.472) C:NA T:77%**	pCi/L	09/08/17 10:13	13982-63-3	
Radium-228	EPA 904.0	**0.411 ± 0.389 (0.797) C:70% T:88%**	pCi/L	09/12/17 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.988 ± 0.811 (1.27)**	pCi/L	09/19/17 08:24	7440-14-4	

Sample: P-98 **Lab ID: 30228379021** Collected: 08/23/17 11:20 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.603 ± 0.363 (0.149) C:NA T:89%**	pCi/L	09/08/17 10:13	13982-63-3	
Radium-228	EPA 904.0	**0.504 ± 0.365 (0.706) C:70% T:89%**	pCi/L	09/12/17 15:01	15262-20-1	
Total Radium	Total Radium Calculation	**1.11 ± 0.728 (0.855)**	pCi/L	09/19/17 08:26	7440-14-4	

Sample: P-120 **Lab ID: 30228379022** Collected: 08/23/17 12:10 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.592 ± 0.440 (0.579) C:NA T:84%**	pCi/L	09/08/17 10:13	13982-63-3	
Radium-228	EPA 904.0	**0.809 ± 0.366 (0.602) C:79% T:90%**	pCi/L	09/12/17 11:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.40 ± 0.806 (1.18)**	pCi/L	09/19/17 08:26	7440-14-4	

Sample: P-150 **Lab ID: 30228379023** Collected: 08/23/17 13:20 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.279 ± 0.291 (0.411) C:NA T:84%**	pCi/L	09/08/17 10:13	13982-63-3	
Radium-228	EPA 904.0	**0.812 ± 0.405 (0.688) C:75% T:78%**	pCi/L	09/12/17 11:56	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Sample: P-150 **Lab ID: 30228379023** Collected: 08/23/17 13:20 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**1.09 ± 0.696 (1.10)**	pCi/L	09/19/17 08:26	7440-14-4	

Sample: P-131 **Lab ID: 30228379024** Collected: 08/23/17 14:20 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.395 ± 0.319 (0.178) C:NA T:73%**	pCi/L	09/08/17 10:31	13982-63-3	
Radium-228	EPA 904.0	**0.444 ± 0.497 (1.05) C:74% T:85%**	pCi/L	09/12/17 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.839 ± 0.816 (1.23)**	pCi/L	09/19/17 08:26	7440-14-4	

Sample: P-151 **Lab ID: 30228379025** Collected: 08/23/17 15:50 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.357 ± 0.333 (0.438) C:NA T:85%**	pCi/L	09/08/17 10:31	13982-63-3	
Radium-228	EPA 904.0	**0.984 ± 0.511 (0.926) C:72% T:84%**	pCi/L	09/12/17 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**1.34 ± 0.844 (1.36)**	pCi/L	09/19/17 08:26	7440-14-4	

Sample: P-153 **Lab ID: 30228379026** Collected: 08/23/17 16:50 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.486 ± 0.386 (0.502) C:NA T:92%**	pCi/L	09/08/17 10:31	13982-63-3	
Radium-228	EPA 904.0	**0.597 ± 0.515 (1.05) C:76% T:80%**	pCi/L	09/12/17 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**1.08 ± 0.901 (1.55)**	pCi/L	09/19/17 08:26	7440-14-4	

Sample: P-154a **Lab ID: 30228379027** Collected: 08/23/17 18:20 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.416 ± 0.422 (0.639) C:NA T:77%**	pCi/L	09/08/17 10:31	13982-63-3	
Radium-228	EPA 904.0	**0.382 ± 0.486 (1.04) C:76% T:79%**	pCi/L	09/12/17 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.798 ± 0.908 (1.68)**	pCi/L	09/19/17 08:26	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Sample: P-132 **Lab ID: 30228379028** Collected: 08/23/17 19:05 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.327 ± 0.301 (0.177) C:NA T:80%**	pCi/L	09/08/17 10:31	13982-63-3	
Radium-228	EPA 904.0	**0.768 ± 0.483 (0.929) C:74% T:85%**	pCi/L	09/12/17 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**1.10 ± 0.784 (1.11)**	pCi/L	09/19/17 08:26	7440-14-4	

Sample: P-165 **Lab ID: 30228379029** Collected: 08/24/17 08:45 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.633 ± 0.470 (0.588) C:NA T:80%**	pCi/L	09/08/17 10:31	13982-63-3	
Radium-228	EPA 904.0	**0.402 ± 0.326 (0.647) C:77% T:88%**	pCi/L	09/12/17 11:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.04 ± 0.796 (1.24)**	pCi/L	09/19/17 08:26	7440-14-4	

Sample: P-162 **Lab ID: 30228379030** Collected: 08/24/17 09:40 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.457 ± 0.321 (0.155) C:NA T:85%**	pCi/L	09/08/17 10:50	13982-63-3	
Radium-228	EPA 904.0	**0.504 ± 0.329 (0.610) C:75% T:82%**	pCi/L	09/12/17 11:56	15262-20-1	
Total Radium	Total Radium Calculation	**0.961 ± 0.650 (0.765)**	pCi/L	09/19/17 08:26	7440-14-4	

Sample: P-163 **Lab ID: 30228379031** Collected: 08/24/17 10:35 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.13 ± 0.523 (0.161) C:NA T:83%**	pCi/L	09/08/17 10:50	13982-63-3	
Radium-228	EPA 904.0	**0.734 ± 0.398 (0.690) C:70% T:78%**	pCi/L	09/12/17 11:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.86 ± 0.921 (0.851)**	pCi/L	09/19/17 08:26	7440-14-4	

Sample: P-164 **Lab ID: 30228379032** Collected: 08/24/17 11:30 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.295 ± 0.348 (0.547) C:NA T:84%**	pCi/L	09/08/17 10:50	13982-63-3	
Radium-228	EPA 904.0	**0.125 ± 0.306 (0.684) C:72% T:82%**	pCi/L	09/12/17 11:57	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

Sample: P-164 **Lab ID: 30228379032** Collected: 08/24/17 11:30 Received: 08/28/17 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.420 ± 0.654 (1.23)**	pCi/L	09/19/17 08:26	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

QC Batch: 269749 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30228379001, 30228379002, 30228379003, 30228379004, 30228379005, 30228379006, 30228379007, 30228379008, 30228379009, 30228379010, 30228379011, 30228379012, 30228379013, 30228379014, 30228379015, 30228379016, 30228379017, 30228379018

METHOD BLANK: 1327747 Matrix: Water
Associated Lab Samples: 30228379001, 30228379002, 30228379003, 30228379004, 30228379005, 30228379006, 30228379007, 30228379008, 30228379009, 30228379010, 30228379011, 30228379012, 30228379013, 30228379014, 30228379015, 30228379016, 30228379017, 30228379018

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.397 ± 0.337 (0.418) C:NA T:91%	pCi/L	09/07/17 20:25	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

QC Batch: 269739 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30228379001

METHOD BLANK: 1327734 Matrix: Water
Associated Lab Samples: 30228379001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0110 ± 0.313 (0.732) C:76% T:80%	pCi/L	09/11/17 11:05	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

QC Batch: 269742 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30228379002, 30228379003, 30228379004, 30228379005, 30228379006, 30228379007, 30228379008, 30228379009, 30228379010, 30228379011, 30228379012, 30228379013, 30228379014, 30228379015, 30228379016, 30228379017, 30228379018, 30228379019, 30228379020, 30228379021

METHOD BLANK: 1327738 Matrix: Water
Associated Lab Samples: 30228379002, 30228379003, 30228379004, 30228379005, 30228379006, 30228379007, 30228379008, 30228379009, 30228379010, 30228379011, 30228379012, 30228379013, 30228379014, 30228379015, 30228379016, 30228379017, 30228379018, 30228379019, 30228379020, 30228379021

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.167 ± 0.296 (0.646) C:79% T:94%	pCi/L	09/12/17 15:00	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

QC Batch: 269750 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30228379019, 30228379020, 30228379021, 30228379022, 30228379023, 30228379024, 30228379025, 30228379026, 30228379027, 30228379028, 30228379029, 30228379030, 30228379031, 30228379032

METHOD BLANK: 1327749 Matrix: Water
Associated Lab Samples: 30228379019, 30228379020, 30228379021, 30228379022, 30228379023, 30228379024, 30228379025, 30228379026, 30228379027, 30228379028, 30228379029, 30228379030, 30228379031, 30228379032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.475 ± 0.315 (0.143) C:NA T:89%	pCi/L	09/08/17 10:13	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

QC Batch: 269743 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30228379022, 30228379023, 30228379024, 30228379025, 30228379026, 30228379027, 30228379028, 30228379029, 30228379030, 30228379031, 30228379032

METHOD BLANK: 1327739 Matrix: Water
Associated Lab Samples: 30228379022, 30228379023, 30228379024, 30228379025, 30228379026, 30228379027, 30228379028, 30228379029, 30228379030, 30228379031, 30228379032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.130 ± 0.313 (0.696) C:81% T:79%	pCi/L	09/12/17 11:56	

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(724)850-5600

QUALIFIERS

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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Pace Analytical®
www.pacelabs.com

CHAIN-O ... ent

The Chain-of-Cu ... ately.

WO#: 30228379

30228379

Page: 1 of 3

2125445

Section A Required Client Information:

Company:	Xcel Energy
Address:	c/o Pace MN Field
Email To:	
Phone:	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	David Anderson
Copy To:	
Purchase Order No.:	
Project Name:	17-0921, Xcel Energy -
Project Number:	Sherco CCR, August 2017

Attention:	Ciara Ruikkie
Company Name:	Pace MN Field services
Address:	
Pace Quote Reference:	Tom Halverson
Pace Project Manager:	Robbin Robl
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-74-1	WT				8/21/17	1210		2			2							✓	✓		001
2	P-73a-1						1315		2			2							✓	✓		002
3	P-125						1420		2			2							✓	✓		003
4	P-141						1515		2			2							✓	✓		004
5	P-134						1605		2			2							✓	✓		005
6	P-138A						1700		2			2							✓	✓		006
7	P-137A						1800		2			2							✓	✓		007
8	P-152a	WT				8/22/17	0910		2			2							✓	✓		008
9	P-130						1010		2			2							✓	✓		009
10	P-17						1130		2			2							✓	✓		010
11	P-158						1215		2			2							✓	✓		011
12	P-157						1300		2			2							✓	✓		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
① Client needs to analyze for: Radium 226 + 228 pCi/L combined.	David Anderson / Pace	8/24/17	1450	C. Carney	8/25/17	0845	WT	Y	Y	Y
② RA-226 EPA 903.1 RA-228 EPA 904.0							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 8/22/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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

30228379

Page: 2 of 3

2125446

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: David Anderson	Attention: Ciara Ruikkie
Address: c/o Pace MN Field	Copy To:	Company Name: Pace MN Field Services
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference: Tom Halverson
Phone: Fax:	Project Name: 17-0921, Xcel Energy -	Pace Project Manager: Robbin Robl
Requested Due Date/TAT:	Project Number: Sherco CCR, August 2017	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	RA-226EPA903.1	RA-228EPA904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-23	WT				8/22/17	1425		2			2							✓	✓		013
2	P-22						1540		2			2							✓	✓		014
3	P-155						1640		2			2							✓	✓		015
4	P-01a-1						1725		2			2							✓	✓		016
5	P-156						1820		2			2							✓	✓		017
6	P-117	WT				8/23/17	0905		2			2							✓	✓		018
7	P-75-1						0945		2			2							✓	✓		019
8	P-97						1025		2			2							✓	✓		020
9	P-98						1120		2			2							✓	✓		021
10	P-120						1210		2			2							✓	✓		022
11	P-150						1320		2			2							✓	✓		023
12	P-131						1420		2			2							✓	✓		024

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1. client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson / Pace	8/24/17	1450	C Carney	8/28/17	0845	[illegible]	Y	Y	Y

2. RA-226EPA903.1
RA-228EPA904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 8/23/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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30228379

Page: 3 of 3

2125481

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-0921, Xcel Energy - Sherco CCR, August 2017
Project Number:

Section C Invoice Information:

Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Robl
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-151	WT				8/23/17	1550		2			2							✓	✓		025
2	P-153	↓				↓	1650		2			2							✓	✓		026
3	P-154a	↓				↓	1820		2			2							✓	✓		027
4	P-132	↓				↓	1905		2			2							✓	✓		028
5	P-165	WT				8/24/17	0845		2			2							✓	✓		029
6	P-162	↓				↓	0940		2			2							✓	✓		030
7	P-163	↓				↓	1035		2			2							✓	✓		031
8	P-164	↓				↓	1130		2			2							✓	✓		032
9																						
10																						
11																						
12																						

JSTA 8/24/17

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
(1) client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson / Pace	8/24/17	1450	C. Carney	8/24/17	0845	NA	X	Y	X
(2) RA-226 EPA 903.1 RA-228 EPA 904.0										

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 8/24/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: XCEL energy Project # 30228379

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label Cx
LIMS Login BLM

Tracking #: 7475 8207 3788

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

Thermometer Used 2A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp 2A °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 8/28/17 CX

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation.	✓			16. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed / Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: CX Date: 8/28/17

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

September 2017

Field Datasheets and Laboratory Reports

Xcel - Sherco CCR, Sept. 2017
Field Proj. # 17-1003

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 9-11-17 Page 1 of 3

pH

Meter Make YSI 556 Meter ID MPS-5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	4.00	25.0	1035	DJA
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.02	25.0	1035	DJA
Buffer: 10.0 units ERA - Lot #: 230916 *Exp Date: 03/31/20*	10.03	25.0	1035	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4607D88 *Exp Date: 07/31/18*	7.03	25.0	1045	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.05	27.0	1740	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 1000
Mfg. Fisher 998
Lot No. CC16243
Exp. Date 07/2018

Meter Result (µS/cm)	Temp (°C)
999	25.0

Initial Cal. Verification (ICV)

Low Standard Value 100
Cond Std: 100 umhos/cm —
Ricca - Lot #: 4605D87 —
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
99	25.0

Meter Make YSI 556 ID MPS-5
IC/ICV Time 1050 / 1053
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1745 Initials DJA Std. Value 998 / 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 997 Temp (°C) 27.0 CCV: (Pass) / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time ____ Initials DJA 9-11-17 Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: (Pass) / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 9-11-17

Xcel - Sherco CCR, Sept. 2017
Field Proj. # 17-1003

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 9-11-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	231	Secondary Source Std. Value (mV)	231
Mfg.	Zobell's ORP std.	Mfg.	Zobell's ORP std.
Lot No.	17F100849	Lot No.	YSI 16L100376
Exp Date	5/2022	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
231	25.0	231	25.0

Meter Make YSI 556 ID MPS-5

IC/ICV Time 1055 / 1057

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1750 Initials DJA Std. Value 228 ☒ Calibration Standard ☐ Secondary Source Standard

Result (mV) 230 Temp (°C) 27.0 CCV: (Pass) / Fail *(CCV acceptable if ± 10 mV of standard value)*

CCV Time ____ Initials ____ Std. Value ____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) ____ Temp (°C) DJA 9-11-17 CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

CCV Time ____ Initials ____ Std. Value ____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	25.0 (°C)	Ambient Temp:	25.0 (°C)
Barometric Pressure	29.15 (in. Hg)	Barometric Pressure	29.15 (in. Hg)
Barometric Pressure	740.41 (mm Hg)	Barometric Pressure	740.41 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)		ICV Meter Result (%)	
97		97	

IC/ICV Time 1030 Initials DJA

DO Meter ID YSI 556 MPS-5

Barometer ID Skymaster DB-26GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1735 Initials DJA Barometric Pressure 739.90 (in. Hg / mm Hg)

Calibration Value 97 (%) Result 97 (%) CCV: (Pass) / Fail *(CCV acceptable if ± 2% of Calibration Value)*

CCV Time ____ Initials ____ Barometric Pressure ____ (in. Hg / mm Hg)

Calibration Value ____ (%) Result ____ (%) DJA 9-11-17 CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

CCV Time ____ Initials ____ Barometric Pressure ____ (in. Hg / mm Hg)

Calibration Value ____ (%) Result ____ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 9-11-17

Xcel - Shetco ECR, Sept. 2017
Field Proj. # 17-1003

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 9-11-17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	100	999	IC Time 1100 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.02	9.9	100	999	ICV Time 1105 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.02	9.9	99	998	CCV Time 1755 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 9-11-17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Ambrose Date: 9-11-17

Form Revised: 11/14/2013

Attach additional notes if necessary

Xcel - Sherco CCR, Sept. 2017
Field Proj. # 17-1003

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 9-12-17 Page 1 of 3

Meter Make YSI 556 Meter ID MPS-5

pH

Initial Calibration (IC)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units	ERA - Lot #: 060915		Exp Date: 09/30/17	3.99	21.0	0745	DJA
Buffer: 7.0 units	ERA - Lot #: 100716		Exp Date: 07/31/18	7.04	21.0	0745	DJA
Buffer: 10.0 units	ERA - Lot #: 230916		Exp Date: 03/31/20	10.04	21.0	0745	DJA

IC Slope (%) NA (Pass) / Fail (Acceptable Slope: 92-102%)

Initial Calibration Verification (ICV)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	Ricca - Lot #: 4607D88		Exp Date: 07/31/18	7.05	21.0	0755	DJA

(Pass) / Fail (ICV acceptable if ± 0.1 s.u. of buffer value)

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	ERA - Lot #: 100716		Exp Date: 07/31/18	7.00	27.0	1840	DJA

(Pass) / Fail (CCV acceptable if ± 0.1 s.u. of buffer value)

Conductivity

Initial Calibration (IC)

High Standard Value: ~~1000~~ 998
Mfg. Fisher
Lot No. CC16243
Exp. Date 07/2018

Meter Result (µS/cm)	Temp (°C)
999	21.0

Initial Cal. Verification (ICV)

Low Standard Value: 100
Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
97	21.0

Meter Make YSI 556 ID MPS-5
IC/ICV Time 0800 / 0802
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time	Initials	Std. Value		Result (µS/cm)	Temp (°C)	CCV	
1845	DJA	~~1000~~ 998	☒ High Standard ☐ Low Standard	1000	27.0	(Pass) / Fail	(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)
			☐ High Standard ☐ Low Standard			Pass / Fail	(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)
			☐ High Standard ☐ Low Standard			Pass / Fail	(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

DJA 9-12-17

Form Revised: 11/13/2013

Lead Technician Signature: Kent Andersen Date: 9-12-17

Xcel - Sherco CCR, Sept. 2017
Field Proj. # 17-1003

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 9-12-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	236	Secondary Source Std. Value (mV)	236
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	17F100849	Lot No.	YSI 16L100376
Exp Date	5/2022	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
235	21.0	235	21.0

Meter Make YSI 556 ID MPS-5

IC/ICV Time 0805 / 0807

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1850	Initials DJA	Std. Value 228	☒ Calibration Standard ☐ Secondary Source Standard	DJA
Result (mV) 230	Temp (°C) 27.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*	
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard	DJA 9/12/17
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*	
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard	
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*	

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	19.0 (°C)	Ambient Temp:	19.0 (°C)
Barometric Pressure	29.02 (in. Hg)	Barometric Pressure	29.02 (in. Hg)
Barometric Pressure	737.11 (mm Hg)	Barometric Pressure	737.11 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)		ICV Meter Result (%)	
97		97	

IC/ICV Time 0740 Initials DJA

DO Meter ID YSI 556 MPS-5

Barometer ID Skymaster DB-266W

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1835	Initials DJA	Barometric Pressure 733.81 (in. Hg / mm Hg)			
Calibration Value 97 (%)	Result 96 (%)	CCV: (Pass) / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*	DJA 9-12-17	
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*		

Form Revised: 02/03/17

Lead Technician Signature: Dana Anders Date: 9-12-17

Xcel - Shetco CCR, Sept. 2017
Field Proj. # 17-1003

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 9-12-17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.01	9.9	100	1000	IC Time 0810 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	99	998	ICV Time 0820 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.02	10.0	99	999	CCV Time 1855 Initials DJA CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 9/12/17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 9-12-17

Form Revised: 11/14/2013

Attach additional notes if necessary

Xcel - Sherco CCR, Sept. 2017
Field Proj. # 17-1003

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 9-13-17 Page 1 of 3

pH

Meter Make YSI 556 Meter ID MPS-5

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	4.00	22.0	0720	DJA
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.02	22.0	0720	DJA
Buffer: 10.0 units ERA - Lot #: 230916 *Exp Date: 03/31/20*	10.04	22.0	0720	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4607D88 *Exp Date: 07/31/18*	7.05	22.0	0730	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.01	27.0	1850	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 1000
Mfg. Fisher 998
Lot No. CC16243
Exp. Date 07 / 2018

Meter Result (µS/cm)	Temp (°C)
1000	22.0

Initial Cal. Verification (ICV)

Low Standard Value 100
Cond Std: 100 umhos/cm —
Ricca - Lot #: 4605D87 —
Exp Date: 05/31/18
Exp. Date

Meter Result (µS/cm)	Temp (°C)
99	22.0

Meter Make YSI 556 ID MPS-5
IC/ICV Time 0735 / 0737
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1855 Initials DJA Std. Value 998 / 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 999 Temp (°C) 27.0 CCV: (Pass) / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

DJA 9/13/17

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 9/13/17

Xcel - Sherco CCR, Sept. 2017
Field Proj. #17-1003

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 9-13-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	235	Secondary Source Std. Value (mV)	235
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	17F100849	Lot No.	YSI 16L100376
Exp Date	5/2022	Exp. Date	11/2017
Meter Result (mV)	236	Meter Result (mV)	234
Temp (°C)	22.0	Temp (°C)	22.0

Meter Make YSI 556 ID MPS-5

IC/ICV Time 0740/0742

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1900 Initials DJA Std. Value 228 ☒ Calibration Standard ☐ Secondary Source Standard

Result (mV) 226 Temp (°C) 27.0 CCV: (Pass) / Fail *(CCV acceptable if ± 10 mV of standard value)*

CCV Time _____ Initials _____ Std. Value _____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) _____ Temp (°C) _____ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

CCV Time _____ Initials _____ Std. Value _____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) _____ Temp (°C) _____ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	18.0 (°C)	Ambient Temp:	18.0 (°C)
Barometric Pressure	28.77 (in. Hg)	Barometric Pressure	28.77 (in. Hg)
Barometric Pressure	730.76 (mm Hg)	Barometric Pressure	730.76 (mm Hg)
Calibration Value[1]	96 (%)	Calibration Value[1]	96 (%)
IC Meter Result (%)	97	ICV Meter Result (%)	96

IC/ICV Time 0715 Initials DJA

DO Meter ID YSI 556 MPS-5

Barometer ID Skymaster DB-266W

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1845 Initials DJA Barometric Pressure 727.71 (in. Hg / mm Hg)

Calibration Value 96 (%) Result 95 (%) CCV: (Pass) / Fail *(CCV acceptable if ± 2% of Calibration Value)*

CCV Time _____ Initials _____ Barometric Pressure _____ (in. Hg / mm Hg)

Calibration Value _____ (%) Result _____ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

DJA 9-13-17

CCV Time _____ Initials _____ Barometric Pressure _____ (in. Hg / mm Hg)

Calibration Value _____ (%) Result _____ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

Form Revised: 02/03/17

Lead Technician Signature: Dan Anderson Date: 9-13-17

Xcel - Sherco ECR, Sept. 2017
Field Proj. # 17-1003

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 9-13-17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	10.0	99	999	IC Time 0745 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.02	10.0	100	999	ICV Time 0755 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	99	998	CCV Time 1905 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 9-13-17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: Dan Anderson Date: 9-13-17

Form Revised: 11/14/2013

Attach additional notes if necessary

Xcel - Sherco CCR, Sept. 2017
Field Proj. # 17-1003

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 9-14-17 Page 1 of 3

Meter Make YSI 556 Meter ID MPS-5

pH

Initial Calibration (IC)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 4.0 units ERA - Lot #: 060915 *Exp Date: 09/30/17*	3.99	23.0	0805	DJA
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.02	23.0	0805	DJA
Buffer: 10.0 units ERA - Lot #: 230916 *Exp Date: 03/31/20*	10.05	23.0	0805	DJA

IC Slope (%) NA Pass / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4607D88 *Exp Date: 07/31/18*	7.04	23.0	0815	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value / Manufacturer / Lot No / Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*	7.02	25.0	1155	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 1000
Mfg. Fisher 998
Lot No. CC16243
Exp. Date 07/2018

Meter Result (µS/cm)	Temp (°C)
998	23.0

Initial Cal. Verification (ICV)

Low Standard Value 100
Cond Std: 100 umhos/cm —
Ricca - Lot #: 4605D87 —
Exp Date: 05/31/18 —
Exp. Date

Meter Result (µS/cm)	Temp (°C)
98	23.0

Meter Make YSI 556 ID MPS-5
IC/ICV Time 0820 / 0823
Initials DJA

ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1200 Initials DJA Std. Value 998 1000 ☒ High Standard ☐ Low Standard
Result (µS/cm) 999 Temp (°C) 25.0 CCV: (Pass) / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

DJA 9/14

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 9-14-17

Xcel – Sherco CCR, Sept. 2017
Field Proj. # 17-1003

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 9-14-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	233	Secondary Source Std. Value (mV)	233
Mfg.	Zobell's ORP std.	Mfg.	Zobell's ORP std.
Lot No.	17F100849	Lot No.	YSI 16L100376
Exp Date	5/2022	Exp. Date	11/2017
Meter Result (mV)	233	Meter Result (mV)	233
Temp (°C)	23.0	Temp (°C)	23.0

Meter Make YSI 556 ID MPS-5

IC/ICV Time 0825/0827

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time	1205	Initials	DJA	Std. Value	231
Result (mV)	229	Temp (°C)	25.0	CCV: (Pass) / Fail	

☒ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)	DJA 9/14/17	CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)		CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	19.0 (°C)	Ambient Temp:	19.0 (°C)
Barometric Pressure	28.74 (in. Hg)	Barometric Pressure	28.74 (in. Hg)
Barometric Pressure	730.00 (mm Hg)	Barometric Pressure	730.00 (mm Hg)
Calibration Value[1]	96 (%)	Calibration Value[1]	96 (%)
IC Meter Result (%)	97	ICV Meter Result (%)	96

IC/ICV Time 0800 Initials DJA

DO Meter ID YSI 556 MPS-5

Barometer ID Skymaster DB-26GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time	1150	Initials	DJA	Barometric Pressure	730.00 (in. Hg / mm Hg)
Calibration Value	96 (%)	Result	94 (%)	CCV: (Pass) / Fail	

(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure	(in. Hg / mm Hg)
Calibration Value	(%)	Result	DJA (%) 9/14/17	CCV: Pass / Fail	

(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure	(in. Hg / mm Hg)
Calibration Value	(%)	Result	(%)	CCV: Pass / Fail	

(CCV acceptable if ± 2% of Calibration Value)

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 9/14/17

Xcel - Sherco ECR, Sept. 2017
Field Proj. # 17-1003

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 9-14-17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	10.0	100	999	IC Time 0830 Initials DJA IC: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.02	10.0	100	999	ICV Time 0840 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	99	998	CCV Time 1210 Initials DJA CCV: (Pass) / Fail
CCV		DJA 9/14/17			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: David Anderson Date: 9/14/17

Form Revised: 11/14/2013

Attach additional notes if necessary

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Sept. Project No. 17-1003

Monitoring Point ID P-01a-1 Labeled P-01A

Inside Diameter 2 (inches) Key # 2106 ☐ Locked ☒ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel cover will not close

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 80.98 Feet

Static water level measurement before purging 76.59 Feet

Static water level measurement at time of sampling 76.59 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 9-13-17 Water Column 4.39 Feet

Time Purged 1720-1735 One Casing Volume 0.7 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 2.25 Gallons

Field Sampling Data

Date Sampled 9-13-17

Time Sampled 1750

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 8.7 (mg/l)

Spec. Cond. 670 (µmhos/cm) Turbidity 1.1 (NTU)

Temp. 14.5 (°C) Eh 58 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 80°+ sunny, wind S 10

Sample Description: clear + odorless

Observations: DJA 9-13-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1725	7.4	680	14.5	10.0	NA	52	0.75
1730	7.4	670	14.5	9.1	NA	55	1.50
1735	7.3	670	14.5	8.7	NA	58	2.25
			DJA 9/13/17				

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 9/13/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Sept. Project No. 17-1003

Monitoring Point ID P-17 Labeled P17

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	58.76	Feet
Static water level measurement before purging	36.09	Feet
Static water level measurement at time of sampling	36.09	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 9-12-17 Water Column 22.67 Feet

Time Purged 1425 - 1522 One Casing Volume 3.7 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 11.4 Gallons

Field Sampling Data

Date Sampled 9-12-17

Time Sampled 1530

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 8.0 (mg/l)

Spec. Cond. 570 (µmhos/cm) Turbidity 1.2 (NTU)

Temp. 12.0 (°C) Eh 66 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 81° + sunny wind S10

Sample Description: clear + odorless

Observations:

DJA 9-12-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1444	7.5	570	12.0	8.1	NA	67	3.8
1503	7.4	570	12.0	8.0	NA	66	7.6
1522	7.4	570	12.0	8.0	NA	66	11.4

DJA 9/12/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 9/12/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Sept. Project No. 17-1003

Monitoring Point ID P-22 Labeled P-22

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 57.85 Feet

Static water level measurement before purging 38.78 Feet

Static water level measurement at time of sampling 38.78 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 9-13-17 Water Column 19.07 Feet

Time Purged 1515-1603 One Casing Volume 3.1 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 9-13-17

Time Sampled 1610

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 8.0 (mg/l)

Spec. Cond. 830 (µmhos/cm) Turbidity 1.6 (NTU)

Temp. 14.0 (°C) Eh 66 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 80°+ sunny, wind 5 10

Sample Description: clear + odorless

Observations:

DJA 9-13-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1531	7.5	830	14.5	8.0	NA	67	3.2
1547	7.5	820	14.5	7.9	NA	67	6.4
1603	7.5	830	14.0	8.0	NA	66	9.6

DJA 9/13/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 9/13/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Sept. Project No. 17-1003

Monitoring Point ID P-23 Labeled P-23

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	67.34	Feet
Static water level measurement before purging	40.57	Feet
Static water level measurement at time of sampling	40.57	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 9-12-17 Water Column 26.77 Feet

Time Purged 1715 - 1821 One Casing Volume 4.4 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 13.2 Gallons

Field Sampling Data

Date Sampled 9-12-17

Time Sampled 1830

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 8.5 (mg/l)

Spec. Cond. 700 (µmhos/cm) Turbidity 1.4 (NTU)

Temp. 13.0 (°C) Eh 67 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 82° + sunny, wind 5 10

Sample Description: clear + odorless

Observations: collected Duplicate at this well.

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
~~1737~~ 1807	7.6	690	13.0	8.4	NA	66	4.4
~~1759~~ 1824	7.6	700	13.5	8.5	NA	67	8.8
~~182~~ 1851	7.6	700	13.0	8.5	NA	67	13.2

DJA 9/12/17

DJA 9/12/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 9/12/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Sept. Project No. 17-1003

Monitoring Point ID P-152A Labeled 806318

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	42.18	Feet
Static water level measurement before purging	35.77	Feet
Static water level measurement at time of sampling	35.77	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 9-12-17 Water Column 6.41 Feet

Time Purged 1250-1311 One Casing Volume 1.0 Gallons

Pump Rate 0.15 (GPM) LPM Volume Purged 3.15 Gallons

Field Sampling Data

Date Sampled 9-12-17

Time Sampled 1320

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.0 (units) D.O 10.2 (mg/l)

Spec. Cond. 360 (µmhos/cm) Turbidity 0.6 (NTU)

Temp. 12.0 (°C) Eh 89 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 80°+ sunny, wind S10

Sample Description: clear + odorless

Observations: DJA 9-12-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1257	6.9	360	12.0	10.5	NA	107	1.05
1304	7.0	360	12.0	10.3	NA	94	2.10
1311	7.0	360	12.0	10.2	NA	89	3.15

DJA 9-12-17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 9-12-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Sept. Project No. 17-1003

Monitoring Point ID P-155 Labeled 812964

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	85.47	Feet
Static water level measurement before purging	76.84	Feet
Static water level measurement at time of sampling	76.84	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 9-13-17 Water Column 8.63 Feet

Time Purged 1625-1655 One Casing Volume 1.4 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 4.5 Gallons

Field Sampling Data

Date Sampled 9-13-17

Time Sampled 1705

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 7.2 (mg/l)

Spec. Cond. 790 (µmhos/cm) Turbidity 6.3 (NTU)

Temp. 14.0 (°C) Eh 64 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 80° & sunny, wind S10

Sample Description: clear & odorless

Observations:

DJA 9/13/17

Stabilization Test

Time	pH (units)	Specific Conductance (umhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1635	7.3	800	14.5	7.5	NA	62	1.5
1645	7.4	790	14.0	7.3	NA	63	3.0
1655	7.4	790	14.0	7.2	NA	64	4.5

DJA 9/13/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: Dave Anderson Date: 9/13/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Sept. Project No. 17-1003

Monitoring Point ID P-156 Labeled 812965

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	85.53	Feet
Static water level measurement before purging	75.79	Feet
Static water level measurement at time of sampling	75.79	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 9-13-17 Water Column 9.74 Feet

Time Purged 1800 - 1824 One Casing Volume 1.6 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 9-13-17

Time Sampled 1835

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 7.6 (mg/l)

Spec. Cond. 450 (µmhos/cm) Turbidity 6.8 (NTU)

Temp. 14.0 (°C) Eh 56 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 79° + sunny, Wind S 10

Sample Description: clear + odorless

Observations: DJA 9/13/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1808	7.5	450	14.5	7.7	NA	50	1.6
1816	7.5	450	14.0	7.6	NA	53	3.2
1824	7.5	450	14.0	7.6	NA	56	4.8

DJA 9/13/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 9/13/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Sept. Project No. 17-1003

Monitoring Point ID P-157 Labeled 812966

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	49.06	Feet
Static water level measurement before purging	41.05	Feet
Static water level measurement at time of sampling	41.05	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 9-12-17 Water Column 8.01 Feet

Time Purged 1630-1651 One Casing Volume 1.3 Gallons

Pump Rate 0.2 (GPM) LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 9-12-17

Time Sampled 1700

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 8.0 (mg/l)

Spec. Cond. 710 (µmhos/cm) Turbidity 1.0 (NTU)

Temp. 12.5 (°C) Eh 88 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 82° + sunny, wind S10

Sample Description: clear + odorless

Observations:

DJA 9/12/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1637	7.2	710	12.5	7.8	NA	73	1.4
1644	7.2	710	12.5	8.0	NA	80	2.8
1651	7.2	710	12.5	8.0	NA	88	4.2

DJA 9/12/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: Dave Anderson Date: 9/12/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR, Sept. Project No. 17-1003

Monitoring Point ID P-158 Labeled 812967

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	49.16	Feet
Static water level measurement before purging	38.71	Feet
Static water level measurement at time of sampling	38.71	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 9-12-17 Water Column 10.45 Feet

Time Purged 1540-1607 One Casing Volume 1.7 Gallons

Pump Rate 0.2 (GPM) / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 9-12-17

Time Sampled 1615

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 10.4 (mg/l)

Spec. Cond. 920 (µmhos/cm) Turbidity 0.9 (NTU)

Temp. 12.0 (°C) Eh 81 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 82° + sunny, wind S 10

Sample Description: clear + odorless

Observations:

DJA 9/12/17

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1549	7.3	920	12.0	10.5	NA	86	1.8
1558	7.4	920	12.0	10.4	NA	83	3.6
1607	7.4	920	12.0	10.4	NA	81	5.4

DJA 9/12/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: Dave Anderson Date: 9/12/17

Amended Report

Original Report ID: MCI0163 Xcel General Report FINAL 09 25 2017 0752 09 25 2017 0907

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification #MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

11 January 2018

Charles A Donkers

Environmental Services-Water Minneapolis

250 Marquette Plaza

Minneapolis, MN 55401

RE: Sherco CCR

cc: Laboratory report re-created to only include wells in the Bottom Ash Pond CCR Groundwater Monitoring System. HSD 1/11/18

Enclosed are the results of analyses for samples received by the laboratory on 09/14/2017 13:20. If you have any questions concerning this report, please feel free to contact me.

I certify that this analysis report was prepared under my direction or supervision under a system designed to assure that qualified personnel analyzed the submitted samples. All protocols for analysis were followed as required by Minnesota Rules and the Applicable Management Plan.

Sincerely,

Steve Davis

Project Manager

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Amended Report

Original Report ID: MCI0163 Xcel General Report FINAL 09 25 2017 0752 09 25 2017 0907

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Rinse		MCI0163-01	Water	09/11/2017 11:15	09/14/2017 13:20
P-152a		MCI0163-14	Water	09/12/2017 13:20	09/14/2017 13:20
P-17		MCI0163-16	Water	09/12/2017 15:30	09/14/2017 13:20
P-158		MCI0163-17	Water	09/12/2017 16:15	09/14/2017 13:20
P-157		MCI0163-18	Water	09/12/2017 17:00	09/14/2017 13:20
P-23		MCI0163-19	Water	09/12/2017 18:30	09/14/2017 13:20
Duplicate		MCI0163-20	Water	09/12/2017 18:30	09/14/2017 13:20
P-22		MCI0163-28	Water	09/13/2017 16:10	09/14/2017 13:20
P-155		MCI0163-29	Water	09/13/2017 17:05	09/14/2017 13:20
P-01a-1		MCI0163-30	Water	09/13/2017 17:50	09/14/2017 13:20
P-156		MCI0163-31	Water	09/13/2017 18:35	09/14/2017 13:20

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCI0163 Xcel General Report FINAL 09 25 2017 0752 09 25 2017 0907

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Rinse

MCI0163-01 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 12:55	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 12:55	EPA 300.0	CRL
Sulfate	< 1.00	1.00	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 12:55	EPA 300.0	CRL
Wet Chemistry										
pH	6.84		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 14:22	SM 4500-H+ B	CRL
Total Dissolved Solids	< 20.0	20.0	mg/L		1	BCI0296	9/15/17 8:37	9/15/17 8:37	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 9:09	EPA 200.8	CRL
Barium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 9:09	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 9:09	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 9:09	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 9:09	EPA 200.8	CRL
Chromium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 9:09	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 9:09	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 9:09	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 9:09	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 9:09	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 9:09	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 12:19	EPA 200.7	HRD
Calcium	< 0.500	0.500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 12:17	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 12:17	EPA 200.7	HRD

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Rinse

MCI0163-01 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0323	9/18/17 8:22	9/18/17 13:26	EPA 245.1, 7470A	HRD

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCI0163 Xcel General Report FINAL 09 25 2017 0752 09 25 2017 0907

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-152a

MCI0163-14 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 19:02	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 19:02	EPA 300.0	CRL
Sulfate	8.65	1.00	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 19:02	EPA 300.0	CRL
Wet Chemistry										
pH	7.82		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:16	SM 4500-H+ B	CRL
Total Dissolved Solids	214	20.0	mg/L		1	BCI0320	9/18/17 9:10	9/18/17 9:10	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.507	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:15	EPA 200.8	CRL
Barium	35.7	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:15	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:15	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:15	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:15	EPA 200.8	CRL
Chromium	0.713	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:15	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:15	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:15	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:15	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:15	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:15	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0546	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 13:46	EPA 200.7	HRD
Calcium	53.7	0.500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 13:45	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 13:45	EPA 200.7	HRD

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-152a

MCI0163-14 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0323	9/18/17 8:22	9/18/17 13:56	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCI0163 Xcel General Report FINAL 09 25 2017 0752 09 25 2017 0907

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-17

MCI0163-16 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	22.4	1.00	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 19:43	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 19:43	EPA 300.0	CRL
Sulfate	30.3	1.00	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 19:43	EPA 300.0	CRL
Wet Chemistry										
pH	7.83		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:23	SM 4500-H+ B	CRL
Total Dissolved Solids	316	20.0	mg/L		1	BCI0320	9/18/17 9:10	9/18/17 9:10	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:23	EPA 200.8	CRL
Barium	42.0	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:23	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:23	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:23	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:23	EPA 200.8	CRL
Chromium	0.889	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:23	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:23	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:23	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:23	EPA 200.8	CRL
Selenium	0.524	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:23	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:23	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 13:56	EPA 200.7	HRD
Calcium	76.8	0.500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 13:55	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 13:55	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-17

MCI0163-16 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0323	9/18/17 8:22	9/18/17 13:59	EPA 245.1, 7470A	HRD

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Amended Report

Original Report ID: MCI0163 Xcel General Report FINAL 09 25 2017 0752 09 25 2017 0907

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-158

MCI0163-17 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	4.33	1.00	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 20:03	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 20:03	EPA 300.0	CRL
Sulfate	222	1.00	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 20:03	EPA 300.0	CRL
Wet Chemistry										
pH	7.57		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:27	SM 4500-H+ B	CRL
Total Dissolved Solids	670	20.0	mg/L		1	BCI0320	9/18/17 9:10	9/18/17 9:10	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.515	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:27	EPA 200.8	CRL
Barium	99.0	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:27	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:27	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:27	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:27	EPA 200.8	CRL
Chromium	0.951	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:27	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:27	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:27	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:27	EPA 200.8	CRL
Selenium	2.57	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:27	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:27	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.37	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:01	EPA 200.7	HRD
Calcium	134	0.500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:00	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:00	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-158

MCI0163-17 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0323	9/18/17 8:22	9/18/17 14:01	EPA 245.1, 7470A	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-157

MCI0163-18 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	12.7	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 12:40	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 12:40	EPA 300.0	CRL
Sulfate	86.5	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 12:40	EPA 300.0	CRL
Wet Chemistry										
pH	7.57		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:31	SM 4500-H+ B	CRL
Total Dissolved Solids	452	20.0	mg/L		1	BCI0320	9/18/17 9:10	9/18/17 9:10	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:31	EPA 200.8	CRL
Barium	50.7	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:31	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:31	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:31	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:31	EPA 200.8	CRL
Chromium	1.44	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:31	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:31	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:31	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:31	EPA 200.8	CRL
Selenium	2.58	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:31	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:31	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.258	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:07	EPA 200.7	HRD
Calcium	92.6	0.500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:05	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:05	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-157

MCI0163-18 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0323	9/18/17 8:22	9/18/17 14:03	EPA 245.1, 7470A	HRD

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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-23

MCI0163-19 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	27.5	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 13:00	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 13:00	EPA 300.0	CRL
Sulfate	107	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 13:00	EPA 300.0	CRL
Wet Chemistry										
pH	7.74		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:34	SM 4500-H+ B	CRL
Total Dissolved Solids	446	20.0	mg/L		1	BCI0320	9/18/17 9:10	9/18/17 9:10	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.623	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:35	EPA 200.8	CRL
Barium	62.5	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:35	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:35	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:35	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:35	EPA 200.8	CRL
Chromium	0.869	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:35	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:35	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:35	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:35	EPA 200.8	CRL
Selenium	1.30	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:35	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:35	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.319	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:12	EPA 200.7	HRD
Calcium	93.9	0.500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:10	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:10	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-23

MCI0163-19 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0323	9/18/17 8:22	9/18/17 14:04	EPA 245.1, 7470A	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Duplicate

MCI0163-20 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	27.5	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 13:21	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 13:21	EPA 300.0	CRL
Sulfate	108	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 13:21	EPA 300.0	CRL
Wet Chemistry										
pH	7.75		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:38	SM 4500-H+ B	CRL
Total Dissolved Solids	458	20.0	mg/L		1	BCI0320	9/18/17 9:10	9/18/17 9:10	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.584	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:39	EPA 200.8	CRL
Barium	60.9	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:39	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:39	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:39	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:39	EPA 200.8	CRL
Chromium	1.00	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:39	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:39	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:39	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:39	EPA 200.8	CRL
Selenium	1.29	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:39	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:39	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.316	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:17	EPA 200.7	HRD
Calcium	91.9	0.500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:16	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 14:16	EPA 200.7	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Duplicate

MCI0163-20 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0323	9/18/17 8:22	9/18/17 14:06	EPA 245.1, 7470A	HRD

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WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-22

MCI0163-28 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	14.5	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 17:46	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 17:46	EPA 300.0	CRL
Sulfate	174	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 17:46	EPA 300.0	CRL
Wet Chemistry										
pH	7.76		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 16:10	SM 4500-H+ B	CRL
Total Dissolved Solids	558	20.0	mg/L		1	BCI0337	9/19/17 9:20	9/19/17 9:20	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.531	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:51	EPA 200.8	CRL
Barium	67.0	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:51	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:51	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:51	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:51	EPA 200.8	CRL
Chromium	0.950	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:51	EPA 200.8	CRL
Molybdenum	0.680	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:51	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:51	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:51	EPA 200.8	CRL
Selenium	8.06	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:51	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:51	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.47	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:55	EPA 200.7	HRD
Calcium	102	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:54	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:54	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-22

MCI0163-28 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0421	9/21/17 8:39	9/21/17 13:47	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

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MCI0163-29 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	15.5	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 18:06	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 18:06	EPA 300.0	CRL
Sulfate	160	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 18:06	EPA 300.0	CRL
Wet Chemistry										
pH	7.68		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 16:14	SM 4500-H+ B	CRL
Total Dissolved Solids	502	20.0	mg/L		1	BCI0337	9/19/17 9:20	9/19/17 9:20	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.599	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:55	EPA 200.8	CRL
Barium	69.6	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:55	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:55	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:55	EPA 200.8	CRL
Cobalt	1.09	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:55	EPA 200.8	CRL
Chromium	2.52	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:55	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:55	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:55	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:55	EPA 200.8	CRL
Selenium	4.38	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:55	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:55	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.62	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:00	EPA 200.7	HRD
Calcium	87.0	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:59	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:59	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-155

MCI0163-29 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0421	9/21/17 8:39	9/21/17 13:48	EPA 245.1, 7470A	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-01a-1

MCI0163-30 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	10.8	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 18:27	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 18:27	EPA 300.0	CRL
Sulfate	89.4	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 18:27	EPA 300.0	CRL
Wet Chemistry										
pH	7.67		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 16:17	SM 4500-H+ B	CRL
Total Dissolved Solids	422	20.0	mg/L		1	BCI0337	9/19/17 9:20	9/19/17 9:20	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.523	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:59	EPA 200.8	CRL
Barium	36.3	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:59	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:59	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:59	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:59	EPA 200.8	CRL
Chromium	1.10	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:59	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:59	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:59	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:59	EPA 200.8	CRL
Selenium	4.89	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:59	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:59	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.630	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:05	EPA 200.7	HRD
Calcium	80.5	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:04	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:04	EPA 200.7	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-01a-1

MCI0163-30 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0421	9/21/17 8:39	9/21/17 13:54	EPA 245.1, 7470A	HRD

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Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

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MCI0163-31 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	2.27	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 18:47	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 18:47	EPA 300.0	CRL
Sulfate	21.6	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 18:47	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 16:25	SM 4500-H+ B	CRL
Total Dissolved Solids	218	20.0	mg/L		1	BCI0370	9/20/17 9:14	9/20/17 9:14	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.571	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:03	EPA 200.8	CRL
Barium	50.5	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:03	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:03	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:03	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:03	EPA 200.8	CRL
Chromium	3.21	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:03	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:03	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:03	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:03	EPA 200.8	CRL
Selenium	1.27	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:03	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:03	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.184	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:10	EPA 200.7	HRD
Calcium	61.7	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:09	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:09	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

P-156

MCI0163-31 (Water) - Chain of Custody Number: 2112554/2112557/2112559

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.200	0.200	ug/L		1	BCI0421	9/21/17 8:39	9/21/17 13:55	EPA 245.1, 7470A	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0297 - Wet Prep										
Blank (BCI0297-BLK1)				Prepared & Analyzed: 09/15/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCI0297-BLK2)				Prepared & Analyzed: 09/15/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCI0297-BS1)				Prepared & Analyzed: 09/15/2017						
Chloride	26.5	1.00	mg/L	25.000		106	90-110			
Fluoride	5.40	0.750	mg/L	5.0000		108	90-110			
Sulfate	98.4	1.00	mg/L	100.00		98.4	90-110			
LCS (BCI0297-BS2)				Prepared & Analyzed: 09/15/2017						
Chloride	25.2	1.00	mg/L	25.000		101	90-110			
Fluoride	4.67	0.750	mg/L	5.0000		93.4	90-110			
Sulfate	96.9	1.00	mg/L	100.00		96.9	90-110			
LCS (BCI0297-BS3)				Prepared & Analyzed: 09/15/2017						
Chloride	26.2	1.00	mg/L	25.000		105	90-110			
Fluoride	5.07	0.750	mg/L	5.0000		101	90-110			
Sulfate	96.6	1.00	mg/L	100.00		96.6	90-110			
Duplicate (BCI0297-DUP1)		**Source: MCI0163-14**		Prepared & Analyzed: 09/15/2017						
Chloride	0.782	1.00	mg/L		0.789			0.891	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	8.77	1.00	mg/L		8.65			1.45	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0297 - Wet Prep										
Duplicate (BCI0297-DUP2)		**Source: MCI0163-15**		Prepared & Analyzed: 09/15/2017						
Chloride	1.21	1.00	mg/L		1.13			6.93	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	10.4	1.00	mg/L		10.2			1.88	20	
Matrix Spike (BCI0297-MS1)		**Source: MCI0163-14**		Prepared & Analyzed: 09/15/2017						
Chloride	13.2	1.00	mg/L	12.500	0.789	99.1	80-120			
Fluoride	2.34	0.750	mg/L	2.5000	<0.750	93.5	80-120			
Sulfate	57.9	1.00	mg/L	50.000	8.65	98.5	80-120			
Matrix Spike (BCI0297-MS2)		**Source: MCI0163-15**		Prepared & Analyzed: 09/15/2017						
Chloride	13.5	1.00	mg/L	12.500	1.13	98.9	80-120			
Fluoride	2.35	0.750	mg/L	2.5000	<0.750	94.0	80-120			
Sulfate	57.9	1.00	mg/L	50.000	10.2	95.3	80-120			
Matrix Spike Dup (BCI0297-MSD1)		**Source: MCI0163-14**		Prepared & Analyzed: 09/15/2017						
Chloride	13.1	1.00	mg/L	12.500	0.789	98.8	80-120	0.281	20	
Fluoride	2.34	0.750	mg/L	2.5000	<0.750	93.6	80-120	0.171	20	
Sulfate	57.8	1.00	mg/L	50.000	8.65	98.4	80-120	0.142	20	
Matrix Spike Dup (BCI0297-MSD2)		**Source: MCI0163-15**		Prepared & Analyzed: 09/15/2017						
Chloride	13.7	1.00	mg/L	12.500	1.13	101	80-120	1.53	20	
Fluoride	2.42	0.750	mg/L	2.5000	<0.750	97.0	80-120	3.14	20	
Sulfate	58.9	1.00	mg/L	50.000	10.2	97.3	80-120	1.70	20	
Batch BCI0327 - Wet Prep										
Blank (BCI0327-BLK1)				Prepared & Analyzed: 09/18/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0327 - Wet Prep										
Blank (BCI0327-BLK2)				Prepared & Analyzed: 09/18/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCI0327-BS1)				Prepared & Analyzed: 09/18/2017						
Chloride	24.4	1.00	mg/L	25.000		97.6	90-110			
Fluoride	4.86	0.750	mg/L	5.0000		97.1	90-110			
Sulfate	98.9	1.00	mg/L	100.00		98.9	90-110			
LCS (BCI0327-BS2)				Prepared & Analyzed: 09/18/2017						
Chloride	26.2	1.00	mg/L	25.000		105	90-110			
Fluoride	5.02	0.750	mg/L	5.0000		100	90-110			
Sulfate	96.4	1.00	mg/L	100.00		96.4	90-110			
LCS (BCI0327-BS3)				Prepared & Analyzed: 09/18/2017						
Chloride	26.3	1.00	mg/L	25.000		105	90-110			
Fluoride	4.94	0.750	mg/L	5.0000		98.7	90-110			
Sulfate	96.0	1.00	mg/L	100.00		96.0	90-110			
Duplicate (BCI0327-DUP1)		**Source: MCI0163-24**		Prepared & Analyzed: 09/18/2017						
Chloride	0.609	1.00	mg/L		0.608			0.164	20	
Fluoride	0.124	0.750	mg/L		0.122			1.63	20	
Sulfate	3.38	1.00	mg/L		3.48			3.03	20	
Duplicate (BCI0327-DUP2)		**Source: MCI0163-27**		Prepared & Analyzed: 09/18/2017						
Chloride	1.58	1.00	mg/L		1.58			0.127	20	
Fluoride	0.111	0.750	mg/L		0.110			0.905	20	
Sulfate	9.77	1.00	mg/L		9.76			0.0921	20	

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Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0327 - Wet Prep										
Matrix Spike (BCI0327-MS1)	**Source: MCI0163-24**			Prepared & Analyzed: 09/18/2017						
Chloride	13.8	1.00	mg/L	12.500	0.608	106	80-120			
Fluoride	2.75	0.750	mg/L	2.5000	0.122	105	80-120			
Sulfate	53.3	1.00	mg/L	50.000	3.48	99.5	80-120			
Matrix Spike (BCI0327-MS2)	**Source: MCI0163-27**			Prepared & Analyzed: 09/18/2017						
Chloride	14.7	1.00	mg/L	12.500	1.58	105	80-120			
Fluoride	2.56	0.750	mg/L	2.5000	0.110	97.9	80-120			
Sulfate	58.4	1.00	mg/L	50.000	9.76	97.3	80-120			
Matrix Spike Dup (BCI0327-MSD1)	**Source: MCI0163-24**			Prepared & Analyzed: 09/18/2017						
Chloride	13.9	1.00	mg/L	12.500	0.608	107	80-120	0.915	20	
Fluoride	2.71	0.750	mg/L	2.5000	0.122	104	80-120	1.21	20	
Sulfate	53.8	1.00	mg/L	50.000	3.48	101	80-120	0.942	20	
Matrix Spike Dup (BCI0327-MSD2)	**Source: MCI0163-27**			Prepared & Analyzed: 09/18/2017						
Chloride	15.0	1.00	mg/L	12.500	1.58	107	80-120	1.57	20	
Fluoride	2.66	0.750	mg/L	2.5000	0.110	102	80-120	3.87	20	
Sulfate	59.6	1.00	mg/L	50.000	9.76	99.7	80-120	2.02	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0284 - Wet Prep										
LCS (BCI0284-BS1)				Prepared & Analyzed: 09/14/2017						
pH	7.03		pH Units	7.0000		100	90-110			
LCS (BCI0284-BS2)				Prepared & Analyzed: 09/14/2017						
pH	7.06		pH Units	7.0000		101	90-110			
Duplicate (BCI0284-DUP1)		**Source: MCI0163-02**		Prepared & Analyzed: 09/14/2017						
pH	7.52		pH Units		7.57			0.663	20	
Duplicate (BCI0284-DUP2)		**Source: MCI0163-11**		Prepared & Analyzed: 09/14/2017						
pH	7.65		pH Units		7.65			0.00	20	
Duplicate (BCI0284-DUP3)		**Source: MCI0163-21**		Prepared & Analyzed: 09/14/2017						
pH	7.85		pH Units		7.85			0.00	20	
Duplicate (BCI0284-DUP4)		**Source: MCI0163-31**		Prepared & Analyzed: 09/14/2017						
pH	7.82		pH Units		7.85			0.383	20	
Batch BCI0296 - Wet Prep										
Blank (BCI0296-BLK1)				Prepared & Analyzed: 09/15/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCI0296-DUP1)		**Source: MCI0163-01**		Prepared & Analyzed: 09/15/2017						
Total Dissolved Solids	<20.0	20.0	mg/L		<20.0				20	
Batch BCI0320 - Wet Prep										
Blank (BCI0320-BLK1)				Prepared & Analyzed: 09/18/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0320 - Wet Prep										
Duplicate (BCI0320-DUP1)		**Source: MCI0163-11**		Prepared & Analyzed: 09/18/2017						
Total Dissolved Solids	366	20.0	mg/L		344			6.20	20	
Batch BCI0337 - Wet Prep										
Blank (BCI0337-BLK1)				Prepared & Analyzed: 09/19/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCI0337-DUP1)		**Source: MCI0163-21**		Prepared & Analyzed: 09/19/2017						
Total Dissolved Solids	260	20.0	mg/L		258			0.772	20	
Batch BCI0370 - Wet Prep										
Blank (BCI0370-BLK1)				Prepared & Analyzed: 09/20/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Blank (BCI0370-BLK2)				Prepared & Analyzed: 09/20/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCI0370-DUP1)		**Source: MCI0163-31**		Prepared & Analyzed: 09/20/2017						
Total Dissolved Solids	194	20.0	mg/L		218			11.7	20	
Duplicate (BCI0370-DUP2)		**Source: MCI0183-02**		Prepared & Analyzed: 09/20/2017						
Total Dissolved Solids	2630	20.0	mg/L		2640			0.304	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0325 - EPA 200.2, EPA 3005										
Blank (BCI0325-BLK1)				Prepared: 09/18/2017 Analyzed: 09/19/2017						
Chromium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
LCS (BCI0325-BS1)				Prepared: 09/18/2017 Analyzed: 09/19/2017						
Beryllium	102	0.500	ug/L	100.00		102	85-115			
Arsenic	99.9	0.500	ug/L	100.00		99.9	85-115			
Chromium	98.7	0.500	ug/L	100.00		98.7	85-115			
Molybdenum	102	0.500	ug/L	100.00		102	85-115			
Cobalt	97.8	0.500	ug/L	100.00		97.8	85-115			
Selenium	98.0	0.500	ug/L	100.00		98.0	85-115			
Antimony	99.2	0.500	ug/L	100.00		99.2	85-115			
Barium	100	0.500	ug/L	100.00		100	85-115			
Lead	97.1	0.500	ug/L	100.00		97.1	85-115			
Thallium	98.5	0.500	ug/L	100.00		98.5	85-115			
Cadmium	97.3	0.500	ug/L	100.00		97.3	85-115			
Duplicate (BCI0325-DUP1)		**Source: MCI0163-04**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Beryllium	0.0243	0.500	ug/L		<0.500				20	
Arsenic	0.671	0.500	ug/L		0.691			2.86	20	
Antimony	0.0440	0.500	ug/L		<0.500				20	
Molybdenum	0.156	0.500	ug/L		0.126			21.2	20	M_D-RL
Selenium	0.220	0.500	ug/L		0.351			46.0	20	M_D-RL
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Cobalt	0.0765	0.500	ug/L		0.0485			44.8	20	M_D-RL
Thallium	0.0324	0.500	ug/L		<0.500				20	
Lead	0.0205	0.500	ug/L		<0.500				20	
Barium	59.7	0.500	ug/L		58.7			1.75	20	
Chromium	0.643	0.500	ug/L		0.691			7.17	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0325 - EPA 200.2, EPA 3005										
Duplicate (BCI0325-DUP2)		**Source: MCI0163-05**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Antimony	<0.500	0.500	ug/L		0.0329				20	
Molybdenum	0.145	0.500	ug/L		0.143			0.802	20	
Lead	0.0535	0.500	ug/L		0.0512			4.26	20	
Thallium	<0.500	0.500	ug/L		<0.500				20	
Selenium	0.345	0.500	ug/L		0.466			30.0	20	M_D-RL
Barium	72.6	0.500	ug/L		72.5			0.172	20	
Chromium	1.15	0.500	ug/L		1.19			2.91	20	
Cobalt	0.394	0.500	ug/L		0.409			3.61	20	
Arsenic	0.731	0.500	ug/L		0.800			8.96	20	
Beryllium	<0.500	0.500	ug/L		<0.500				20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Matrix Spike (BCI0325-MS1)		**Source: MCI0163-04**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Molybdenum	102	0.500	ug/L	100.00	0.126	102	70-130			
Selenium	101	0.500	ug/L	100.00	0.351	101	70-130			
Arsenic	103	0.500	ug/L	100.00	0.691	103	70-130			
Chromium	103	0.500	ug/L	100.00	0.691	102	70-130			
Antimony	101	0.500	ug/L	100.00	<0.500	101	70-130			
Cobalt	99.7	0.500	ug/L	100.00	0.0485	99.6	70-130			
Thallium	96.2	0.500	ug/L	100.00	<0.500	96.2	70-130			
Lead	93.3	0.500	ug/L	100.00	<0.500	93.3	70-130			
Beryllium	105	0.500	ug/L	100.00	<0.500	105	70-130			
Barium	159	0.500	ug/L	100.00	58.7	101	70-130			
Cadmium	99.8	0.500	ug/L	100.00	<0.500	99.8	70-130			
Matrix Spike (BCI0325-MS2)		**Source: MCI0163-05**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lead	94.8	0.500	ug/L	100.00	0.0512	94.7	70-130			
Thallium	97.8	0.500	ug/L	100.00	<0.500	97.8	70-130			
Chromium	108	0.500	ug/L	100.00	1.19	106	70-130			
Cobalt	103	0.500	ug/L	100.00	0.409	102	70-130			
Beryllium	97.9	0.500	ug/L	100.00	<0.500	97.9	70-130			
Barium	179	0.500	ug/L	100.00	72.5	106	70-130			
Antimony	102	0.500	ug/L	100.00	0.0329	102	70-130			
Molybdenum	102	0.500	ug/L	100.00	0.143	102	70-130			
Selenium	100	0.500	ug/L	100.00	0.466	99.7	70-130			
Cadmium	98.9	0.500	ug/L	100.00	<0.500	98.9	70-130			
Arsenic	104	0.500	ug/L	100.00	0.800	103	70-130			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0325 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCI0325-MSD1)	**Source: MCI0163-04**			Prepared: 09/18/2017 Analyzed: 09/19/2017						
Molybdenum	104	0.500	ug/L	100.00	0.126	104	70-130	1.82	20	
Beryllium	96.4	0.500	ug/L	100.00	<0.500	96.4	70-130	8.55	20	
Selenium	100	0.500	ug/L	100.00	0.351	99.9	70-130	1.18	20	
Cadmium	97.9	0.500	ug/L	100.00	<0.500	97.9	70-130	1.86	20	
Antimony	103	0.500	ug/L	100.00	<0.500	103	70-130	2.09	20	
Arsenic	103	0.500	ug/L	100.00	0.691	102	70-130	0.679	20	
Lead	95.9	0.500	ug/L	100.00	<0.500	95.9	70-130	2.74	20	
Thallium	98.0	0.500	ug/L	100.00	<0.500	98.0	70-130	1.80	20	
Cobalt	101	0.500	ug/L	100.00	0.0485	100	70-130	0.841	20	
Chromium	103	0.500	ug/L	100.00	0.691	103	70-130	0.554	20	
Barium	165	0.500	ug/L	100.00	58.7	106	70-130	3.21	20	
Matrix Spike Dup (BCI0325-MSD2)	**Source: MCI0163-05**			Prepared: 09/18/2017 Analyzed: 09/19/2017						
Arsenic	102	0.500	ug/L	100.00	0.800	102	70-130	1.19	20	
Lead	92.7	0.500	ug/L	100.00	0.0512	92.6	70-130	2.21	20	
Antimony	99.2	0.500	ug/L	100.00	0.0329	99.2	70-130	3.17	20	
Cobalt	104	0.500	ug/L	100.00	0.409	103	70-130	0.826	20	
Selenium	96.0	0.500	ug/L	100.00	0.466	95.6	70-130	4.18	20	
Barium	172	0.500	ug/L	100.00	72.5	99.9	70-130	3.57	20	
Cadmium	100	0.500	ug/L	100.00	<0.500	100	70-130	1.28	20	
Thallium	95.4	0.500	ug/L	100.00	<0.500	95.4	70-130	2.53	20	
Beryllium	101	0.500	ug/L	100.00	<0.500	101	70-130	2.80	20	
Molybdenum	101	0.500	ug/L	100.00	0.143	101	70-130	0.891	20	
Chromium	110	0.500	ug/L	100.00	1.19	108	70-130	1.76	20	
Batch BCI0330 - EPA 200.2, EPA 3005										
Blank (BCI0330-BLK1)				Prepared: 09/18/2017 Analyzed: 09/20/2017						
Barium	<1.00	1.00	ug/L							
Selenium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0330 - EPA 200.2, EPA 3005										
LCS (BCI0330-BS1)				Prepared: 09/18/2017 Analyzed: 09/20/2017						
Cadmium	98.1	0.500	ug/L	100.00		98.1	85-115			
Lead	94.9	0.500	ug/L	100.00		94.9	85-115			
Cobalt	102	0.500	ug/L	100.00		102	85-115			
Molybdenum	97.5	0.500	ug/L	100.00		97.5	85-115			
Barium	96.1	1.00	ug/L	100.00		96.1	85-115			
Arsenic	96.0	0.500	ug/L	100.00		96.0	85-115			
Selenium	95.2	0.500	ug/L	100.00		95.2	85-115			
Beryllium	99.9	0.500	ug/L	100.00		99.9	85-115			
Antimony	96.2	0.500	ug/L	100.00		96.2	85-115			
Chromium	99.0	0.500	ug/L	100.00		99.0	85-115			
Thallium	95.6	0.500	ug/L	100.00		95.6	85-115			
Duplicate (BCI0330-DUP1)		**Source: MCI0163-23**		Prepared: 09/18/2017 Analyzed: 09/20/2017						
Molybdenum	0.351	0.500	ug/L		0.347			1.02	20	
Antimony	0.0900	0.500	ug/L		0.0687			26.8	20	M_D-RL
Cobalt	0.418	0.500	ug/L		0.425			1.77	20	
Selenium	0.304	0.500	ug/L		0.373			20.2	20	M_D-RL
Cadmium	0.0312	0.500	ug/L		<0.500				20	
Arsenic	0.329	0.500	ug/L		0.371			12.2	20	
Beryllium	0.0404	0.500	ug/L		0.00901			127	20	M_D-RL
Barium	48.2	1.00	ug/L		48.8			1.10	20	
Thallium	0.0589	0.500	ug/L		0.0164			113	20	M_D-RL
Lead	0.225	0.500	ug/L		0.211			6.76	20	
Chromium	0.812	0.500	ug/L		0.773			4.94	20	
Duplicate (BCI0330-DUP2)		**Source: MCI0163-24**		Prepared: 09/18/2017 Analyzed: 09/20/2017						
Lead	<0.500	0.500	ug/L		<0.500				20	
Selenium	0.293	0.500	ug/L		0.298			1.84	20	
Antimony	0.0655	0.500	ug/L		0.0613			6.66	20	
Molybdenum	0.594	0.500	ug/L		0.596			0.254	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Barium	15.6	1.00	ug/L		15.5			0.702	20	
Thallium	0.0120	0.500	ug/L		0.00855			33.4	20	M_D-RL
Cobalt	0.0321	0.500	ug/L		0.0443			32.0	20	M_D-RL
Arsenic	0.781	0.500	ug/L		0.850			8.47	20	
Beryllium	0.00673	0.500	ug/L		0.00744			10.1	20	
Chromium	0.644	0.500	ug/L		0.668			3.59	20	

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0330 - EPA 200.2, EPA 3005										
Matrix Spike (BCI0330-MS1)		**Source: MCI0163-23**		Prepared: 09/18/2017 Analyzed: 09/20/2017						
Cobalt	101	0.500	ug/L	100.00	0.425	100	70-130			
Beryllium	97.9	0.500	ug/L	100.00	0.00901	97.9	70-130			
Selenium	96.6	0.500	ug/L	100.00	0.373	96.2	70-130			
Antimony	98.6	0.500	ug/L	100.00	0.0687	98.5	70-130			
Barium	145	1.00	ug/L	100.00	48.8	96.2	70-130			
Chromium	101	0.500	ug/L	100.00	0.773	99.8	70-130			
Lead	92.6	0.500	ug/L	100.00	0.211	92.4	70-130			
Thallium	94.5	0.500	ug/L	100.00	0.0164	94.5	70-130			
Molybdenum	103	0.500	ug/L	100.00	0.347	103	70-130			
Arsenic	101	0.500	ug/L	100.00	0.371	101	70-130			
Cadmium	96.3	0.500	ug/L	100.00	<0.500	96.3	70-130			
Matrix Spike (BCI0330-MS2)		**Source: MCI0163-24**		Prepared: 09/18/2017 Analyzed: 09/20/2017						
Arsenic	96.1	0.500	ug/L	100.00	0.850	95.3	70-130			
Molybdenum	98.8	0.500	ug/L	100.00	0.596	98.2	70-130			
Selenium	97.6	0.500	ug/L	100.00	0.298	97.3	70-130			
Cadmium	97.3	0.500	ug/L	100.00	<0.500	97.3	70-130			
Lead	91.5	0.500	ug/L	100.00	<0.500	91.5	70-130			
Cobalt	99.4	0.500	ug/L	100.00	0.0443	99.3	70-130			
Thallium	92.1	0.500	ug/L	100.00	0.00855	92.1	70-130			
Chromium	98.7	0.500	ug/L	100.00	0.668	98.0	70-130			
Antimony	95.1	0.500	ug/L	100.00	0.0613	95.0	70-130			
Beryllium	96.1	0.500	ug/L	100.00	0.00744	96.1	70-130			
Barium	110	1.00	ug/L	100.00	15.5	94.2	70-130			
Matrix Spike Dup (BCI0330-MSD1)		**Source: MCI0163-23**		Prepared: 09/18/2017 Analyzed: 09/20/2017						
Cadmium	98.9	0.500	ug/L	100.00	<0.500	98.9	70-130	2.72	20	
Antimony	98.9	0.500	ug/L	100.00	0.0687	98.8	70-130	0.366	20	
Thallium	95.5	0.500	ug/L	100.00	0.0164	95.5	70-130	1.08	20	
Beryllium	98.8	0.500	ug/L	100.00	0.00901	98.8	70-130	0.855	20	
Chromium	103	0.500	ug/L	100.00	0.773	102	70-130	2.63	20	
Selenium	98.2	0.500	ug/L	100.00	0.373	97.8	70-130	1.65	20	
Lead	92.9	0.500	ug/L	100.00	0.211	92.7	70-130	0.357	20	
Arsenic	98.4	0.500	ug/L	100.00	0.371	98.0	70-130	2.96	20	
Cobalt	102	0.500	ug/L	100.00	0.425	101	70-130	0.801	20	
Molybdenum	101	0.500	ug/L	100.00	0.347	101	70-130	2.46	20	
Barium	148	1.00	ug/L	100.00	48.8	98.8	70-130	1.77	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0330 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCI0330-MSD2)		**Source: MCI0163-24**		Prepared: 09/18/2017 Analyzed: 09/20/2017						
Thallium	96.0	0.500	ug/L	100.00	0.00855	96.0	70-130	4.11	20	
Arsenic	102	0.500	ug/L	100.00	0.850	101	70-130	5.60	20	
Cadmium	98.8	0.500	ug/L	100.00	<0.500	98.8	70-130	1.53	20	
Lead	94.0	0.500	ug/L	100.00	<0.500	94.0	70-130	2.74	20	
Chromium	103	0.500	ug/L	100.00	0.668	102	70-130	4.06	20	
Selenium	97.9	0.500	ug/L	100.00	0.298	97.6	70-130	0.359	20	
Antimony	100	0.500	ug/L	100.00	0.0613	100	70-130	5.36	20	
Beryllium	97.3	0.500	ug/L	100.00	0.00744	97.3	70-130	1.23	20	
Molybdenum	102	0.500	ug/L	100.00	0.596	102	70-130	3.67	20	
Cobalt	102	0.500	ug/L	100.00	0.0443	102	70-130	3.08	20	
Barium	113	1.00	ug/L	100.00	15.5	97.3	70-130	2.77	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0324 - EPA 200.2, EPA 3005										
Blank (BCI0324-BLK1)				Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Boron	<0.0500	0.0500	mg/L							
LCS (BCI0324-BS1)				Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	1.04	0.0500	mg/L	1.0000		104	85-115			
Calcium	105	0.500	mg/L	100.00		105	85-115			
Boron	1.01	0.0500	mg/L	1.0000		101	85-115			
Duplicate (BCI0324-DUP1)		**Source: MCI0163-02**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	85.6	0.500	mg/L		86.5			1.11	20	
Boron	0.127	0.0500	mg/L		0.124			2.23	20	
Duplicate (BCI0324-DUP2)		**Source: MCI0163-03**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	65.1	0.500	mg/L		64.8			0.381	20	
Boron	0.0566	0.0500	mg/L		0.0581			2.56	20	
Matrix Spike (BCI0324-MS1)		**Source: MCI0163-02**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125			
Calcium	190	0.500	mg/L	100.00	86.5	104	70-130			
Boron	1.15	0.0500	mg/L	1.0000	0.124	103	70-130			
Matrix Spike (BCI0324-MS2)		**Source: MCI0163-03**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125			
Boron	1.01	0.0500	mg/L	1.0000	0.0581	94.9	70-130			
Calcium	167	0.500	mg/L	100.00	64.8	102	70-130			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0324 - EPA 200.2, EPA 3005										
Matrix Spike Dup (BCI0324-MSD1)		**Source: MCI0163-02**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Calcium	191	0.500	mg/L	100.00	86.5	104	70-130	0.397	20	
Boron	1.15	0.0500	mg/L	1.0000	0.124	103	70-130	0.249	20	
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125	0.714	20	
Matrix Spike Dup (BCI0324-MSD2)		**Source: MCI0163-03**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	1.08	0.0500	mg/L	1.0000	<0.0500	108	75-125	3.68	20	
Boron	1.07	0.0500	mg/L	1.0000	0.0581	102	70-130	6.45	20	
Calcium	175	0.500	mg/L	100.00	64.8	110	70-130	4.64	20	
Batch BCI0329 - EPA 200.2, EPA 3005										
Blank (BCI0329-BLK1)				Prepared: 09/18/2017 Analyzed: 09/19/2017						
Boron	<0.0500	0.0500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
LCS (BCI0329-BS1)				Prepared: 09/18/2017 Analyzed: 09/19/2017						
Boron	0.982	0.0500	mg/L	1.0000		98.2	85-115			
Lithium	1.03	0.0500	mg/L	1.0000		103	85-115			
Calcium	103	0.500	mg/L	100.00		103	85-115			
Duplicate (BCI0329-DUP1)		**Source: MCI0163-21**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	54.8	0.500	mg/L		55.3			0.984	20	
Boron	<0.0500	0.0500	mg/L		<0.0500				20	
Duplicate (BCI0329-DUP2)		**Source: MCI0163-22**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	77.9	0.500	mg/L		76.6			1.63	20	
Boron	0.0311	0.0500	mg/L		0.0353			12.6	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0329 - EPA 200.2, EPA 3005										
Matrix Spike (BCI0329-MS1)	**Source: MCI0163-21**			Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	1.00	0.0500	mg/L	1.0000	<0.0500	100	75-125			
Calcium	156	0.500	mg/L	100.00	55.3	100	70-130			
Boron	1.01	0.0500	mg/L	1.0000	<0.0500	101	70-130			
Matrix Spike (BCI0329-MS2)	**Source: MCI0163-22**			Prepared: 09/18/2017 Analyzed: 09/19/2017						
Calcium	179	0.500	mg/L	100.00	76.6	102	70-130			
Boron	1.02	0.0500	mg/L	1.0000	0.0353	98.2	70-130			
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125			
Matrix Spike Dup (BCI0329-MSD1)	**Source: MCI0163-21**			Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	1.01	0.0500	mg/L	1.0000	<0.0500	101	75-125	0.858	20	
Calcium	156	0.500	mg/L	100.00	55.3	101	70-130	0.353	20	
Boron	1.03	0.0500	mg/L	1.0000	<0.0500	103	70-130	1.67	20	
Matrix Spike Dup (BCI0329-MSD2)	**Source: MCI0163-22**			Prepared: 09/18/2017 Analyzed: 09/19/2017						
Boron	1.05	0.0500	mg/L	1.0000	0.0353	102	70-130	3.19	20	
Calcium	179	0.500	mg/L	100.00	76.6	102	70-130	0.0944	20	
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125	0.730	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0323 - EPA 245.1, EPA 7470A										
Blank (BCI0323-BLK1)				Prepared & Analyzed: 09/18/2017						
Mercury	<0.200	0.200	ug/L							
LCS (BCI0323-BS1)				Prepared & Analyzed: 09/18/2017						
Mercury	2.90	0.200	ug/L	3.0000		96.8	85-115			
Duplicate (BCI0323-DUP1)		**Source: MCI0163-06**		Prepared & Analyzed: 09/18/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCI0323-DUP2)		**Source: MCI0163-07**		Prepared & Analyzed: 09/18/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCI0323-MS1)		**Source: MCI0163-06**		Prepared & Analyzed: 09/18/2017						
Mercury	2.79	0.200	ug/L	3.0000	<0.200	93.0	70-130			
Matrix Spike (BCI0323-MS2)		**Source: MCI0163-07**		Prepared & Analyzed: 09/18/2017						
Mercury	2.73	0.200	ug/L	3.0000	<0.200	90.9	70-130			
Matrix Spike Dup (BCI0323-MSD1)		**Source: MCI0163-06**		Prepared & Analyzed: 09/18/2017						
Mercury	2.63	0.200	ug/L	3.0000	<0.200	87.8	70-130	5.78	20	
Matrix Spike Dup (BCI0323-MSD2)		**Source: MCI0163-07**		Prepared & Analyzed: 09/18/2017						
Mercury	2.68	0.200	ug/L	3.0000	<0.200	89.4	70-130	1.68	20	
Batch BCI0421 - EPA 245.1, EPA 7470A										
Blank (BCI0421-BLK1)				Prepared & Analyzed: 09/21/2017						
Mercury	<0.200	0.200	ug/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCI0421 - EPA 245.1, EPA 7470A										
LCS (BCI0421-BS1)				Prepared & Analyzed: 09/21/2017						
Mercury	2.72	0.200	ug/L	3.0000		90.6	85-115			
Duplicate (BCI0421-DUP1)		**Source: MCI0158-03**		Prepared & Analyzed: 09/21/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Duplicate (BCI0421-DUP2)		**Source: MCI0163-25**		Prepared & Analyzed: 09/21/2017						
Mercury	<0.200	0.200	ug/L		<0.200				20	
Matrix Spike (BCI0421-MS1)		**Source: MCI0158-03**		Prepared & Analyzed: 09/21/2017						
Mercury	2.67	0.200	ug/L	3.0000	<0.200	89.1	70-130			
Matrix Spike (BCI0421-MS2)		**Source: MCI0163-25**		Prepared & Analyzed: 09/21/2017						
Mercury	2.71	0.200	ug/L	3.0000	<0.200	90.2	70-130			
Matrix Spike Dup (BCI0421-MSD1)		**Source: MCI0158-03**		Prepared & Analyzed: 09/21/2017						
Mercury	2.71	0.200	ug/L	3.0000	<0.200	90.4	70-130	1.47	20	
Matrix Spike Dup (BCI0421-MSD2)		**Source: MCI0163-25**		Prepared & Analyzed: 09/21/2017						
Mercury	2.65	0.200	ug/L	3.0000	<0.200	88.4	70-130	1.97	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:46

Qualifiers and Definitions

M_TTT	Sample received at the lab outside of required hold time.
M_D-RL	The RPD for the sample duplicate was outside of QC acceptance limits due to<RL.
Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 3

2112554

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, Sept. 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Rinse	WT				9-11-17	1115		4	1	1	2							✓		
2	P-74-1						1150		4	1	1	2							✓		
3	P-73a-1						1250		4	1	1	2							✓		
4	P-125						1345		4	1	1	2							✓		
5	P-141						1500		4	1	1	2							✓		
6	P-134						1540		4	1	1	2							✓		
7	P-138A						1635		4	1	1	2							✓		
8	P-137A						1730		4	1	1	2							✓		
9	P-117	WT				9-12-17	0910		4	1	1	2							✓		
10	P-75-1						1000		4	1	1	2							✓		
11	P-97						1040		4	1	1	2							✓		
12	P-98						1135		4	1	1	2							✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
(1.) marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	9/14/17	1310	[signature] / Xcel	9/14/17	1320

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
M400841 .5°C	Y	Y	Y

pH Strips: MB0050B

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 9/12/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 3

2112557

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, Sept, 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-120	WT				9/12/17	1230		4	1	1	2							✓		
2	P-152a						1320		4	1	1	2							✓		
3	P-130						1410		4	1	1	2							✓		
4	P-17						1530		4	1	1	2							✓		
5	P-158						1615		4	1	1	2							✓		
6	P-157						1700		4	1	1	2							✓		
7	P-23						1830		4	1	1	2							✓		
8	Duplicate						1830		4	1	1	2							✓		
9	P-150	WT				9/13/17	0835		4	1	1	2							✓		
10	P-131						0940		4	1	1	2							✓		
11	P-151						1050		4	1	1	2							✓		
12	P-153						1200		4	1	1	2							✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1.) Marked HNO3 bottles filtered and unfiltered.	David Anderson Pace	9/14/17	1310	[signature] Xcel	9/14/17	1320	M400841:58

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	Y	Y

pHstrips: MB00508 ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 9-13-17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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Page: 3 of 3

2112559

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, Sept. 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-154a	WT				9/13/17	1310		4	1	1	2							✓		
2	P-132						1400		4	1	1	2							✓		
3	P-165						1455		4	1	1	2							✓		
4	P-22						1610		4	1	1	2							✓		
5	P-155						1705		4	1	1	2							✓		
6	P-01a-1						1750		4	1	1	2							✓		
7	P-156						1835		4	1	1	2							✓		
8	P-162	WT				9/14/17	0930		4	1	1	2							✓		
9	P-163						1040		4	1	1	2							✓		
10	P-164						1140		4	1	1	2							✓		
11																					
12				DJA 9/14/17																	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
(1) marked HNO3 bottles filtered and unfiltered.	David Anderson [signature]	9/14/17	1310	[signature] / Xcel	1320 9/14/17	1320

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
MU00341 5.8°C	X	X	X

ORIGINAL

pH strips: MB00508

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 9-14-17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

October 03, 2017

Dave Anderson
Pace Analytical Services - Field Svcs Division
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Dear Dave Anderson:
Enclosed are the analytical results for sample(s) received by the laboratory on September 19, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Robbin Robl
robbin.robl@pacelabs.com
(724)850-5613
Project Manager

Enclosures

cc: Harry S. Davis III, Xcel Energy
Charles A. Donkers, Xcel Energy
Christine M. Keefe, Xcel Energy
Ciara Ruikkie, Pace Analytical Services - Field Svcs Division

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Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30230404001	**P-74-1**	Water	09/11/17 11:50	09/19/17 09:55
30230404002	**P-73a-1**	Water	09/11/17 12:50	09/19/17 09:55
30230404003	**P-125**	Water	09/11/17 13:45	09/19/17 09:55
30230404004	**P-141**	Water	09/11/17 15:00	09/19/17 09:55
30230404005	**P-134**	Water	09/11/17 15:40	09/19/17 09:55
30230404006	**P-138A**	Water	09/11/17 16:35	09/19/17 09:55
30230404007	**P-137A**	Water	09/11/17 17:30	09/19/17 09:55
30230404008	**P-117**	Water	09/12/17 09:10	09/19/17 09:55
30230404009	**P-75-1**	Water	09/12/17 10:00	09/19/17 09:55
30230404010	**P-97**	Water	09/12/17 10:40	09/19/17 09:55
30230404011	**P-98**	Water	09/12/17 11:35	09/19/17 09:55
30230404012	**P-120**	Water	09/12/17 12:30	09/19/17 09:55
30230404013	**P-152a**	Water	09/12/17 13:20	09/19/17 09:55
30230404014	**P-130**	Water	09/12/17 14:10	09/19/17 09:55
30230404015	**P-17**	Water	09/12/17 15:30	09/19/17 09:55
30230404016	**P-158**	Water	09/12/17 16:15	09/19/17 09:55
30230404017	**P-157**	Water	09/12/17 17:00	09/19/17 09:55
30230404018	**P-23**	Water	09/12/17 18:30	09/19/17 09:55
30230404019	**P-150**	Water	09/13/17 08:35	09/19/17 09:55
30230404020	**P-131**	Water	09/13/17 09:40	09/19/17 09:55
30230404021	**P-151**	Water	09/13/17 10:50	09/19/17 09:55
30230404022	**P-153**	Water	09/13/17 12:00	09/19/17 09:55
30230404023	**P-154a**	Water	09/13/17 13:10	09/19/17 09:55
30230404024	**P-132**	Water	09/13/17 14:00	09/19/17 09:55
30230404025	**P-165**	Water	09/13/17 14:55	09/19/17 09:55
30230404026	**P-22**	Water	09/13/17 16:10	09/19/17 09:55
30230404027	**P-155**	Water	09/13/17 17:05	09/19/17 09:55
30230404028	**P-01a-1**	Water	09/13/17 17:50	09/19/17 09:55
30230404029	**P-156**	Water	09/13/17 18:35	09/19/17 09:55
30230404030	**P-162**	Water	09/14/17 09:30	09/19/17 09:55
30230404031	**P-163**	Water	09/14/17 10:40	09/19/17 09:55
30230404032	**P-164**	Water	09/14/17 11:40	09/19/17 09:55

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30230404001	**P-74-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404002	**P-73a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404003	**P-125**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404004	**P-141**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404005	**P-134**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404006	**P-138A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404007	**P-137A**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404008	**P-117**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404009	**P-75-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404010	**P-97**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404011	**P-98**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404012	**P-120**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404013	**P-152a**	EPA 903.1	WRR	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404014	**P-130**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404015	**P-17**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404016	**P-158**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404017	**P-157**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404018	**P-23**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404019	**P-150**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404020	**P-131**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404021	**P-151**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404022	**P-153**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404023	**P-154a**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404024	**P-132**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404025	**P-165**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		Total Radium Calculation	JAL	1	PASI-PA
30230404026	**P-22**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404027	**P-155**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404028	**P-01a-1**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404029	**P-156**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404030	**P-162**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404031	**P-163**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
30230404032	**P-164**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Pace-MN Field Services Division
Date: October 03, 2017

General Information:
32 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Pace-MN Field Services Division
Date: October 03, 2017

General Information:
32 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Batch Comments:

The Ra-228 LCS recovery associated with batch 37832 was high and outside of the default acceptance criteria for LCS recovery at 148.0%. Samples with activity results less than the RL of 1.0 pCi/L are reportable without qualification.
- QC Batch: 272358

Analyte Comments:

QC Batch: 272358

1c: The Ra-228 LCS recovery associated with batch 37832 was high and outside of the default acceptance criteria for LCS recovery at 148.0%. Samples with activity results less than the RL of 1.0 pCi/L are reportable without qualification.
- BLANK (Lab ID: 1339843)
  - Radium-228
- P-117 (Lab ID: 30230404008)
  - Radium-228
- P-120 (Lab ID: 30230404012)
  - Radium-228
- P-125 (Lab ID: 30230404003)
  - Radium-228
- P-130 (Lab ID: 30230404014)
  - Radium-228
- P-131 (Lab ID: 30230404020)
  - Radium-228
- P-134 (Lab ID: 30230404005)
  - Radium-228
- P-137A (Lab ID: 30230404007)
  - Radium-228
- P-138A (Lab ID: 30230404006)
  - Radium-228

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Pace-MN Field Services Division
Date: October 03, 2017

Analyte Comments:

QC Batch: 272358

1c: The Ra-228 LCS recovery associated with batch 37832 was high and outside of the default acceptance criteria for LCS recovery at 148.0%. Samples with activity results less than the RL of 1.0 pCi/L are reportable without qualification.

- P-141 (Lab ID: 30230404004)
  - Radium-228
- P-150 (Lab ID: 30230404019)
  - Radium-228
- P-152a (Lab ID: 30230404013)
  - Radium-228
- P-157 (Lab ID: 30230404017)
  - Radium-228
- P-158 (Lab ID: 30230404016)
  - Radium-228
- P-17 (Lab ID: 30230404015)
  - Radium-228
- P-23 (Lab ID: 30230404018)
  - Radium-228
- P-73a-1 (Lab ID: 30230404002)
  - Radium-228
- P-74-1 (Lab ID: 30230404001)
  - Radium-228
- P-75-1 (Lab ID: 30230404009)
  - Radium-228
- P-97 (Lab ID: 30230404010)
  - Radium-228
- P-98 (Lab ID: 30230404011)
  - Radium-228

2c: The Ra-228 LCS recovery was high and outside of the default acceptance criteria for LCS recovery at 148.0%. Sample results have been reported based on both an acceptable LCSD recovery and batch RPD assessment.

- P-117 (Lab ID: 30230404008)
  - Radium-228
- P-138A (Lab ID: 30230404006)
  - Radium-228
- P-158 (Lab ID: 30230404016)
  - Radium-228
- P-73a-1 (Lab ID: 30230404002)
  - Radium-228
- P-75-1 (Lab ID: 30230404009)
  - Radium-228

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PROJECT NARRATIVE

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Pace-MN Field Services Division
Date: October 03, 2017

General Information:
32 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Sample: P-74-1 **Lab ID: 30230404001** Collected: 09/11/17 11:50 Received: 09/19/17 09:55 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 ± 0.440 (0.811) C:NA T:83%**	pCi/L	09/28/17 20:05	13982-63-3	
Radium-228	EPA 904.0	**0.300 ± 0.416 (0.893) C:73% T:86%**	pCi/L	09/30/17 14:10	15262-20-1	1c
Total Radium	Total Radium Calculation	**0.503 ± 0.856 (1.70)**	pCi/L	10/03/17 13:29	7440-14-4	

Sample: P-73a-1 **Lab ID: 30230404002** Collected: 09/11/17 12:50 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.415 ± 0.472 (0.744) C:NA T:84%**	pCi/L	09/28/17 20:05	13982-63-3	
Radium-228	EPA 904.0	**1.11 ± 0.509 (0.859) C:73% T:83%**	pCi/L	09/30/17 14:10	15262-20-1	1c,2c
Total Radium	Total Radium Calculation	**1.53 ± 0.981 (1.60)**	pCi/L	10/03/17 13:29	7440-14-4	

Sample: P-125 **Lab ID: 30230404003** Collected: 09/11/17 13:45 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.125 ± 0.286 (0.461) C:NA T:87%**	pCi/L	09/28/17 20:05	13982-63-3	
Radium-228	EPA 904.0	**0.379 ± 0.484 (1.03) C:69% T:80%**	pCi/L	09/30/17 14:10	15262-20-1	1c
Total Radium	Total Radium Calculation	**0.504 ± 0.770 (1.49)**	pCi/L	10/03/17 13:29	7440-14-4	

Sample: P-141 **Lab ID: 30230404004** Collected: 09/11/17 15:00 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.586 ± 0.719 (1.18) C:NA T:74%**	pCi/L	09/28/17 20:05	13982-63-3	
Radium-228	EPA 904.0	**0.405 ± 0.449 (0.940) C:71% T:78%**	pCi/L	09/30/17 14:11	15262-20-1	1c
Total Radium	Total Radium Calculation	**0.991 ± 1.17 (2.12)**	pCi/L	10/03/17 13:29	7440-14-4	

Sample: P-134 **Lab ID: 30230404005** Collected: 09/11/17 15:40 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.251 ± 0.349 (0.582) C:NA T:90%**	pCi/L	09/28/17 20:05	13982-63-3	
Radium-228	EPA 904.0	**0.207 ± 0.435 (0.960) C:72% T:77%**	pCi/L	09/30/17 14:11	15262-20-1	1c

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Sample: P-134 **Lab ID: 30230404005** Collected: 09/11/17 15:40 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.458 ± 0.784 (1.54)**	pCi/L	10/03/17 13:29	7440-14-4	

Sample: P-138A **Lab ID: 30230404006** Collected: 09/11/17 16:35 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.539 ± 0.462 (0.626) C:NA T:83%**	pCi/L	09/28/17 20:19	13982-63-3	
Radium-228	EPA 904.0	**1.41 ± 0.605 (1.02) C:71% T:84%**	pCi/L	09/30/17 14:11	15262-20-1	1c,2c
Total Radium	Total Radium Calculation	**1.95 ± 1.07 (1.65)**	pCi/L	10/03/17 13:29	7440-14-4	

Sample: P-137A **Lab ID: 30230404007** Collected: 09/11/17 17:30 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.437 ± 0.370 (0.459) C:NA T:87%**	pCi/L	09/28/17 20:19	13982-63-3	
Radium-228	EPA 904.0	**0.732 ± 0.452 (0.838) C:69% T:81%**	pCi/L	09/30/17 14:11	15262-20-1	1c
Total Radium	Total Radium Calculation	**1.17 ± 0.822 (1.30)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-117 **Lab ID: 30230404008** Collected: 09/12/17 09:10 Received: 09/19/17 09:55 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 ± 0.277 (0.564) C:NA T:87%**	pCi/L	09/28/17 20:19	13982-63-3	
Radium-228	EPA 904.0	**1.24 ± 0.524 (0.843) C:71% T:84%**	pCi/L	09/30/17 14:11	15262-20-1	1c,2c
Total Radium	Total Radium Calculation	**1.24 ± 0.801 (1.41)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-75-1 **Lab ID: 30230404009** Collected: 09/12/17 10:00 Received: 09/19/17 09:55 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 ± 0.425 (0.777) C:NA T:80%**	pCi/L	09/28/17 20:19	13982-63-3	
Radium-228	EPA 904.0	**1.22 ± 0.522 (0.830) C:72% T:77%**	pCi/L	09/30/17 14:11	15262-20-1	1c,2c
Total Radium	Total Radium Calculation	**1.44 ± 0.947 (1.61)**	pCi/L	10/03/17 13:30	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Sample: P-97 **Lab ID: 30230404010** Collected: 09/12/17 10:40 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.205 ± 0.312 (0.502) C:NA T:84%**	pCi/L	09/28/17 20:19	13982-63-3	
Radium-228	EPA 904.0	**0.750 ± 0.433 (0.785) C:74% T:81%**	pCi/L	09/30/17 14:12	15262-20-1	1c
Total Radium	Total Radium Calculation	**0.955 ± 0.745 (1.29)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-98 **Lab ID: 30230404011** Collected: 09/12/17 11:35 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.521 ± 0.514 (0.782) C:NA T:83%**	pCi/L	09/28/17 20:19	13982-63-3	
Radium-228	EPA 904.0	**0.951 ± 0.445 (0.735) C:72% T:81%**	pCi/L	09/30/17 14:12	15262-20-1	1c
Total Radium	Total Radium Calculation	**1.47 ± 0.959 (1.52)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-120 **Lab ID: 30230404012** Collected: 09/12/17 12:30 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.254 ± 0.307 (0.468) C:NA T:86%**	pCi/L	09/28/17 20:35	13982-63-3	
Radium-228	EPA 904.0	**0.901 ± 0.453 (0.765) C:73% T:76%**	pCi/L	09/30/17 14:12	15262-20-1	1c
Total Radium	Total Radium Calculation	**1.16 ± 0.760 (1.23)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-152a **Lab ID: 30230404013** Collected: 09/12/17 13:20 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.527 ± 0.451 (0.612) C:NA T:81%**	pCi/L	09/28/17 20:35	13982-63-3	
Radium-228	EPA 904.0	**0.978 ± 0.474 (0.809) C:72% T:85%**	pCi/L	09/30/17 14:12	15262-20-1	1c
Total Radium	Total Radium Calculation	**1.51 ± 0.925 (1.42)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-130 **Lab ID: 30230404014** Collected: 09/12/17 14:10 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.324 ± 0.383 (0.602) C:NA T:85%**	pCi/L	09/28/17 20:35	13982-63-3	
Radium-228	EPA 904.0	**0.839 ± 0.425 (0.727) C:71% T:84%**	pCi/L	09/30/17 14:12	15262-20-1	1c

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Sample: P-130 **Lab ID: 30230404014** Collected: 09/12/17 14:10 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**1.16 ± 0.808 (1.33)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-17 **Lab ID: 30230404015** Collected: 09/12/17 15:30 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0744 ± 0.437 (0.893) C:NA T:76%**	pCi/L	09/28/17 20:35	13982-63-3	
Radium-228	EPA 904.0	**0.891 ± 0.421 (0.682) C:73% T:80%**	pCi/L	09/30/17 14:12	15262-20-1	1c
Total Radium	Total Radium Calculation	**0.965 ± 0.858 (1.58)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-158 **Lab ID: 30230404016** Collected: 09/12/17 16:15 Received: 09/19/17 09:55 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 ± 0.436 (0.906) C:NA T:86%**	pCi/L	09/28/17 20:35	13982-63-3	
Radium-228	EPA 904.0	**1.29 ± 0.530 (0.820) C:71% T:80%**	pCi/L	09/30/17 14:12	15262-20-1	1c,2c
Total Radium	Total Radium Calculation	**1.29 ± 0.966 (1.73)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-157 **Lab ID: 30230404017** Collected: 09/12/17 17:00 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.213 ± 0.369 (0.659) C:NA T:77%**	pCi/L	09/28/17 20:35	13982-63-3	
Radium-228	EPA 904.0	**0.933 ± 0.486 (0.855) C:75% T:76%**	pCi/L	09/30/17 14:12	15262-20-1	1c
Total Radium	Total Radium Calculation	**1.15 ± 0.855 (1.51)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-23 **Lab ID: 30230404018** Collected: 09/12/17 18:30 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0728 ± 0.332 (0.536) C:NA T:79%**	pCi/L	09/28/17 20:50	13982-63-3	
Radium-228	EPA 904.0	**0.319 ± 0.469 (1.01) C:75% T:81%**	pCi/L	09/30/17 14:25	15262-20-1	1c
Total Radium	Total Radium Calculation	**0.392 ± 0.801 (1.55)**	pCi/L	10/03/17 13:30	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Sample: P-150 **Lab ID: 30230404019** Collected: 09/13/17 08:35 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.507 ± 0.430 (0.533) C:NA T:87%**	pCi/L	09/28/17 20:50	13982-63-3	
Radium-228	EPA 904.0	**0.310 ± 0.496 (1.08) C:77% T:83%**	pCi/L	09/30/17 14:25	15262-20-1	1c
Total Radium	Total Radium Calculation	**0.817 ± 0.926 (1.61)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-131 **Lab ID: 30230404020** Collected: 09/13/17 09:40 Received: 09/19/17 09:55 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 ± 0.393 (0.817) C:NA T:94%**	pCi/L	09/28/17 20:50	13982-63-3	
Radium-228	EPA 904.0	**0.523 ± 0.492 (1.02) C:77% T:87%**	pCi/L	09/30/17 14:25	15262-20-1	1c
Total Radium	Total Radium Calculation	**0.523 ± 0.885 (1.84)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-151 **Lab ID: 30230404021** Collected: 09/13/17 10:50 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.132 ± 0.448 (0.864) C:NA T:85%**	pCi/L	09/28/17 21:09	13982-63-3	
Radium-228	EPA 904.0	**0.497 ± 0.347 (0.666) C:78% T:91%**	pCi/L	09/30/17 14:10	15262-20-1	
Total Radium	Total Radium Calculation	**0.629 ± 0.795 (1.53)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-153 **Lab ID: 30230404022** Collected: 09/13/17 12:00 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.574 ± 0.381 (0.173) C:NA T:87%**	pCi/L	09/28/17 21:09	13982-63-3	
Radium-228	EPA 904.0	**0.396 ± 0.347 (0.697) C:74% T:90%**	pCi/L	09/30/17 14:10	15262-20-1	
Total Radium	Total Radium Calculation	**0.970 ± 0.728 (0.870)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-154a **Lab ID: 30230404023** Collected: 09/13/17 13:10 Received: 09/19/17 09:55 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 ± 0.398 (0.842) C:NA T:86%**	pCi/L	09/28/17 21:09	13982-63-3	
Radium-228	EPA 904.0	**0.691 ± 0.426 (0.790) C:73% T:82%**	pCi/L	09/30/17 14:10	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Sample: P-154a **Lab ID: 30230404023** Collected: 09/13/17 13:10 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**0.691 ± 0.824 (1.63)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-132 **Lab ID: 30230404024** Collected: 09/13/17 14:00 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.258 ± 0.359 (0.600) C:NA T:86%**	pCi/L	09/28/17 21:09	13982-63-3	
Radium-228	EPA 904.0	**0.819 ± 0.477 (0.886) C:76% T:81%**	pCi/L	09/30/17 14:04	15262-20-1	
Total Radium	Total Radium Calculation	**1.08 ± 0.836 (1.49)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-165 **Lab ID: 30230404025** Collected: 09/13/17 14:55 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0613 ± 0.360 (0.736) C:NA T:87%**	pCi/L	09/28/17 21:09	13982-63-3	
Radium-228	EPA 904.0	**0.436 ± 0.432 (0.889) C:74% T:82%**	pCi/L	09/30/17 14:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.497 ± 0.792 (1.63)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-22 **Lab ID: 30230404026** Collected: 09/13/17 16:10 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.125 ± 0.285 (0.460) C:NA T:85%**	pCi/L	09/28/17 21:09	13982-63-3	
Radium-228	EPA 904.0	**0.627 ± 0.438 (0.848) C:74% T:83%**	pCi/L	09/30/17 14:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.752 ± 0.723 (1.31)**	pCi/L	10/03/17 13:30	7440-14-4	

Sample: P-155 **Lab ID: 30230404027** Collected: 09/13/17 17:05 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.459 ± 0.389 (0.483) C:NA T:86%**	pCi/L	09/28/17 21:27	13982-63-3	
Radium-228	EPA 904.0	**-0.0905 ± 0.504 (1.17) C:74% T:81%**	pCi/L	09/30/17 14:05	15262-20-1	
Total Radium	Total Radium Calculation	**0.459 ± 0.893 (1.65)**	pCi/L	10/03/17 13:32	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Sample: P-01a-1 **Lab ID: 30230404028** Collected: 09/13/17 17:50 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.354 ± 0.418 (0.657) C:NA T:82%**	pCi/L	09/28/17 21:27	13982-63-3	
Radium-228	EPA 904.0	**0.636 ± 0.430 (0.813) C:69% T:86%**	pCi/L	09/30/17 14:05	15262-20-1	
Total Radium	Total Radium Calculation	**0.990 ± 0.848 (1.47)**	pCi/L	10/03/17 13:32	7440-14-4	

Sample: P-156 **Lab ID: 30230404029** Collected: 09/13/17 18:35 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.612 ± 0.448 (0.501) C:NA T:87%**	pCi/L	09/28/17 21:27	13982-63-3	
Radium-228	EPA 904.0	**0.440 ± 0.387 (0.782) C:76% T:86%**	pCi/L	09/30/17 14:05	15262-20-1	
Total Radium	Total Radium Calculation	**1.05 ± 0.835 (1.28)**	pCi/L	10/03/17 13:32	7440-14-4	

Sample: P-162 **Lab ID: 30230404030** Collected: 09/14/17 09:30 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.892 ± 0.555 (0.547) C:NA T:79%**	pCi/L	09/28/17 21:27	13982-63-3	
Radium-228	EPA 904.0	**0.273 ± 0.408 (0.879) C:73% T:80%**	pCi/L	09/30/17 14:05	15262-20-1	
Total Radium	Total Radium Calculation	**1.17 ± 0.963 (1.43)**	pCi/L	10/03/17 13:32	7440-14-4	

Sample: P-163 **Lab ID: 30230404031** Collected: 09/14/17 10:40 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.702 ± 0.483 (0.516) C:NA T:79%**	pCi/L	09/28/17 21:27	13982-63-3	
Radium-228	EPA 904.0	**0.825 ± 0.458 (0.829) C:71% T:86%**	pCi/L	09/30/17 14:06	15262-20-1	
Total Radium	Total Radium Calculation	**1.53 ± 0.941 (1.35)**	pCi/L	10/03/17 13:32	7440-14-4	

Sample: P-164 **Lab ID: 30230404032** Collected: 09/14/17 11:40 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.484 ± 0.363 (0.188) C:NA T:85%**	pCi/L	09/28/17 21:27	13982-63-3	
Radium-228	EPA 904.0	**0.931 ± 0.521 (0.962) C:75% T:80%**	pCi/L	09/30/17 14:06	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

Sample: P-164 **Lab ID: 30230404032** Collected: 09/14/17 11:40 Received: 09/19/17 09:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Total Radium	Total Radium Calculation	**1.42 ± 0.884 (1.15)**	pCi/L	10/03/17 13:32	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

QC Batch: 272340 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30230404001, 30230404002, 30230404003, 30230404004, 30230404005, 30230404006, 30230404007, 30230404008, 30230404009, 30230404010, 30230404011, 30230404012, 30230404013, 30230404014, 30230404015, 30230404016, 30230404017, 30230404018, 30230404019, 30230404020

METHOD BLANK: 1339824 Matrix: Water
Associated Lab Samples: 30230404001, 30230404002, 30230404003, 30230404004, 30230404005, 30230404006, 30230404007, 30230404008, 30230404009, 30230404010, 30230404011, 30230404012, 30230404013, 30230404014, 30230404015, 30230404016, 30230404017, 30230404018, 30230404019, 30230404020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.172 ± 0.263 (0.423) C:NA T:93%	pCi/L	09/28/17 20:05	

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

QC Batch: 272360 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30230404021, 30230404022, 30230404023, 30230404024, 30230404025, 30230404026, 30230404027, 30230404028, 30230404029, 30230404030, 30230404031, 30230404032

METHOD BLANK: 1339850 Matrix: Water
Associated Lab Samples: 30230404021, 30230404022, 30230404023, 30230404024, 30230404025, 30230404026, 30230404027, 30230404028, 30230404029, 30230404030, 30230404031, 30230404032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.425 ± 0.375 (0.760) C:79% T:85%	pCi/L	09/30/17 14:04	

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Greensburg, PA 15601
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

QC Batch: 272341 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30230404021, 30230404022, 30230404023, 30230404024, 30230404025, 30230404026, 30230404027, 30230404028, 30230404029, 30230404030, 30230404031, 30230404032

METHOD BLANK: 1339825 Matrix: Water
Associated Lab Samples: 30230404021, 30230404022, 30230404023, 30230404024, 30230404025, 30230404026, 30230404027, 30230404028, 30230404029, 30230404030, 30230404031, 30230404032

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.237 ± 0.272 (0.160) C:NA T:96%	pCi/L	09/28/17 20:50	

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

QC Batch: 272358 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30230404001, 30230404002, 30230404003, 30230404004, 30230404005, 30230404006, 30230404007, 30230404008, 30230404009, 30230404010, 30230404011, 30230404012, 30230404013, 30230404014, 30230404015, 30230404016, 30230404017, 30230404018, 30230404019, 30230404020

METHOD BLANK: 1339843 Matrix: Water
Associated Lab Samples: 30230404001, 30230404002, 30230404003, 30230404004, 30230404005, 30230404006, 30230404007, 30230404008, 30230404009, 30230404010, 30230404011, 30230404012, 30230404013, 30230404014, 30230404015, 30230404016, 30230404017, 30230404018, 30230404019, 30230404020

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.499 ± 0.429 (0.868) C:78% T:81%	pCi/L	09/30/17 14:10	1c

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Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 17-1003, Xcel Energy-
Pace Project No.: 30230404

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-PA	Pace Analytical Services - Greensburg

BATCH QUALIFIERS

Batch: 272358

[1]	The Ra-228 LCS recovery associated with batch 37832 was high and outside of the default acceptance criteria for LCS recovery at 148.0%. Samples with activity results less than the RL of 1.0 pCi/L are reportable without qualification.

ANALYTE QUALIFIERS

1c	The Ra-228 LCS recovery associated with batch 37832 was high and outside of the default acceptance criteria for LCS recovery at 148.0%. Samples with activity results less than the RL of 1.0 pCi/L are reportable without qualification.
2c	The Ra-228 LCS recovery was high and outside of the default acceptance criteria for LCS recovery at 148.0%. Sample results have been reported based on both an acceptable LCSD recovery and batch RPD assessment.

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WO#: 30230404

CHAIN-OF-CUSTODY / Analytical Request Document

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

30230404

Page: 1 of 3

2112555

Section A Required Client Information:

Company:	Xcel Energy
Address:	c/o Pace MN Field
Email To:	
Phone:	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	David Anderson
Copy To:	
Purchase Order No.:	
Project Name:	17-1003, Xcel Energy -
Project Number:	Sherco CCR, Sept. 2017

Section C Invoice Information:

Attention:	Ciara Rikkie
Company Name:	Pace MN Field Services
Address:	
Pace Quote Reference:	Tom Halverson
Pace Project Manager:	Robbin Robl
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-74-1	WT				9-11-17	1150		2			2						✓	✓		001
2	P-73A-1						1250		2			2						✓	✓		002
3	P-125						1345		2			2						✓	✓		003
4	P-141						1500		2			2						✓	✓		004
5	P-134						1540		2			2						✓	✓		005
6	P-138A						1635		2			2						✓	✓		006
7	P-137A	↓				↓	1730		2			2						✓	✓		007
8	P-117	WT				9-12-17	0910		2			2						✓	✓		008
9	P-75-1						1000		2			2						✓	✓		009
10	P-97						1040		2			2						✓	✓		010
11	P-98						1135		2			2						✓	✓		011
12	P-120	↓				↓	1230		2			2						✓	✓		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
(1.) Client needs to analyze for: Radium 226+228 pCi/L Combined.	David Anderson, Pace	9/14/17	1445		9/19/17	0955
(2.) RA-226 EPA 903.1 RA-228 EPA 904.0 ORIGINAL						

SAMPLE CONDITIONS				
	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
N/A	2	Y	Y (9/19/17)	4

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 9/12/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

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30230404

Page: 2 of 3

2112556

Section A Required Client Information:

Company: Xcel Energy
Address: c/o Pace MN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-1003, Xcel Energy - Sherco CCR, Sept. 2017
Project Number:

Section C Invoice Information:

Attention: Ciara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Robl
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-152a	WT				9/12/17	1320		2			2						Y	✓	✓		013
2	P-130						1410		2			2							✓	✓		014
3	P-17						1530		2			2							✓	✓		015
4	P-158						1615		2			2							✓	✓		016
5	P-157						1700		2			2							✓	✓		017
6	P-23						1830		2			2							✓	✓		018
7	P-150	WT				9/13/17	0833		2			2							✓	✓		019
8	P-131						0940		2			2							✓	✓		020
9	P-151						1050		2			2							✓	✓		021
10	P-153						1200		2			2							✓	✓		022
11	P-154a						1310		2			2							✓	✓		023
12	P-132						1400		2			2							✓	✓		024

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1) Client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson / Pace	9/14/17	1145		9/14/17	0955	N/A N 4 4 4

(2) RA-226 EPA 903.1 ORIGINAL
RA-228 EPA 904.0

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 9/13/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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30230404

Page: 3 of 3

2112558

Section A Required Client Information:
Company: Xcel Energy
Address: c/o PaceMN Field
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:
Report To: David Anderson
Copy To:
Purchase Order No.:
Project Name: 17-1003, Xcel Energy-
Project Number: Sherco CCR, Sept. 2017

Section C Invoice Information:
Attention: Ciara Ruikkie
Company Name: PaceMN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Robbin Robl
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	RA-226 EPA903.1	RA-228 EPA904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-165	WT				9/13/17	1455		2			2							✓	✓		025
2	P-22						1610		2			2							✓	✓		026
3	P-155						1705		2			2							✓	✓		027
4	P-014-1						1750		2			2							✓	✓		028
5	P-156						1835		2			2							✓	✓		029
6	P-162	WT				9/14/17	0930		2			2							✓	✓		030
7	P-163						1040		2			2							✓	✓		031
8	P-164						1140		2			2							✓	✓		032
9																						
10																						
11				DJA 9/14/17																		
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
(1.) client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson / Pace	9/14/17	1415	[signature]	9/19/17	0955	N/A	N	~~Y~~ ZH 9/19/17	Y

(2.) RA-226 EPA 903.1
RA-228 EPA 904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 9-14-17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pittsburgh Lab Sample Condition Upon Receipt

30230404

Pace Analytical

Client Name: Xcel Energy Project # _____

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label ML

LIMS Login ZH

Tracking #: 749759827935 2

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

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

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

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ZH 9/19/17

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.	✓ ✓			16. pH<2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed ZH Date/time of preservation; Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: ZH Date: 9/19/17

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Appendix B

October 2017 Detection Monitoring Event
Field Datasheets and Laboratory Reports

Xcel Energy – Sherco NPDES + CCR Oct. '17
Field Proj. # 17-1121

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 10/9/17 Page 1 of 3

pH

Meter Make YSI 556 Meter ID MPS-5

Initial Calibration (IC)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
4.0	ERA	010916	03/31/20	3.98	23.0	0935	DJA
Buffer: 7.0 units	ERA - Lot #: 100716		Exp Date: 07/31/18	7.03	23.0	0935	DJA
Buffer: 10.0 units	ERA - Lot #: 230916		Exp Date: 03/31/20	10.04	23.0	0935	DJA

IC Slope (%) NA (Pass) / Fail (Acceptable Slope: 92-102%)

Initial Calibration Verification (ICV)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	Ricca - Lot #: 4607D88		Exp Date: 07/31/18	7.04	23.0	0945	DJA

(Pass) / Fail (ICV acceptable if ± 0.1 s.u. of buffer value)

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	ERA - Lot #: 100716		Exp Date: 07/31/18	7.07	15.0	1825	DJA

(Pass) / Fail (CCV acceptable if ± 0.1 s.u. of buffer value)

Conductivity

Initial Calibration (IC)

High Standard Value 998

Mfg. Fisher

Lot No. CC16243

Exp. Date

Meter Result (µS/cm)	Temp (°C)
999	23.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm

Ricca - Lot #: 4605D87

Exp Date: 05/31/18

Meter Result (µS/cm)	Temp (°C)
99	23.0

Meter Make YSI 556 ID MPS-5

IC/ICV Time 0950/0953

Initials DJA

ICV: (Pass) / Fail

(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1830 Initials DJA Std. Value 998 ☒ High Standard ☐ Low Standard

Result (µS/cm) 997 Temp (°C) 15.0 CCV: (Pass) / Fail

(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time Initials Std. Value ☐ High Standard ☐ Low Standard

Result (µS/cm) Temp (°C) N/A 10/9/17 CCV: Pass / Fail

(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time Initials Std. Value ☐ High Standard ☐ Low Standard

Result (µS/cm) Temp (°C) CCV: Pass / Fail

(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anders Date: 10/9/17

Xcel Energy - Sherco NPDES & CCR Oct. '17
Field Proj. #17-1121

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 10/9/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal Verification (ICV)	
Calibration Std. Value (mV)	234	Secondary Source Std. Value (mV)	234
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	17F100849	Lot No.	16L100376
Exp Date	03/2018	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
234	23.0	233	23.0

Meter Make YSI 556 ID MPS-5

IC/ICV Time 0955/0958

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1835	Initials DJA	Std. Value 244	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 240	Temp (°C) 15.0	CCV: (Pass) / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 10/9/17	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal Verification (ICV) % Saturation	
Ambient Temp:	22.0 (°C)	Ambient Temp:	22.0 (°C)
Barometric Pressure	29.17 (in. Hg)	Barometric Pressure	29.17 (in. Hg)
Barometric Pressure	740.92 (mm Hg)	Barometric Pressure	740.92 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)		ICV Meter Result (%)	
97		97	

IC/ICV Time 0930 Initials DJA

DO Meter ID YSI 556 MPS-5

Barometer ID Skymaster DB-26GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1820	Initials DJA	Barometric Pressure 741.68 (in. Hg / mm Hg)			
Calibration Value 98 (%)	Result 97 (%)	CCV: (Pass) / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 10/9/17 (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		

Form Revised: 02/03/17

Lead Technician Signature: DJ and Anderson Date: 10/9/17

Xcel Energy - Sherco NPDES + CCR Oct. '17
Field Proj. # 17-1121

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 10/9/17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

STANDARDS	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

IC	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	9.9	100	999	IC Time 1000 Initials DJA IC: Pass / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	9.9	99	999	ICV Time 1010 Initials DJA ICV: Pass / Fail

ICV acceptable if ± 5% of standard value.

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.9	100	999	CCV Time 1840 Initials DJA CCV: Pass / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
					CCV Time ____ Initials ____ CCV: Pass / Fail

DJA 10/9/17

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: [signature] Date: 10/9/17

Form Revised 11/14/2013

Attach additional notes if necessary

Xcel Energy – Sherco NPDES + CCR Oct. '17
Field Proj. # 17-1121

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 10/10/17 Page 1 of 3

Meter Make YSI 556 Meter ID MPS-5

pH

Initial Calibration (IC)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
4.0	ERA	010916	03/31/20	4.00	24.0	0635	DJA
Buffer: 7.0 units	ERA - Lot #: 100716		Exp Date: 07/31/18	7.02	24.0	0635	DJA
Buffer: 10.0 units	ERA - Lot #: 230916		Exp Date: 03/31/20	10.03	24.0	0635	DJA

IC Slope (%) NA (Pass) / Fail (Acceptable Slope: 92-102%)

Initial Calibration Verification (ICV)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	Ricca - Lot #: 4607D88		Exp Date: 07/31/18	7.04	24.0	0645	DJA

(Pass) / Fail (ICV acceptable if ± 0.1 s.u. of buffer value)

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	ERA - Lot #: 100716		Exp Date: 07/31/18	7.03	12.0	1835	DJA

(Pass) / Fail (CCV acceptable if ± 0.1 s.u. of buffer value)

Conductivity

Initial Calibration (IC)

High Standard Value 998
Mfg. Fisher
Lot No. CC16243
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1000	24.0

Initial Cal. Verification (ICV)

Low Standard Value 100
Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp.

Meter Result (µS/cm)	Temp (°C)
97	24.0

Meter Make YSI 556 ID MPS-5
IC/ICV Time 0650/0653
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1840 Initials DJA Std. Value 998 ☒ High Standard ☐ Low Standard
Result (µS/cm) 998 Temp (°C) 12.0 CCV: (Pass) / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

DJA 10/10/17

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anders Date: 10/10/17

Xcel Energy - Sherco NPDES + CCR Oct. '17
Field Proj. #17-1121

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 10/10/17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	232	Secondary Source Std. Value (mV)	232
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	17F100849	Lot No.	16L100376
Exp Date	03/2018	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
232	24.0	232	24.0

Meter Make YSI 556 ID MPS-5

IC/ICV Time 0655/0657

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time	1845	Initials	DJA	Std. Value	248
Result (mV)	244	Temp (°C)	12.0	CCV: (Pass) / Fail	

☒ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)		CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

DJA 10/10/17

CCV Time		Initials		Std. Value	
Result (mV)		Temp (°C)		CCV: Pass / Fail	

☐ Calibration Standard ☐ Secondary Source Standard (CCV acceptable if ± 10 mV of standard value)

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	24.0 (°C)	Ambient Temp:	24.0 (°C)
Barometric Pressure	29.29 (in. Hg)	Barometric Pressure	29.29 (in. Hg)
Barometric Pressure	743.97 (mm Hg)	Barometric Pressure	743.97 (mm Hg)
Calibration Value[1]	98 (%)	Calibration Value[1]	98 (%)
IC Meter Result (%)		ICV Meter Result (%)	
98		98	

IC/ICV Time 0630 Initials DJA

DO Meter ID YSI 556 MPS-5

Barometer ID Skymaster DB-26GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time	1830	Initials	DJA	Barometric Pressure	742.95	(in. Hg / mm Hg)
Calibration Value	98 (%)	Result	97 (%)	CCV: (Pass) / Fail		

(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure		(in. Hg / mm Hg)
Calibration Value	(%)	Result	(%)	CCV: Pass / Fail		

DJA 10/10/17

(CCV acceptable if ± 2% of Calibration Value)

CCV Time		Initials		Barometric Pressure		(in. Hg / mm Hg)
Calibration Value	(%)	Result	(%)	CCV: Pass / Fail		

(CCV acceptable if ± 2% of Calibration Value)

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 10/10/17

Xcel Energy - Sherco NPDES + CCR Oct. '17
Field Proj. # 17-1121

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 10/10/17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

STANDARDS	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

IC	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.9	100	998	IC Time 0700 Initials DJA IC: Pass / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.9	99	998	ICV Time 0710 Initials DJA ICV: Pass / Fail

ICV acceptable if ± 5% of standard value.

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	10.0	99	999	CCV Time 1850 Initials DJA CCV: Pass / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 10/10/17			CCV Time ____ Initials ____ CCV: Pass / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: Daniel Anderson Date: 10/10/17

Form Revised 11/14/2013

Attach additional notes if necessary

Xcel Energy – Sherco NPDES + CCR Oct. '17
Field Proj. # 17-1121

Pace Analytical® Field Services Division

pH and Conductivity
Field Calibration and Verification Sheet

Technician(s) DJA Date 10-11-17 Page 1 of 3

pH

Meter Make YSI 556 Meter ID MPS-5

Initial Calibration (IC)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
4.0	ERA	010916	03/31/20	3.98	23.0	0720	DJA
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*				7.01	23.0	0720	DJA
Buffer: 10.0 units ERA - Lot #: 230916 *Exp Date: 03/31/20*				10.05	23.0	0720	DJA

IC Slope (%) NA (Pass) / Fail *(Acceptable Slope: 92-102%)*

Initial Calibration Verification (ICV)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4607D88 *Exp Date: 07/31/18*				7.03	23.0	0730	DJA

(Pass) / Fail *(ICV acceptable if ± 0.1 s.u. of buffer value)*

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*				7.10	12.0	1845	DJA

(Pass) / Fail *(CCV acceptable if ± 0.1 s.u. of buffer value)*

Conductivity

Initial Calibration (IC)

High Standard Value 998
Mfg. Fisher
Lot No. CC16243
Exp. Date

Meter Result (µS/cm)	Temp (°C)
999	23.0

Initial Cal. Verification (ICV)

Low Standard Value 100
Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp.

Meter Result (µS/cm)	Temp (°C)
100	23.0

Meter Make YSI 556 ID MPS-5
IC/ICV Time 0735/0737
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1850 Initials DJA Std. Value 998 ☒ High Standard ☐ Low Standard
Result (µS/cm) 997 Temp (°C) 12.0 CCV: (Pass) / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) DJA 10-11-17 CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time Initials Std. Value ☐ High Standard ☐ Low Standard
Result (µS/cm) Temp (°C) CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anders Date: 10-11-17

Xcel Energy - Sherco NPDES + CCR Oct. '17
Field Proj. #17-1121

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 10-11-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	234	Secondary Source Std. Value (mV)	234
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	17F100849	Lot No.	16L100376
Exp Date	03/2018	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
233	23.0	233	23.0

Meter Make YSI 556 ID MPS-5

IC/ICV Time 0740/0742

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time	Initials	Std. Value		
1855	DJA	248	☒ Calibration Standard ☐ Secondary Source Standard	
Result (mV) 245	Temp (°C) 12.0	CCV: (Pass) / Fail	*(CCV acceptable if ± 10 mV of standard value)*	
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard	
Result (mV)	Temp (°C) DJA 10/11/17	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*	
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard	
Result (mV)	Temp (°C)	CCV: Pass / Fail	*(CCV acceptable if ± 10 mV of standard value)*	

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	23.0 (°C)	Ambient Temp:	23.0 (°C)
Barometric Pressure	29.25 (in. Hg)	Barometric Pressure	29.25 (in. Hg)
Barometric Pressure	742.95 (mm Hg)	Barometric Pressure	742.95 (mm Hg)
Calibration Value[1]	98 (%)	Calibration Value[1]	98 (%)
IC Meter Result (%)		ICV Meter Result (%)	
98		98	

IC/ICV Time 0715 Initials DJA

DO Meter ID YSI 556 MPS-5

Barometer ID Skymaster DB-266W

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time	Initials	Barometric Pressure	
1840	DJA	738.89	(in. Hg / mm Hg)
Calibration Value 97 (%)	Result 95 (%)	CCV: (Pass) / Fail	*(CCV acceptable if ± 2% of Calibration Value)*
CCV Time	Initials	Barometric Pressure	(in. Hg / mm Hg)
Calibration Value (%)	Result DJA 10/11/17 (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*
CCV Time	Initials	Barometric Pressure	(in. Hg / mm Hg)
Calibration Value (%)	Result (%)	CCV: Pass / Fail	*(CCV acceptable if ± 2% of Calibration Value)*

Form Revised: 02/03/17

Lead Technician Signature: D and Anderson Date: 10-11-17

Xcel Energy - Sherco NPDES + CCR Oct. '17
Field Proj. # 17-1121

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 10-11-17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	100	998	IC Time 0745 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.01	9.9	99	998	ICV Time 0755 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.9	98	999	CCV Time 1900 Initials DJA CCV: (Pass) / Fail
CCV		DJA 10/11			CCV Time ____ Initials ____ CCV: Pass / Fail
CCV					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: Dan Anderson Date: 10-11-17

Form Revised: 11/14/2013

Attach additional notes if necessary

Xcel Energy – Sherco NPDES + CCR Oct. '17
Field Proj. # 17-1121

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 10-12-17 Page 1 of 3

pH

Meter Make YSI 556 Meter ID MPS-5

Initial Calibration (IC)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
4.0	ERA	010916	03/31/20	4.00	12.0	0720	DJA
Buffer: 7.0 units	ERA - Lot #: 100716		Exp Date: 07/31/18	7.07	12.0	0720	DJA
Buffer: 10.0 units	ERA - Lot #: 230916		Exp Date: 03/31/20	9.96	12.0	0720	DJA

IC Slope (%) NA (Pass) / Fail (Acceptable Slope: 92-102%)

Initial Calibration Verification (ICV)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	Ricca - Lot #: 4607D88		Exp Date: 07/31/18	7.06	12.0	0730	DJA

Pass / Fail (ICV acceptable if ± 0.1 s.u. of buffer value)

Continuing Calibration Verification (CCV)

See Below [X] See Field Data Log Sheet [ ] See Raw Data (continuous pH) [ ]

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	ERA - Lot #: 100716		Exp Date: 07/31/18	7.10	16.0	1750	DJA

(Pass) / Fail (CCV acceptable if ± 0.1 s.u. of buffer value)

Conductivity

Initial Calibration (IC)

High Standard Value 998
Mfg. Fisher
Lot No. CC16243
Exp. Date

Meter Result (µS/cm)	Temp (°C)
993	12.0

Initial Cal. Verification (ICV)

Low Standard Value 100
Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18
Exp.

Meter Result (µS/cm)	Temp (°C)
96	12.0

Meter Make YSI 556 ID MPS-5
IC/ICV Time 0740/0742
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1755 Initials DJA Std. Value 998 [X] High Standard [ ] Low Standard
Result (µS/cm) 996 Temp (°C) 16.0 CCV: (Pass) / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time ____ Initials ____ Std. Value ____ [ ] High Standard [ ] Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time ____ Initials ____ Std. Value ____ [ ] High Standard [ ] Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 10/12/17

Xcel Energy - Sherco NPDES + CCR Oct. '17
Field Proj. #17-1121

Pace Analytical® Field Services Division

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 10-12-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)	
Calibration Std. Value (mV)	248	Secondary Source Std. Value (mV)	248
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	17F100849	Lot No.	16L100376
Exp Date	03/2018	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
248	12.0	247	12.0

Meter Make YSI 556 ID MPS-5

IC/ICV Time 0745/0747

Initials DJA

ICV: (Pass) / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1800 Initials DJA Std. Value 243 ☒ Calibration Standard ☐ Secondary Source Standard

Result (mV) 241 Temp (°C) 16.0 CCV: (Pass) / Fail *(CCV acceptable if ± 10 mV of standard value)*

CCV Time _____ Initials _____ Std. Value _____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) _____ Temp (°C) DJA 10/12/17 CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

CCV Time _____ Initials _____ Std. Value _____ ☐ Calibration Standard ☐ Secondary Source Standard

Result (mV) _____ Temp (°C) _____ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation	
Ambient Temp:	14.0 (°C)	Ambient Temp:	14.0 (°C)
Barometric Pressure	29.07 (in. Hg)	Barometric Pressure	29.07 (in. Hg)
Barometric Pressure	738.38 (mm Hg)	Barometric Pressure	738.38 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)		ICV Meter Result (%)	
97		97	

IC/ICV Time 0715 Initials DJA

DO Meter ID YSI 556 MPS-5

Barometer ID Skymaster DB-26GW

ICV: (Pass) / Fail

(ICV/CCV acceptable if ± 2% of Calibration Value)

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1745 Initials DJA Barometric Pressure 734.06 (in. Hg / mm Hg)

Calibration Value 97 (%) Result 97 (%) CCV: (Pass) / Fail *(CCV acceptable if ± 2% of Calibration Value)*

CCV Time _____ Initials _____ Barometric Pressure _____ (in. Hg / mm Hg)

Calibration Value _____ (%) Result DJA 10/12/17 (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

CCV Time _____ Initials _____ Barometric Pressure _____ (in. Hg / mm Hg)

Calibration Value _____ (%) Result _____ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 10/12/17

Xcel Energy - Sherco NPDES + CCR Oct. '17
Field Proj. # 17-1121

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 10-12-17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

STANDARDS	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

IC	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.9	98	997	IC Time 0750 Initials DJA IC: Pass / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.9	98	998	ICV Time 0800 Initials DJA ICV: Pass / Fail

ICV acceptable if ± 5% of standard value.

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	9.9	98	998	CCV Time 1810 Initials DJA CCV: Pass / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 10/12/17			CCV Time ____ Initials ____ CCV: Pass / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
					CCV Time ____ Initials ____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature: [signature] Date: 10/12/17

Form Revised: 11/14/2013

Attach additional notes if necessary

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client: Xcel Energy Project: Sherco NPDES + CCR Project No.: 17-1121

Monitoring Point ID: P-01A-1 Labeled: P01A

Inside Diameter: 2 (inches) Key #: 2106 ☐ Locked ☒ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel cover will not close

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	80.98	Feet
Static water level measurement before purging	76.46	Feet
Static water level measurement at time of sampling	76.46	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method: dedicated bladder pump Pump ID: PC-6

Date Purged: 10-11-17 Water Column: 4.52 Feet

Time Purged: 1710-1725 One Casing Volume: 0.7 Gallons

Pump Rate: 0.15 (GPM) LPM Volume Purged: 2.25 Gallons

Field Sampling Data

Date Sampled: 10-11-17

Time Sampled: 1740

Sampling Equip.: above pump

Analyzed by: DJA

Field Parameter Measurements of Sample

pH: 7.4 (units) D.O: 8.7 (mg/l)

Spec. Cond.: 640 (µmhos/cm) Turbidity: 2.3 (NTU)

Temp.: 12.0 (°C) Eh: 127 (mV)

Other: NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 53°+ cloudy, wind SE 10

Sample Description: clear + odorless

Observations:

DJA 10-11-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1715	7.5	640	11.5	8.8	NA	128	0.75
1720	7.5	640	12.0	8.7	NA	127	1.50
1725	7.4	640	12.0	8.7	NA	127	2.25

DJA 10/11/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 10-11-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client: Xcel Energy Project: Sherco NPDES + CCR Project No. 17-1121

Monitoring Point ID: P-17 Labeled: P17

Inside Diameter: 2 (inches) Key #: 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation: NA Feet

Well depth: 58.76 Feet

Static water level measurement before purging: 36.06 Feet

Static water level measurement at time of sampling: 36.06 Feet

Static Water Level Elevation Before Purging: NA Feet

Purge Method: dedicated bladder pump Pump ID: PC-6

Date Purged: 10-11-17 Water Column: 22.70 Feet

Time Purged: 1105-1202 One Casing Volume: 3.7 Gallons

Pump Rate: 0.2 GPM / LPM Volume Purged: 11.4 Gallons

Field Sampling Data

Date Sampled: 10-11-17

Time Sampled: 1210

Sampling Equip.: above pump

Analyzed by: DJA

Field Parameter Measurements of Sample

pH: 7.7 (units) D.O: 8.3 (mg/l)

Spec. Cond.: 560 (µmhos/cm) Turbidity: 2.8 (NTU)

Temp.: 11.0 (°C) Eh: 117 (mV)

Other: NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 44° + sunny, wind 510

Sample Description: clear + odorless

Observations:

DJA 10-11-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1124	7.6	570	11.0	8.6	NA	125	3.8
1143	7.7	560	11.0	8.4	NA	120	7.6
1202	7.7	560	11.0	8.3	NA	117	11.4

DJA 10-11-17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 10-11-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project SherCo NPDES + CCR Project No. 17-1121.1

Monitoring Point ID P-22 Labeled P-22

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	57.85	Feet
Static water level measurement before purging	38.70	Feet
Static water level measurement at time of sampling	38.70	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 10-9-17 Water Column 19.15 Feet

Time Purged 1210-1258 One Casing Volume 3.1 Gallons

Pump Rate 0.2 (GPM) LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 10-9-17

Time Sampled 1310

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 9.2 (mg/l)

Spec. Cond. 650 (µmhos/cm) Turbidity 1.9 (NTU)

Temp. 11.0 (°C) Eh 70 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 53° + cloudy, wind NW 10

Sample Description: clear + odorless

Observations: collected Rinse Blank at this well.

DJA 10-9-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1226	7.3	660	11.5	9.0	NA	73	3.2
1242	7.3	650	11.0	9.1	NA	71	6.4
1258	7.2	650	11.0	9.2	NA	70	9.6

DJA 10/9/17

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 10/9/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco NPDES + CCR Project No. 17-1121

Monitoring Point ID P-23 Labeled P-23

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 67.34 Feet

Static water level measurement before purging 40.56 Feet

Static water level measurement at time of sampling 40.56 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 10-11-17 Water Column 26.78 Feet

Time Purged 1355 - 1501 One Casing Volume 4.4 Gallons

Pump Rate 0.2 (GPM) LPM Volume Purged 13.2 Gallons

Field Sampling Data

Date Sampled 10-11-17

Time Sampled 1510

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 8.6 (mg/l)

Spec. Cond. 630 (µmhos/cm) Turbidity 2.3 (NTU)

Temp. 12.5 (°C) Eh 124 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 52° + cloudy, wind SE 10

Sample Description: clear + odorless

Observations:

DJA 10-11-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1417	7.7	630	12.5	8.9	NA	129	4.4
1439	7.7	630	12.5	8.7	NA	126	8.8
1501	7.7	630	12.5	8.6	NA	124	13.2

DJA 10/11/17

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 10-11-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco NAPES + CCR Project No. 17-1121

Monitoring Point ID P-152d Labeled 806318

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet

Well depth 42.18 Feet

Static water level measurement before purging 35.65 Feet

Static water level measurement at time of sampling 35.65 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 10-11-17 Water Column 6.53 Feet

Time Purged 0905 - 0929 One Casing Volume 1.1 Gallons

Pump Rate 0.15 (GPM) LPM Volume Purged 3.6 Gallons

Field Sampling Data

Date Sampled 10-11-17

Time Sampled 0940

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 11.1 (mg/l)

Spec. Cond. 370 (µmhos/cm) Turbidity 2.8 (NTU)

Temp. 10.5 (°C) Eh 135 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 38° + sunny, wind 5 5

Sample Description: clear + odorless

Observations:

DTA 10-11-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0913	7.2	370	10.5	11.3	NA	137	1.2
0921	7.2	370	10.5	11.2	NA	136	2.4
0929	7.2	370	10.5	11.1	NA	135	3.6

DTA 10-11-17

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 10-11-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project SherCo NPDES + CCR Project No. 17-1121

Monitoring Point ID P-155 Labeled 812964

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	85.47	Feet
Static water level measurement before purging	76.73	Feet
Static water level measurement at time of sampling	76.73	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 10-11-17 Water Column 8.74 Feet

Time Purged 1615-1645 One Casing Volume 1.4 Gallons

Pump Rate 0.15 (GPM) LPM Volume Purged 4.5 Gallons

Field Sampling Data

Date Sampled 10-11-17

Time Sampled 1655

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 7.5 (mg/l)

Spec. Cond. 790 (µmhos/cm) Turbidity 3.6 (NTU)

Temp. 12.5 (°C) Eh 127 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 54° + cloudy, wind SE 10

Sample Description: clear + odorless

Observations:

DJA 10-11-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1625	7.5	790	12.5	7.7	NA	129	1.5
1635	7.5	790	12.5	7.6	NA	127	3.0
1645	7.5	790	12.5	7.5	NA	127	4.5

DJA 10-11-17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: Dave Anders Date: 10-11-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco NPDES + CCR Project No. 17-1121

Monitoring Point ID P-156 Labeled 812965

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	85.53	Feet
Static water level measurement before purging	75.67	Feet
Static water level measurement at time of sampling	75.67	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 10-11-17 Water Column 9.86 Feet

Time Purged 1755-1819 One Casing Volume 1.6 Gallons

Pump Rate 0.2 (GPM) LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 10-11-17

Time Sampled 1830

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 9.2 (mg/l)

Spec. Cond. 450 (µmhos/cm) Turbidity 22.6 (NTU)

Temp. 12.0 (°C) Eh 133 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 49° + cloudy, wind SE 10

Sample Description: clear + odorless

Observations:

DTA 10-11-17

Stabilization Test

Time	pH (units)	Specific Conductance (umhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1803	7.5	450	11.5	9.5	NA	136	1.6
1811	7.5	450	12.0	9.3	NA	134	3.2
1819	7.5	450	12.0	9.2	NA	133	4.8

DTA 10-11-17

Samples chilled immediately after collection ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 10-11-17

Pace Analytical®
Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client: Xcel Energy Project: Sherco NPDES + CCR Project No. 17-1121

Monitoring Point ID: P-157 Labeled: 812966

Inside Diameter: 2 (inches) Key #: 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation: NA Feet

Well depth: 49.06 Feet

Static water level measurement before purging: 41.09 Feet

Static water level measurement at time of sampling: 41.09 Feet

Static Water Level Elevation Before Purging: NA Feet

Purge Method: dedicated bladder pump Pump ID: PC-6

Date Purged: 10-11-17 Water Column: 7.97 Feet

Time Purged: 1315 - 1336 One Casing Volume: 1.3 Gallons

Pump Rate: 0.2 GPM / LPM Volume Purged: 4.2 Gallons

Field Sampling Data

Date Sampled: 10-11-17

Time Sampled: 1345

Sampling Equip.: above pump

Analyzed by: DJA

Field Parameter Measurements of Sample

pH: 7.4 (units) D.O: 8.7 (mg/l)

Spec. Cond.: 710 (µmhos/cm) Turbidity: 2.2 (NTU)

Temp.: 11.5 (°C) Eh: 124 (mV)

Other: NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 50° + cloudy, wind SE 10

Sample Description: clear + odorless

Observations: DJA 10-11-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1322	7.4	710	11.5	8.4	NA	123	1.4
1329	7.4	710	11.0	8.6	NA	123	2.8
1336	7.4	710	11.5	8.7	NA	124	4.2

DJA 10-11-17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 10-11-17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco NPDES + CCR Project No. 17-1121

Monitoring Point ID P-158 Labeled 812967

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	49.16	Feet
Static water level measurement before purging	38.73	Feet
Static water level measurement at time of sampling	38.73	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 10-11-17 Water Column 10.43 Feet

Time Purged 1225 - 1252 One Casing Volume 1.7 Gallons

Pump Rate 0.2 (GPM) LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 10-11-17

Time Sampled 1300

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 11.5 (mg/l)

Spec. Cond. 700 (µmhos/cm) Turbidity 2.8 (NTU)

Temp. 11.0 (°C) Eh 125 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA

Weather Conditions During Sampling: 48° + sunny, wind 5 10

Sample Description: clear + odorless

Observations:

DJA 10-11-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1234	7.6	700	11.0	11.7	NA	126	1.8
1243	7.6	700	11.0	11.6	NA	125	3.6
1252	7.6	700	11.0	11.5	NA	125	5.4

DJA 10-11-17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 08/30/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 10-11-17

Amended Report

Original Report ID: MCJ0145,MCJ0178 Xcel General Report FINAL 10 31 2017 1252 10 31 2017 1012

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification #MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

11 January 2018

Charles A Donkers

Environmental Services-Water Minneapolis

250 Marquette Plaza

Minneapolis, MN 55401

RE: Sherco NPDES GW-B

cc: Laboratory report re-created to only include wells in the Bottom Ash Pond CCR Groundwater Monitoring System. HSD 1/11/18

Enclosed are the results of analyses for samples received by the laboratory on 10/11/2017 05:50-10/13/2017 09:50. If you have any questions concerning this report, please feel free to contact me.

I certify that this analysis report was prepared under my direction or supervision under a system designed to assure that qualified personnel analyzed the submitted samples. All protocols for analysis were followed as required by Minnesota Rules and the Applicable Management Plan.

Sincerely,

Steve Davis

Project Manager

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Amended Report

Original Report ID: MCJ0145,MCJ0178 Xcel General Report FINAL 10 31 2017 1252 10 31 2017 1012

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Rinse		MCJ0145-01	Water	10/09/2017 11:50	10/11/2017 5:50
P-22		MCJ0145-02	Water	10/09/2017 13:10	10/11/2017 5:50
Duplicate		MCJ0145-17	Water	10/10/2017 13:30	10/11/2017 5:50
P-152a		MCJ0178-05	Water	10/11/2017 9:40	10/13/2017 9:50
P-17		MCJ0178-07	Water	10/11/2017 12:10	10/13/2017 9:50
P-158		MCJ0178-08	Water	10/11/2017 13:00	10/13/2017 9:50
P-157		MCJ0178-09	Water	10/11/2017 13:45	10/13/2017 9:50
P-23		MCJ0178-10	Water	10/11/2017 15:10	10/13/2017 9:50
P-155		MCJ0178-12	Water	10/11/2017 16:55	10/13/2017 9:50
P-01A-1		MCJ0178-13	Water	10/11/2017 17:40	10/13/2017 9:50
P-156		MCJ0178-14	Water	10/11/2017 18:30	10/13/2017 9:50

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Amended Report

Original Report ID: MCJ0145,MCJ0178 Xcel General Report FINAL 10 31 2017 1252 10 31 2017 1012

Minneapolis Testing Laboratory
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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Rinse

MCJ0145-01 (Water) - Chain of Custody Number: 2112512/2112509

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCJ0264	10/11/17 8:48	10/11/17 14:48	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0264	10/11/17 8:48	10/11/17 14:48	EPA 300.0	CRL
Sulfate	< 1.00	1.00	mg/L		1	BCJ0264	10/11/17 8:48	10/11/17 14:48	EPA 300.0	CRL
Wet Chemistry										
pH	6.85		pH Units	M_TTT	1	BCJ0255	10/11/17 6:49	10/11/17 9:19	SM 4500-H+ B	CRL
Total Dissolved Solids	< 20.0	20.0	mg/L		1	BCJ0254	10/11/17 11:02	10/11/17 11:02	SM 2540C	HSD
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCJ0266	10/11/17 10:31	10/13/17 10:42	EPA 200.7	HRD
Calcium	< 0.500	0.500	mg/L		1	BCJ0266	10/11/17 10:31	10/13/17 10:41	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

P-22

MCJ0145-02 (Water) - Chain of Custody Number: 2112512/2112509

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	17.0	1.00	mg/L		1	BCJ0264	10/11/17 8:48	10/11/17 15:08	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0264	10/11/17 8:48	10/11/17 15:08	EPA 300.0	CRL
Sulfate	187	1.00	mg/L		1	BCJ0264	10/11/17 8:48	10/11/17 15:08	EPA 300.0	CRL
Wet Chemistry										
pH	7.77		pH Units	M_TTT	1	BCJ0255	10/11/17 6:49	10/11/17 9:33	SM 4500-H+ B	CRL
Total Dissolved Solids	568	20.0	mg/L		1	BCJ0254	10/11/17 11:02	10/11/17 11:02	SM 2540C	HSD
Total Metals by ICP										
Boron	1.58	0.0500	mg/L		1	BCJ0266	10/11/17 10:31	10/13/17 10:47	EPA 200.7	HRD
Calcium	107	0.500	mg/L		1	BCJ0266	10/11/17 10:31	10/13/17 10:46	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Duplicate

MCJ0145-17 (Water) - Chain of Custody Number: 2112512/2112509

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	3.11	1.00	mg/L		1	BCJ0294	10/12/17 6:46	10/12/17 12:22	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0294	10/12/17 6:46	10/12/17 12:22	EPA 300.0	CRL
Sulfate	63.6	1.00	mg/L		1	BCJ0294	10/12/17 6:46	10/12/17 12:22	EPA 300.0	CRL
Wet Chemistry										
pH	7.76		pH Units	M_TTT	1	BCJ0255	10/11/17 6:49	10/11/17 11:24	SM 4500-H+ B	CRL
Total Dissolved Solids	396	20.0	mg/L		1	BCJ0290	10/12/17 9:20	10/12/17 9:20	SM 2540C	HSD
Total Metals by ICP										
Boron	0.0843	0.0500	mg/L		1	BCJ0266	10/11/17 10:31	10/13/17 10:58	EPA 200.7	HRD
Calcium	103	0.500	mg/L		1	BCJ0266	10/11/17 10:31	10/13/17 10:56	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

P-152a

MCJ0178-05 (Water) - Chain of Custody Number: 2112510/2112507

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	< 1.00	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 14:31	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 14:31	EPA 300.0	CRL
Sulfate	9.12	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 14:31	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 12:55	SM 4500-H+ B	CRL
Total Dissolved Solids	222	20.0	mg/L		1	BCJ0350	10/16/17 9:46	10/16/17 9:46	SM 2540C	HSD
Total Metals by ICP										
Boron	0.0669	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 12:47	EPA 200.7	HRD
Calcium	55.5	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 12:45	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

P-17

MCJ0178-07 (Water) - Chain of Custody Number: 2112510/2112507

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	24.0	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 15:12	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 15:12	EPA 300.0	CRL
Sulfate	31.3	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 15:12	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 13:06	SM 4500-H+ B	CRL
Total Dissolved Solids	306	20.0	mg/L		1	BCJ0350	10/16/17 9:46	10/16/17 9:46	SM 2540C	HSD
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:08	EPA 200.7	HRD
Calcium	75.7	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:06	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

P-158

MCJ0178-08 (Water) - Chain of Custody Number: 2112510/2112507

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	3.57	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 15:33	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 15:33	EPA 300.0	CRL
Sulfate	135	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 15:33	EPA 300.0	CRL
Wet Chemistry										
pH	7.68		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 13:09	SM 4500-H+ B	CRL
Total Dissolved Solids	450	20.0	mg/L		1	BCJ0350	10/16/17 9:46	10/16/17 9:46	SM 2540C	HSD
Total Metals by ICP										
Boron	0.801	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:13	EPA 200.7	HRD
Calcium	99.1	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:11	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

P-157

MCJ0178-09 (Water) - Chain of Custody Number: 2112510/2112507

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	13.7	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 17:35	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 17:35	EPA 300.0	CRL
Sulfate	90.5	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 17:35	EPA 300.0	CRL
Wet Chemistry										
pH	7.62		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 13:13	SM 4500-H+ B	CRL
Total Dissolved Solids	444	20.0	mg/L		1	BCJ0350	10/16/17 9:46	10/16/17 9:46	SM 2540C	HSD
Total Metals by ICP										
Boron	0.261	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:18	EPA 200.7	HRD
Calcium	92.0	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:16	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

P-23

MCJ0178-10 (Water) - Chain of Custody Number: 2112510/2112507

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	25.1	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 17:56	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 17:56	EPA 300.0	CRL
Sulfate	73.8	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 17:56	EPA 300.0	CRL
Wet Chemistry										
pH	7.79		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 13:20	SM 4500-H+ B	CRL
Total Dissolved Solids	390	20.0	mg/L		1	BCJ0350	10/16/17 9:46	10/16/17 9:46	SM 2540C	HSD
Total Metals by ICP										
Boron	0.328	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:23	EPA 200.7	HRD
Calcium	85.7	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:22	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

P-155

MCJ0178-12 (Water) - Chain of Custody Number: 2112510/2112507

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	15.7	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 18:36	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 18:36	EPA 300.0	CRL
Sulfate	168	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 18:36	EPA 300.0	CRL
Wet Chemistry										
pH	7.72		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 13:37	SM 4500-H+ B	CRL
Total Dissolved Solids	504	20.0	mg/L		1	BCJ0372	10/17/17 9:30	10/17/17 9:30	SM 2540C	HSD
Total Metals by ICP										
Boron	1.70	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:33	EPA 200.7	HRD
Calcium	91.8	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:32	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

P-01A-1

MCJ0178-13 (Water) - Chain of Custody Number: 2112510/2112507

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	10.4	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 18:57	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 18:57	EPA 300.0	CRL
Sulfate	76.9	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 18:57	EPA 300.0	CRL
Wet Chemistry										
pH	7.66		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 13:44	SM 4500-H+ B	CRL
Total Dissolved Solids	392	20.0	mg/L		1	BCJ0372	10/17/17 9:30	10/17/17 9:30	SM 2540C	HSD
Total Metals by ICP										
Boron	0.674	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:38	EPA 200.7	HRD
Calcium	83.2	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:37	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

P-156

MCJ0178-14 (Water) - Chain of Custody Number: 2112510/2112507

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	2.40	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 19:17	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 19:17	EPA 300.0	CRL
Sulfate	24.1	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 19:17	EPA 300.0	CRL
Wet Chemistry										
pH	7.84		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 13:47	SM 4500-H+ B	CRL
Total Dissolved Solids	260	20.0	mg/L		1	BCJ0372	10/17/17 9:30	10/17/17 9:30	SM 2540C	HSD
Total Metals by ICP										
Boron	0.179	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:44	EPA 200.7	HRD
Calcium	69.9	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:42	EPA 200.7	HRD

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0264 - Wet Prep										
Blank (BCJ0264-BLK1)				Prepared & Analyzed: 10/11/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCJ0264-BLK2)				Prepared & Analyzed: 10/11/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCJ0264-BS1)				Prepared & Analyzed: 10/11/2017						
Chloride	25.1	1.00	mg/L	25.000		101	90-110			
Fluoride	5.26	0.750	mg/L	5.0000		105	90-110			
Sulfate	102	1.00	mg/L	100.00		102	90-110			
LCS (BCJ0264-BS2)				Prepared & Analyzed: 10/11/2017						
Chloride	24.2	1.00	mg/L	25.000		96.8	90-110			
Fluoride	5.27	0.750	mg/L	5.0000		105	90-110			
Sulfate	97.1	1.00	mg/L	100.00		97.1	90-110			
LCS (BCJ0264-BS3)				Prepared & Analyzed: 10/11/2017						
Chloride	24.2	1.00	mg/L	25.000		96.7	90-110			
Fluoride	5.28	0.750	mg/L	5.0000		106	90-110			
Sulfate	97.0	1.00	mg/L	100.00		97.0	90-110			
Duplicate (BCJ0264-DUP1)		**Source: MCJ0145-05**		Prepared & Analyzed: 10/11/2017						
Chloride	2.01	1.00	mg/L		1.99			1.25	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	16.6	1.00	mg/L		16.7			0.504	20	

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Minneapolis Testing Laboratory
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Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0264 - Wet Prep										
Duplicate (BCJ0264-DUP2)		**Source: MCJ0145-09**		Prepared & Analyzed: 10/11/2017						
Chloride	0.712	1.00	mg/L		0.733			2.91	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	4.12	1.00	mg/L		4.12			0.121	20	
Matrix Spike (BCJ0264-MS1)		**Source: MCJ0145-05**		Prepared & Analyzed: 10/11/2017						
Chloride	14.3	1.00	mg/L	12.500	1.99	98.7	80-120			
Fluoride	2.54	0.750	mg/L	2.5000	<0.750	101	80-120			
Sulfate	66.6	1.00	mg/L	50.000	16.7	99.9	80-120			
Matrix Spike (BCJ0264-MS2)		**Source: MCJ0145-09**		Prepared & Analyzed: 10/11/2017						
Chloride	12.7	1.00	mg/L	12.500	0.733	95.8	80-120			
Fluoride	2.61	0.750	mg/L	2.5000	<0.750	104	80-120			
Sulfate	53.2	1.00	mg/L	50.000	4.12	98.2	80-120			
Matrix Spike Dup (BCJ0264-MSD1)		**Source: MCJ0145-05**		Prepared & Analyzed: 10/11/2017						
Chloride	14.2	1.00	mg/L	12.500	1.99	97.8	80-120	0.708	20	
Fluoride	2.65	0.750	mg/L	2.5000	<0.750	106	80-120	4.32	20	
Sulfate	66.4	1.00	mg/L	50.000	16.7	99.4	80-120	0.347	20	
Matrix Spike Dup (BCJ0264-MSD2)		**Source: MCJ0145-09**		Prepared & Analyzed: 10/11/2017						
Chloride	12.9	1.00	mg/L	12.500	0.733	97.2	80-120	1.33	20	
Fluoride	2.71	0.750	mg/L	2.5000	<0.750	109	80-120	3.95	20	
Sulfate	54.1	1.00	mg/L	50.000	4.12	100	80-120	1.62	20	
Batch BCJ0294 - Wet Prep										
Blank (BCJ0294-BLK1)				Prepared & Analyzed: 10/12/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0294 - Wet Prep										
Blank (BCJ0294-BLK2)				Prepared & Analyzed: 10/12/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCJ0294-BS1)				Prepared & Analyzed: 10/12/2017						
Chloride	24.9	1.00	mg/L	25.000		99.6	90-110			
Fluoride	5.54	0.750	mg/L	5.0000		111	90-110			M_LCS-H
Sulfate	100	1.00	mg/L	100.00		100	90-110			
LCS (BCJ0294-BS2)				Prepared & Analyzed: 10/12/2017						
Chloride	24.8	1.00	mg/L	25.000		99.3	90-110			
Fluoride	5.30	0.750	mg/L	5.0000		106	90-110			
Sulfate	99.3	1.00	mg/L	100.00		99.3	90-110			
LCS (BCJ0294-BS3)				Prepared & Analyzed: 10/12/2017						
Chloride	25.0	1.00	mg/L	25.000		100	90-110			
Fluoride	5.59	0.750	mg/L	5.0000		112	90-110			M_LCS-H
Sulfate	100	1.00	mg/L	100.00		100	90-110			
Duplicate (BCJ0294-DUP1)		**Source: MCJ0161-01**		Prepared & Analyzed: 10/12/2017						
Chloride	8.26	1.00	mg/L		8.28			0.218	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	5.29	1.00	mg/L		5.31			0.415	20	
Duplicate (BCJ0294-DUP2)		**Source: MCJ0161-02**		Prepared & Analyzed: 10/12/2017						
Chloride	8.26	1.00	mg/L		8.24			0.315	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	5.21	1.00	mg/L		5.20			0.134	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0294 - Wet Prep										
Matrix Spike (BCJ0294-MS1)		**Source: MCJ0161-01**		Prepared & Analyzed: 10/12/2017						
Chloride	21.0	1.00	mg/L	12.500	8.28	101	80-120			
Fluoride	2.86	0.750	mg/L	2.5000	<0.750	114	80-120			
Sulfate	56.5	1.00	mg/L	50.000	5.31	102	80-120			
Matrix Spike (BCJ0294-MS2)		**Source: MCJ0161-02**		Prepared & Analyzed: 10/12/2017						
Chloride	21.0	1.00	mg/L	12.500	8.24	102	80-120			
Fluoride	2.86	0.750	mg/L	2.5000	<0.750	114	80-120			
Sulfate	56.6	1.00	mg/L	50.000	5.20	103	80-120			
Matrix Spike Dup (BCJ0294-MSD1)		**Source: MCJ0161-01**		Prepared & Analyzed: 10/12/2017						
Chloride	21.2	1.00	mg/L	12.500	8.28	104	80-120	1.26	20	
Fluoride	2.79	0.750	mg/L	2.5000	<0.750	112	80-120	2.20	20	
Sulfate	57.4	1.00	mg/L	50.000	5.31	104	80-120	1.47	20	
Matrix Spike Dup (BCJ0294-MSD2)		**Source: MCJ0161-02**		Prepared & Analyzed: 10/12/2017						
Chloride	21.3	1.00	mg/L	12.500	8.24	104	80-120	1.26	20	
Fluoride	2.79	0.750	mg/L	2.5000	<0.750	112	80-120	2.55	20	
Sulfate	57.4	1.00	mg/L	50.000	5.20	104	80-120	1.47	20	
Batch BCJ0351 - Wet Prep										
Blank (BCJ0351-BLK1)				Prepared & Analyzed: 10/16/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
Blank (BCJ0351-BLK2)				Prepared & Analyzed: 10/16/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0351 - Wet Prep										
LCS (BCJ0351-BS1)				Prepared & Analyzed: 10/16/2017						
Chloride	25.3	1.00	mg/L	25.000		101	90-110			
Fluoride	5.62	0.750	mg/L	5.0000		112	90-110			M_LCS-H
Sulfate	102	1.00	mg/L	100.00		102	90-110			
LCS (BCJ0351-BS2)				Prepared & Analyzed: 10/16/2017						
Chloride	24.3	1.00	mg/L	25.000		97.2	90-110			
Fluoride	5.31	0.750	mg/L	5.0000		106	90-110			
Sulfate	97.5	1.00	mg/L	100.00		97.5	90-110			
LCS (BCJ0351-BS3)				Prepared & Analyzed: 10/16/2017						
Chloride	24.1	1.00	mg/L	25.000		96.3	90-110			
Fluoride	5.28	0.750	mg/L	5.0000		106	90-110			
Sulfate	96.7	1.00	mg/L	100.00		96.7	90-110			
Duplicate (BCJ0351-DUP1)		**Source: MCJ0178-06**		Prepared & Analyzed: 10/16/2017						
Chloride	1.01	1.00	mg/L		1.11			9.81	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	12.1	1.00	mg/L		12.1			0.207	20	
Duplicate (BCJ0351-DUP2)		**Source: MCJ0178-14**		Prepared & Analyzed: 10/16/2017						
Chloride	2.39	1.00	mg/L		2.40			0.292	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	24.2	1.00	mg/L		24.1			0.0663	20	
Matrix Spike (BCJ0351-MS1)		**Source: MCJ0178-06**		Prepared & Analyzed: 10/16/2017						
Chloride	13.1	1.00	mg/L	12.500	1.11	96.2	80-120			
Fluoride	2.58	0.750	mg/L	2.5000	<0.750	103	80-120			
Sulfate	62.0	1.00	mg/L	50.000	12.1	99.8	80-120			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0351 - Wet Prep										
Matrix Spike (BCJ0351-MS2)		**Source: MCJ0178-14**		Prepared & Analyzed: 10/16/2017						
Chloride	14.6	1.00	mg/L	12.500	2.40	97.4	80-120			
Fluoride	2.67	0.750	mg/L	2.5000	<0.750	107	80-120			
Sulfate	73.5	1.00	mg/L	50.000	24.1	98.6	80-120			
Matrix Spike Dup (BCJ0351-MSD1)		**Source: MCJ0178-06**		Prepared & Analyzed: 10/16/2017						
Chloride	13.3	1.00	mg/L	12.500	1.11	97.1	80-120	0.917	20	
Fluoride	2.65	0.750	mg/L	2.5000	<0.750	106	80-120	2.37	20	
Sulfate	62.5	1.00	mg/L	50.000	12.1	101	80-120	0.816	20	
Matrix Spike Dup (BCJ0351-MSD2)		**Source: MCJ0178-14**		Prepared & Analyzed: 10/16/2017						
Chloride	14.8	1.00	mg/L	12.500	2.40	99.1	80-120	1.47	20	
Fluoride	2.75	0.750	mg/L	2.5000	<0.750	110	80-120	3.03	20	
Sulfate	74.3	1.00	mg/L	50.000	24.1	100	80-120	1.14	20	
Batch BCJ0385 - Wet Prep										
Blank (BCJ0385-BLK1)				Prepared & Analyzed: 10/17/2017						
Chloride	<1.00	1.00	mg/L							
Fluoride	<0.750	0.750	mg/L							
Sulfate	<1.00	1.00	mg/L							
LCS (BCJ0385-BS1)				Prepared & Analyzed: 10/17/2017						
Chloride	24.1	1.00	mg/L	25.000		96.5	90-110			
Fluoride	5.42	0.750	mg/L	5.0000		108	90-110			
Sulfate	97.4	1.00	mg/L	100.00		97.4	90-110			
LCS (BCJ0385-BS2)				Prepared & Analyzed: 10/17/2017						
Chloride	24.0	1.00	mg/L	25.000		96.2	90-110			
Fluoride	5.19	0.750	mg/L	5.0000		104	90-110			
Sulfate	96.6	1.00	mg/L	100.00		96.6	90-110			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0385 - Wet Prep										
Duplicate (BCJ0385-DUP1)		**Source: MCJ0178-23**		Prepared & Analyzed: 10/17/2017						
Chloride	19.7	1.00	mg/L		19.8			0.563	20	
Fluoride	<0.750	0.750	mg/L		<0.750				20	
Sulfate	46.6	1.00	mg/L		46.8			0.570	20	
Matrix Spike (BCJ0385-MS1)		**Source: MCJ0178-23**		Prepared & Analyzed: 10/17/2017						
Chloride	32.0	1.00	mg/L	12.500	19.8	97.8	80-120			
Fluoride	2.60	0.750	mg/L	2.5000	<0.750	104	80-120			
Sulfate	95.8	1.00	mg/L	50.000	46.8	98.0	80-120			
Matrix Spike Dup (BCJ0385-MSD1)		**Source: MCJ0178-23**		Prepared & Analyzed: 10/17/2017						
Chloride	32.2	1.00	mg/L	12.500	19.8	99.3	80-120	0.570	20	
Fluoride	2.70	0.750	mg/L	2.5000	<0.750	108	80-120	3.66	20	
Sulfate	96.7	1.00	mg/L	50.000	46.8	99.8	80-120	0.930	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0254 - Wet Prep										
Blank (BCJ0254-BLK1)				Prepared & Analyzed: 10/11/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCJ0254-DUP1)			**Source: MCJ0145-02**	Prepared & Analyzed: 10/11/2017						
Total Dissolved Solids	576	20.0	mg/L		568			1.40	20	
Batch BCJ0255 - Wet Prep										
LCS (BCJ0255-BS1)				Prepared & Analyzed: 10/11/2017						
pH	7.12		pH Units	7.0000		102	90-110			
Duplicate (BCJ0255-DUP1)			**Source: MCJ0145-02**	Prepared & Analyzed: 10/11/2017						
pH	7.71		pH Units		7.77			0.775	20	
Duplicate (BCJ0255-DUP2)			**Source: MCJ0145-11**	Prepared & Analyzed: 10/11/2017						
pH	7.80		pH Units		7.81			0.128	20	
Batch BCJ0290 - Wet Prep										
Blank (BCJ0290-BLK1)				Prepared & Analyzed: 10/12/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCJ0290-DUP1)			**Source: MCJ0145-10**	Prepared & Analyzed: 10/12/2017						
Total Dissolved Solids	324	20.0	mg/L		296			9.03	20	
Batch BCJ0337 - Wet Prep										
LCS (BCJ0337-BS1)				Prepared & Analyzed: 10/13/2017						
pH	7.06		pH Units	7.0000		101	90-110			

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0337 - Wet Prep										
LCS (BCJ0337-BS2)				Prepared & Analyzed: 10/13/2017						
pH	7.06		pH Units	7.0000		101	90-110			
Duplicate (BCJ0337-DUP1)		**Source: MCJ0178-01**		Prepared & Analyzed: 10/13/2017						
pH	7.57		pH Units		7.60			0.396	20	
Duplicate (BCJ0337-DUP2)		**Source: MCJ0178-11**		Prepared & Analyzed: 10/13/2017						
pH	7.86		pH Units		7.87			0.127	20	
Duplicate (BCJ0337-DUP3)		**Source: MCJ0178-21**		Prepared & Analyzed: 10/13/2017						
pH	7.59		pH Units		7.60			0.132	20	
Batch BCJ0350 - Wet Prep										
Blank (BCJ0350-BLK1)				Prepared & Analyzed: 10/16/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCJ0350-DUP1)		**Source: MCJ0178-01**		Prepared & Analyzed: 10/16/2017						
Total Dissolved Solids	438	20.0	mg/L		430			1.84	20	
Batch BCJ0372 - Wet Prep										
Blank (BCJ0372-BLK1)				Prepared & Analyzed: 10/17/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCJ0372-DUP1)		**Source: MCJ0178-11**		Prepared & Analyzed: 10/17/2017						
Total Dissolved Solids	270	20.0	mg/L		324			18.2	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0422 - Wet Prep										
Blank (BCJ0422-BLK1)				Prepared & Analyzed: 10/18/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCJ0422-DUP1)		**Source: MCJ0178-21**		Prepared & Analyzed: 10/18/2017						
Total Dissolved Solids	668	20.0	mg/L		670			0.299	20	

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Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0266 - EPA 200.2, EPA 3005										
Blank (BCJ0266-BLK1)				Prepared: 10/11/2017 Analyzed: 10/13/2017						
Boron	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Duplicate (BCJ0266-DUP1)				**Source: MCJ0138-01**	Prepared: 10/11/2017 Analyzed: 10/13/2017					
Boron	0.0817	0.0500	mg/L		0.0831			1.64	20	
Calcium	106	0.500	mg/L		106			0.447	20	
Duplicate (BCJ0266-DUP2)				**Source: MCJ0162-02**	Prepared: 10/11/2017 Analyzed: 10/13/2017					
Boron	0.0869	0.0500	mg/L		0.0807			7.38	20	
Calcium	56.1	0.500	mg/L		57.0			1.62	20	
Matrix Spike Dup (BCJ0266-MSD1)				**Source: MCJ0138-01**	Prepared: 10/11/2017 Analyzed: 10/13/2017					
Boron	1.08	0.0500	mg/L	1.0000	0.0831	99.6	70-130		20	
Calcium	213	0.500	mg/L	100.00	106	107	70-130		20	
Matrix Spike Dup (BCJ0266-MSD2)				**Source: MCJ0162-02**	Prepared: 10/11/2017 Analyzed: 10/13/2017					
Boron	1.14	0.0500	mg/L	1.0000	0.0807	106	70-130		20	
Calcium	166	0.500	mg/L	100.00	57.0	109	70-130		20	
Batch BCJ0353 - EPA 200.2, EPA 3005										
Blank (BCJ0353-BLK1)				Prepared: 10/16/2017 Analyzed: 10/17/2017						
Boron	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
LCS (BCJ0353-BS1)				Prepared: 10/16/2017 Analyzed: 10/17/2017						
Boron	1.01	0.0500	mg/L	1.0000		101	85-115			
Calcium	106	0.500	mg/L	100.00		106	85-115			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCJ0353 - EPA 200.2, EPA 3005										
Duplicate (BCJ0353-DUP1)		**Source: MCJ0178-05**		Prepared: 10/16/2017 Analyzed: 10/17/2017						
Boron	0.0646	0.0500	mg/L		0.0669			3.52	20	
Calcium	55.2	0.500	mg/L		55.5			0.431	20	
Duplicate (BCJ0353-DUP2)		**Source: MCJ0178-06**		Prepared: 10/16/2017 Analyzed: 10/17/2017						
Boron	0.0465	0.0500	mg/L		0.0468			0.560	20	
Calcium	130	0.500	mg/L		130			0.0423	20	
Matrix Spike (BCJ0353-MS1)		**Source: MCJ0178-05**		Prepared: 10/16/2017 Analyzed: 10/17/2017						
Boron	1.10	0.0500	mg/L	1.0000	0.0669	103	70-130			
Calcium	165	0.500	mg/L	100.00	55.5	109	70-130			
Matrix Spike (BCJ0353-MS2)		**Source: MCJ0178-06**		Prepared: 10/16/2017 Analyzed: 10/17/2017						
Boron	1.06	0.0500	mg/L	1.0000	0.0468	102	70-130			
Calcium	237	0.500	mg/L	100.00	130	107	70-130			
Matrix Spike Dup (BCJ0353-MSD1)		**Source: MCJ0178-05**		Prepared: 10/16/2017 Analyzed: 10/17/2017						
Calcium	163	0.500	mg/L	100.00	55.5	107	70-130	1.16	20	
Boron	1.09	0.0500	mg/L	1.0000	0.0669	103	70-130	0.328	20	
Matrix Spike Dup (BCJ0353-MSD2)		**Source: MCJ0178-06**		Prepared: 10/16/2017 Analyzed: 10/17/2017						
Calcium	238	0.500	mg/L	100.00	130	109	70-130	0.571	20	
Boron	1.08	0.0500	mg/L	1.0000	0.0468	103	70-130	1.48	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:52

Qualifiers and Definitions

M_TTT	Sample received at the lab outside of required hold time.
M_LCS-H	The recovery of this analyte in the LCS was above the control limits. The sample result may be biased high.
Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 4

2112512

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco Ponds NPDES + CCR Wells	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR+GW-B	GW-CCR	GW-B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Rinse	WT				10/9/17	1150		4	1	1	2							✓				
2	P-22						1310		4	1	1	2							✓				
3	P-93A						1405		3 ~~4~~	1	1	1									✓		
4	P-92A						1500		3	1	1	1									✓		
5	P-42						1540		3	1	1	1									✓		
6	P-66						1630		3	1	1	1									✓		
7	P-03A						1705		3	1	1	1									✓		
8	P-05A						1730		3	1	1	1									✓		
9	P-04A						1810		3	1	1	1									✓		
10	P-43	WT				10/10/17	0820		3	1	1	1									✓		
11	P-90A						0920		3	1	1	1									✓		
12	P126						1005		3	1	1	1									✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
(1) marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	10/10/17	1600	[signature] / Xcel	10/11/17	0550	M400041.06

pH strips: MB0050 8

ORIGINAL

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	David Anderson
SIGNATURE of SAMPLER:	David Anderson
DATE Signed (MM/DD/YY):	10/10/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	Y	Y

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 3 of 4

2112510

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco Ponds NPDES + CCR Wells, Oct. 2017	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	GW-CCR+GW-B	GW-CCR	GW-B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-94A	WT				10/10/17	1635		3	1	1	1									✓		
2	P-101A	↓				↓	1735		3	1	1	1									✓		
3	P-56	↓				↓	1815		3	1	1	1									✓		
4	P-88	WT				10/11/17	0845		4	1	1	2									✓		
5	P-152 a	↓				↓	0940		4	1	1	2								✓			
6	P-130	↓				↓	1050		4	1	1	2							✓				
7	P-17	↓				↓	1210		4	1	1	2								✓			
8	P-158	↓				↓	1300		4	1	1	2								✓			
9	P-157	↓				↓	1345		4	1	1	2								✓			
10	P-23	↓				↓	1510		4	1	1	2							✓				
11	P-165	↓				↓	1600		4	1	1	2								✓			
12	P-155	↓				↓	1655		4	1	1	2								✓			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
1. marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	10/13/17	0940	[signature]	10/13/17	0950	M400841: 3.80

pH strips: MB00508

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 10-11-17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Y	Y	Y

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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Page: 2 of 4

2112509

Section A Required Client Information:

Company: Xcel Energy
Address: Environmental Services mp-7
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Chuck Donkers
Copy To:
Purchase Order No.:
Project Name: Sherco Ponds NPDES + CCR Wells
Project Number:

Section C Invoice Information:

Attention: Steve Davis
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes MATRIX / CODE

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): 6W-CCR+GW-B	GW-CCR	GW-B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-128	WT				10/10/17	1105		4	1	1	2									✓			
2	P-127						1140		3	1	1	1									✓			
3	P-129						1235		4	1	1	2									✓			
4	P-132						1330		4	1	1	2							✓					
5	Duplicate						1330		4	1	1	2							✓					
6	P-89-1						1445		3	1	1	1									✓			
7	P-50	↓				↓	1540		3	1	1	1									✓			
8																								
9																								
10																								
11																								
12																								

bTA 10/10/17

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
① marked HNO3 bottles filtered and unfiltered.	David Anderson/Pace	10/10/17	1600	/Xcel	10/11/17	0550	

pH strips: MB00508

ORIGINAL

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
4.0	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson

DATE Signed (MM/DD/YY): 10/10/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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2112507

Section A Required Client Information:

Company: Xcel Energy
Address: Environmental Services MP-7
Email To:
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Chuck Donkers
Copy To:
Purchase Order No.:
Project Name: Sherco Ponds NPDES
Project Number: +CCR wells, Oct. 2017

Section C Invoice Information:

Attention: Steve Davis
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: GW-CCR+GW-B	GW-CCR	GW-B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-01A-1	WT			10/11/17		1740		4	1	1	2						✓				
2	P-156	↓			↓		1830		4	1	1	2							✓			
3	P-150	WT			10/12/17		0840		4	1	1	2							✓			
4	P-151						0940		4	1	1	2							✓			
5	P-131						1050		4	1	1	2						✓				
6	P-153						1140		4	1	1	2							✓			
7	P-154d						1255		4	1	1	2							✓			
8	P-162						1350		4	1	1	2							✓			
9	P-163						1450		4	1	1	2							✓			
10	P-164						1545		4	1	1	2							✓			
11	P-62						1650		3	1	1	1								✓		
12	P-60	↓			↓		1730		3	1	1	1								✓		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
(1) marked HNO3 bottles filtered and unfiltered	David Anderson Pace	10/13/17	0940	[signature] Xcel	10/13/17	0950

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
MJ000641 3.2°C	Y	Y	Y

ptletnps: MB00508

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 10/12/17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Appendix C

November 2017 One-Pass Resampling
Field Datasheets and Laboratory Reports

Xcel - Sherco CCR, Re-sample Nov. 2017
Field Proj. # 17-1294

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 11-15-17 Page 1 of 3

Meter Make YSI 556 Meter ID MPS-5

pH

Initial Calibration (IC)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
4.0	ERA	010916	03/31/20	3.99	18.0	0910	DJA
Buffer: 7.0 units	ERA - Lot #: 100716		Exp Date: 07/31/18	7.09	18.0	0910	DJA
Buffer: 10.0 units	ERA - Lot #: 230916		Exp Date: 03/31/20	10.14	18.0	0910	DJA

IC Slope (%) NA (Pass) / Fail (Acceptable Slope: 92-102%)

Initial Calibration Verification (ICV)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	Ricca - Lot #: 4607D88		Exp Date: 07/31/18	7.11	18.0	0920	DJA

(Pass) / Fail (ICV acceptable if ± 0.1 s.u. of buffer value)

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units	ERA - Lot #: 100716		Exp Date: 07/31/18	7.14	4.0	1630	DJA

(Pass) Fail (CCV acceptable if ± 0.1 s.u. of buffer value)

Conductivity

Initial Calibration (IC)

High Standard Value 998
Mfg. Fisher
Lot No. CC16243
Exp. Date

Meter Result (µS/cm)	Temp (°C)
998	18.0

Initial Cal. Verification (ICV)

Low Standard Value 100
Cond Std: 100 umhos/cm
Ricca - Lot #: 4605D87
Exp Date: 05/31/18

Meter Result (µS/cm)	Temp (°C)
99	18.0

Meter Make YSI 556 ID MPS-5
IC/ICV Time 0930 / 0933
Initials DJA
ICV: (Pass) / Fail
(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 1635 Initials DJA Std. Value 998 ☒ High Standard ☐ Low Standard
Result (µS/cm) 996 Temp (°C) 4.0 CCV: (Pass) / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

DJA 11-15-17

Time ____ Initials ____ Std. Value ____ ☐ High Standard ☐ Low Standard
Result (µS/cm) ____ Temp (°C) ____ CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anderson Date: 11-15-17

Xcel - Sherco CCR, Resample, Nov. 2017

Pace Analytical® Field Services Division — Field Proj. # 17-1294

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 11-15-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)		Meter Make YSI 556 ID MPS-5
Calibration Std. Value (mV)	240	Secondary Source Std. Value (mV)	240	
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.	IC/ICV Time 0935 / 0937
Lot No.	17F100849	Lot No.	16L100376	Initials DJA
Exp Date	03 / 2018	Exp. Date	11 / 2017	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)	ICV: (Pass) / Fail
238	18.0	238	18.0	ICV acceptable if ± 10 mV of standard value.

CCV Time 1625	Initials DJA	Std. Value 258	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 255	Temp (°C) 4.0	CCV: (Pass) Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 11-15-17	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation		IC/ICV Time 0905 Initials DJA
Ambient Temp:	18.0 (°C)	Ambient Temp:	18.0 (°C)	DO Meter ID YSI 556 MPS-5
Barometric Pressure	29.17 (in. Hg)	Barometric Pressure	29.17 (in. Hg)	Barometer ID Skymaster DB-26GW
Barometric Pressure	740.92 (mm Hg)	Barometric Pressure	740.92 (mm Hg)	
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)	ICV: (Pass) / Fail
IC Meter Result (%)		ICV Meter Result (%)		(ICV/CCV acceptable if ± 2% of Calibration Value)
97		97		

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 1620	Initials DJA	Barometric Pressure 740.92 (in. Hg / mm Hg)			
Calibration Value 97 (%)	Result 95 (%)	CCV: (Pass) / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result DJA 11-15-17 (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure (in. Hg / mm Hg)			
Calibration Value (%)	Result (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 11-15-17

Xcel-Sherco CCR, Re-sample Nov. 2017
Field Proj. # 17-1294

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 11-15-17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	9.9	99	999	IC Time 0940 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.02	9.9	99	998	ICV Time 0950 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.03	9.8	100	999	CCV Time 1640 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 11-15-17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anderson Date: 11-15-17

Form Revised 11/14/2013

Attach additional notes if necessary

Xcel - Sherco CCR, Re-sample Nov. 2017
Field proj. # 17-1294

Pace Analytical® Field Services Division

pH and Conductivity

Field Calibration and Verification Sheet

Technician(s) DJA Date 11-16-17 Page 1 of 3

Meter Make YSI 556 Meter ID MPS-5

pH

Initial Calibration (IC)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
4.0	ERA	010916	03/31/20	4.00	21.0	0705	DJA
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*				7.08	21.0	0705	DJA
Buffer: 10.0 units ERA - Lot #: 230916 *Exp Date: 03/31/20*				10.10	21.0	0705	DJA

IC Slope (%) NA (Pass) / Fail (Acceptable Slope: 92-102%)

Initial Calibration Verification (ICV)

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units Ricca - Lot #: 4607D88 *Exp Date: 07/31/18*				7.10	21.0	0715	DJA

Pass / Fail (ICV acceptable if ± 0.1 s.u. of buffer value)

Continuing Calibration Verification (CCV)

See Below ☒ See Field Data Log Sheet ☐ See Raw Data (continuous pH) ☐

Buffer Value	Manufacturer	Lot No.	Exp. Date	Meter Value	Temp (°C)	Time	Initials
Buffer: 7.0 units ERA - Lot #: 100716 *Exp Date: 07/31/18*				7.15	4.0	0940	DJA

(Pass) / Fail (CCV acceptable if ± 0.1 s.u. of buffer value)

Conductivity

Initial Calibration (IC)

High Standard Value 998

Mfg. Fisher

Lot No. CC16243

Exp. Date

Meter Result (µS/cm)	Temp (°C)
999	21.0

Initial Cal. Verification (ICV)

Low Standard Value 100

Cond Std: 100 umhos/cm Ricca - Lot #: 4605D87 *Exp Date: 05/31/18*

Exp.

Meter Result (µS/cm)	Temp (°C)
98	21.0

Meter Make YSI 556 ID MPS-5

IC/ICV Time 0720/0723

Initials DJA

ICV: (Pass) / Fail

(ICV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Continuing Calibration Verification (CCV)

Time 07-0945 Initials DJA Std. Value 998 ☒ High Standard ☐ Low Standard

Result (µS/cm) 995 Temp (°C) 4.0 CCV: (Pass) / Fail (CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time Initials Std. Value ☐ High Standard ☐ Low Standard

Result (µS/cm) Temp (°C) DJA 11-16-17 CCV: Pass / Fail (CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time Initials Std. Value ☐ High Standard ☐ Low Standard

Result (µS/cm) Temp (°C) CCV: Pass / Fail (CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Form Revised: 11/13/2013

Lead Technician Signature: David Anders Date: 11-16-17

Xcel - Sherco CCR, Resample, NOV. 2017

Pace Analytical® Field Services Division

Field Proj #17-1294

Redox and Dissolved Oxygen

Field Calibration and Verification Sheet

Technician(s) DJA Date 11-16-17 Page 2 of 3

Redox (ORP)

Initial Calibration (IC)		Initial Cal. Verification (ICV)		Meter Make YSI 556 ID MPS-5
Calibration Std. Value (mV)	236	Secondary Source Std. Value (mV)	236	
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.	IC/ICV Time 0725 / 0728
Lot No.	17F100849	Lot No.	16L100376	Initials DJA
Exp Date	03 / 2018	Exp. Date	11 / 2017	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)	ICV: (Pass) / Fail
237	~~23.0~~ 21.0	236	~~23.0~~ 21.0	ICV acceptable if ± 10 mV of standard value.

CCV Time 0930	Initials DJA	Std. Value 258	☒ Calibration Standard ☐ Secondary Source Standard		
Result (mV) 256	Temp (°C) 4.0	CCV: (Pass) / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C) DJA 11-16-17	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		
CCV Time	Initials	Std. Value	☐ Calibration Standard ☐ Secondary Source Standard		
Result (mV)	Temp (°C)	CCV: Pass / Fail	(CCV acceptable if ± 10 mV of standard value)		

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation		Initial Cal. Verification (ICV) % Saturation		IC/ICV Time 0700 Initials DJA
Ambient Temp:	23.0 (°C)	Ambient Temp:	23.0 (°C)	DO Meter ID YSI 556 MPS-5
Barometric Pressure	29.17 (in. Hg)	Barometric Pressure	29.17 (in. Hg)	Barometer ID Skymaster DB-266W
Barometric Pressure	740.92 (mm Hg)	Barometric Pressure	740.92 (mm Hg)	
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)	ICV: (Pass) / Fail
IC Meter Result (%)		ICV Meter Result (%)		(ICV/CCV acceptable if ± 2% of Calibration Value)
97		96		

[1] Calibration Value (% Saturation) = (Measured BP / Sea Level BP) X 100. Sea Level BP = 760 mm Hg or 29.92 inches Hg.

CCV Time 0935	Initials DJA	Barometric Pressure 740.92	(in. Hg / mm Hg)		
Calibration Value 97 (%)	Result 95 (%)	CCV: (Pass) / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure	(in. Hg / mm Hg)		
Calibration Value (%)	Result DJA 11/16/17 (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		
CCV Time	Initials	Barometric Pressure	(in. Hg / mm Hg)		
Calibration Value (%)	Result (%)	CCV: Pass / Fail	(CCV acceptable if ± 2% of Calibration Value)		

Form Revised: 02/03/17

Lead Technician Signature: David Anderson Date: 11-16-17

Xcel-Sherco CCR, Re-sample Nov. 2017
Field Proj. #17-1294

Pace Analytical® Field Services Division

Turbidity Calibration and Verification Sheet

Technician(s) DJA Date 11-16-17 Page 3 of 3

Meter Make WTW 350 IR Meter ID TM-1

	Std. 1 Value (NTU)	Std. 2 Value (NTU)	Std. 3 Value (NTU)	Std. 4 Value (NTU)	Standard Info
STANDARDS	0.02	10.0	100	1000	Mfg. WTW Lot No. C689664/C686359/C686358/C688718 Exp. Date 11/2017

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
IC	0.02	10.0	100	999	IC Time 0730 Initials DJA IC: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
ICV	0.02	9.9	99	999	ICV Time 0740 Initials DJA ICV: (Pass) / Fail

ICV acceptable if ± 5% of standard value.

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV	0.01	9.8	98	999	CCV Time 0955 Initials DJA CCV: (Pass) / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 11-16-17			CCV Time _____ Initials _____ CCV: Pass / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV					CCV Time _____ Initials _____ CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments _____

Lead Technician Signature: David Anders Date: 11-16-17

Form Revised: 11/14/2013

Attach additional notes if necessary

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Re-sample Project No. 17-1294

Monitoring Point ID P-22 Labeled P-22

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	57.85	Feet
Static water level measurement before purging	38.01	Feet
Static water level measurement at time of sampling	38.01	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 11-15-17 Water Column 19.84 Feet

Time Purged 1520 - 1608 One Casing Volume 3.2 Gallons

Pump Rate 0.2 (GPM) LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 11-15-17

Time Sampled 1610

Sampling Equip. above pump

Meter ID MPS-5

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 5.8 (mg/l)

Spec. Cond. 860 (µmhos/cm) Turbidity 2.7 (NTU)

Temp. 9.5 (°C) Eh 58 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☐ Yes ☒ No ☐ NA

Weather Conditions During Sampling: 31°+ cloudy, wind N25

Sample Description: clear + odorless

Observations: DTA 11/15/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1536	7.5	860	9.5	5.9	NA	55	3.2
1552	7.5	860	9.5	5.8	NA	56	6.4
1608	7.5	860	9.5	5.8	NA	58	9.6

DTA 11/15/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 09/27/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 11/15/17

Pace Analytical® Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project Sherco CCR Re-sample Project No. 17-1294

Monitoring Point ID P-155 Labeled 812964

Inside Diameter 2 (inches) Key # 2106 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation	NA	Feet
Well depth	85.47	Feet
Static water level measurement before purging	76.49	Feet
Static water level measurement at time of sampling	76.49	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 11-15-17 Water Column 8.98 Feet

Time Purged 1430 - 1500 One Casing Volume 1.5 Gallons

Pump Rate 0.15 (GPM) / LPM Volume Purged 4.5 Gallons

Field Sampling Data

Date Sampled 11-15-17

Time Sampled 1505

Sampling Equip. above pump

Meter ID MPS-5

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 6.5 (mg/l)

Spec. Cond. 780 (µmhos/cm) Turbidity 5.3 (NTU)

Temp. 10.0 (°C) Eh 52 (mV)

Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA

Sample for Soluble Metals Filtered in Field: ☐ Yes ☒ No ☐ NA

Weather Conditions During Sampling: 32° + cloudy, wind NW 20

Sample Description: clear + odorless

Observations: DJA 11-15-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1440	7.4	780	10.0	6.3	NA	54	1.5
1450	7.4	780	10.0	6.4	NA	52	3.0
1500	7.5	780	10.0	6.5	NA	52	4.5

DJA 11/15/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 09/27/2017

Name/Affiliation of Sampler(s): David Anderson / Pace Analytical

Lead Technician Signature: David Anderson Date: 11/15/17

Amended Report

Original Report ID: MCK0151 Xcel General Report FINAL 11 21 2017 1328 11 21 2017 1113

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification #MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

11 January 2018

Charles A Donkers

Environmental Services-Water Minneapolis

250 Marquette Plaza

Minneapolis, MN 55401

RE: Sherco CCR

cc: Laboratory report re-created to only include wells in the Bottom Ash Pond CCR Groundwater Monitoring System. HSD 1/11/18

Enclosed are the results of analyses for samples received by the laboratory on 11/16/2017 10:47. If you have any questions concerning this report, please feel free to contact me.

I certify that this analysis report was prepared under my direction or supervision under a system designed to assure that qualified personnel analyzed the submitted samples. All protocols for analysis were followed as required by Minnesota Rules and the Applicable Management Plan.

Sincerely,



Steve Davis

Project Manager

Amended Report

Original Report ID: MCK0151 Xcel General Report FINAL 11 21 2017 1328 11 21 2017 1113

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:56

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
P-155		MCK0151-04	Water	11/15/2017 15:05	11/16/2017 10:47
P-22		MCK0151-05	Water	11/15/2017 16:10	11/16/2017 10:47

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCK0151 Xcel General Report FINAL 11 21 2017 1328 11 21 2017 1113

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:56

P-155

MCK0151-04 (Water) - Chain of Custody Number:

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Total Metals by ICP										
Boron	1.56	0.0500	mg/L		1	BCK0434	11/20/17 9:01	11/21/17 11:53	EPA 200.7	HRD

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCK0151 Xcel General Report FINAL 11 21 2017 1328 11 21 2017 1113

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:56

P-22

MCK0151-05 (Water) - Chain of Custody Number:

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Total Metals by ICP										
Boron	1.40	0.0500	mg/L		1	BCK0434	11/20/17 9:01	11/21/17 11:59	EPA 200.7	HRD

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:56

Total Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCK0434 - EPA 200.2, EPA 3005										
Blank (BCK0434-BLK1)				Prepared: 11/20/2017 Analyzed: 11/21/2017						
Boron	<0.0500	0.0500	mg/L							
LCS (BCK0434-BS1)				Prepared: 11/20/2017 Analyzed: 11/21/2017						
Boron	0.988	0.0500	mg/L	1.0000		98.8	85-115			
Duplicate (BCK0434-DUP1)			**Source: MCK0151-01**	Prepared: 11/20/2017 Analyzed: 11/21/2017						
Boron	0.204	0.0500	mg/L		0.207			1.14	20	
Matrix Spike (BCK0434-MS1)			**Source: MCK0151-01**	Prepared: 11/20/2017 Analyzed: 11/21/2017						
Boron	1.25	0.0500	mg/L	1.0000	0.207	105	70-130			
Matrix Spike Dup (BCK0434-MSD1)			**Source: MCK0151-01**	Prepared: 11/20/2017 Analyzed: 11/21/2017						
Boron	1.26	0.0500	mg/L	1.0000	0.207	105	70-130	0.200	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Original Report ID: MCK0151 Xcel General Report FINAL 11 21 2017 1328 11 21 2017 1113

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Supervisor (612) 630-4506

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/11/2018 07:56

Qualifiers and Definitions

Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Pace Analytical®
www.pacelabs.com

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

2125349

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Xcel Energy	Report To: Chuck Donkers	Attention: Steve Davis
Address: Environmental Services MP-7	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Sherco CCR, Re-sample	Pace Project Manager:
Requested Due Date/TAT:	Project Number: Nov. 2017	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	B	Ca	SO4	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-162	WT				11-15-17	1220		2	1		1							✓		✓			
2	P-163	↓				↓	1310		2	1		1							✓		✓	✓		
3	P-132	↓				↓	1405		2	1		1							✓		✓			
4	P-155	↓				↓	1505		1			1							✓					
5	P-22	↓				↓	1610		1			1							✓					
6	P-137A	WT				11-16-17	0830		2	1		1								✓	✓	✓		
7	P-75-1	↓				↓	0930		2	1		1							✓		✓			
8																								
9																								
10																								
11																								
12																								

DJA 11/16/17

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	David Anderson / Pace	11-16-17	1045	[signature] / Xcel	11/16/17	1045
pH strips: MB00508						

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
M40841.75	Y	X	X

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson

SIGNATURE of SAMPLER: David Anderson DATE Signed (MM/DD/YY): 11-16-17

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007