CCR ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

SCRUBBER SOLIDS POND NO. 3

Sherburne County (Sherco) Generating Plant
Becker, Minnesota

Prepared for:

Northern States Power Company, a Minnesota Corporation

January 29, 2018

Carlson McCain

15650 36th Ave N. Suite 110
Plymouth, MN 55446
Tel 952-346-3900
Fax 952-346-3901
www.carlsonmccain.com

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Scrubber Solids Pond No. 3
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

NICHOLAS BONOW
47510

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APPENDICES

1. INTRODUCTION

This report presents the documentation of the status of groundwater monitoring and corrective action for the year 2017 (YR2017) for the Scrubber Solids Pond No. 3 (Pond 3) 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).

Pond 3 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 Pond 3 in December of 2016.

This report has been prepared in general accordance with the reporting procedures outlined in the Sherco Scrubber Solids Pond No. 3 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

Pond 3 is located in the City of Becker, Sherburne County, Minnesota. Pond 3 is approximately 115 acres in size and is part of a larger generating plant site. Phased construction resulted in the northern half of Pond No. 3 to become operational in 2004 and the southern half in 2010. The Pond 3 location is shown on Figure 1 and an aerial photograph and site layout map for Pond 3 are shown on Figure 2.

2.1 Site Hydrogeology

The site hydrogeology is discussed in more detail in the Pond 3 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 south-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 331 feet/year.

The conceptual model for the hypothetical (or potential) release of a constituent of concern (COC) from Pond 3 focuses on groundwater as the transport mechanism. The water table beneath Pond 3 is typically below the glacial till layer identified in Section 2.1.2. Exfiltration from Pond 3 area is anticipated to move vertically downward from the base of the pond 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. The lack of an identifiable perched zone above the till indicates that flow along the top of the till is minimal. Upon reaching the water table, a COC would likely travel mainly horizontally toward the west-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 Pond 3 and all upgradient and downgradient monitoring well locations included in the Pond 3 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 Pond 3. A summary of the monitoring wells included in the Pond 3 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 Pond 3 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 10 – 12, 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 Scrubber Solids Pond No. 3 (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-132, P-162 and P-163 for boron and sulfate and also total dissolved solids in well P-163. 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 Pond 3 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 vertical wells included in the groundwater monitoring system for Pond 3 and several additional water level piezometers as noted on Figure 4. For both of the events, the flow direction was generally to the west-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 Pond 3; Section 4.2 discusses the 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 10 – 12, 2017.

Other key actions include the following items:

- The Pond 3 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 Pond 3 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 10 – 12, 2017 was initiated in November 2017, but was not 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.

4.2.2 Resolution of Problems

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

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-132, P-162 and P-163 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, Scrubber Solids Pond No. 3, Sherco Generating Plant, prepared for Northern States Power Company, A Minnesota Corporation, October 16, 2017.

NSPM, 2017a. Statistical Analysis Plan, Sherco Scrubber Solids Pond No. 3, Northern States Power Company, a Minnesota Corporation, October 16, 2017.

NSPM, 2017b. Sherco Scrubber Solids Pond No. 3 CCR Ground Water Sampling Plan, Northern States Power Company, a Minnesota Corporation, October 17, 2017.

Tables

Table 1
CCR Groundwater Monitoring System
Scrubber Solids Pond No. 3

Well ID	Minnesota Unique Well ID	Date Installed	Location Site Coordinates (ft)		Elevation Top of Riser Pipe	Well Type	Screen Length (ft)	Elevation Top of Screen	Elevation Bottom of Screen	Monitoring Status	Hydrologic Location
			Easting	Northing							
P-130	722085	5/12/05	2031446.8	865871.1	965.59	Vertical	10	931	921	Routine Semi-annual	Up-gradient
P-131	722086	5/16/05	2033046.4	865133.3	966.03	Vertical	10	931	921	Routine Semi-annual	Up-gradient
P-132	722087	5/11/05	2031594.6	862211.7	955.96	Vertical	10	931	921	Routine Semi-annual	Down-Gradient
P-150	806320	10/7/14	2032983.1	867047.3	964.41	Vertical	10	938	928	Routine Semi-annual	Up-gradient
P-151	806315	10/9/14	2032644.2	865848.2	942.44	Vertical	10	932	922	Routine Semi-annual	Up-gradient
P-152A	806318	10/10/14	2031471.6	866696.4	965.87	Vertical	10	934	924	Routine Semi-annual	Up-gradient
P-153	806314	10/13/14	2032310.4	864158.5	944.94	Vertical	10	931	921	Routine Semi-annual	Up-gradient
P-154A	806316	10/15/14	2032966.3	862868.4	961.44	Vertical	10	922	912	Routine Semi-annual	Up-gradient
P-162	822156	7/25/16	2030610	864631.7	1020.9	Angled	20	929	916	Routine Semi-annual	Down-Gradient
P-163	822157	7/19/16	2030604	863992	1024.98	Angled	20	927	914	Routine Semi-annual	Down-Gradient
P-164	822158	7/14/16	2030610	863059.5	1020.49	Angled	20	928	916	Routine Semi-annual	Down-Gradient
P-165	822159	7/12/16	2030714	862215.8	957.13	Vertical	10	927	917	Routine Semi-annual	Down-Gradient

*Notes:

Elevation is feet above mean sea level

Table 2
Summary of Data Collected
Sherco Scrubber Solids Pond No. 3

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-130	10	12/13/2016	2/21/2017	3/22/2017	4/24/2017	5/16/2017	6/19/2017	7/17/2017	8/22/2017	9/12/2017	10/11/2017	NS
P-131	10	12/14/2016	2/22/2017	3/21/2017	4/25/2017	5/15/2017	6/19/2017	7/17/2017	8/23/2017	9/13/2017	10/12/2017	NS
P-150	10	12/13/2016	2/23/2017	3/22/2017	4/24/2017	5/24/2017	6/19/2017	7/17/2017	8/23/2017	9/13/2017	10/12/2017	NS
P-151	10	12/14/2016	2/23/2017	3/22/2017	4/26/2017	5/24/2017	6/21/2017	7/18/2017	8/23/2017	9/13/2017	10/12/2017	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-153	10	12/14/2016	2/23/2017	3/22/2017	4/26/2017	5/24/2017	6/21/2017	7/18/2017	8/23/2017	9/13/2017	10/12/2017	NS
P-154A	10	12/14/2016	2/22/2017	3/21/2017	4/24/2017	5/24/2017	6/19/2017	7/17/2017	8/23/2017	9/13/2017	10/12/2017	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-132	11	12/14/2016	2/22/2017	3/21/2017	4/25/2017	5/15/2017	6/19/2017	7/17/2017	8/23/2017	9/13/2017	10/10/2017	11/15/2017
P-162	11	12/20/2016	2/22/2017	3/23/2017	4/26/2017	5/25/2017	6/22/2017	7/19/2017	8/24/2017	9/14/2017	10/12/2017	11/15/2017
P-163	11	12/20/2016	2/22/2017	3/23/2017	4/26/2017	5/25/2017	6/22/2017	7/19/2017	8/24/2017	9/14/2017	10/12/2017	11/15/2017
P-164	10	12/20/2016	2/22/2017	3/23/2017	4/26/2017	5/25/2017	6/22/2017	7/19/2017	8/24/2017	9/14/2017	10/12/2017	NS
P-165	10	12/14/2016	2/22/2017	3/21/2017	4/25/2017	5/25/2017	6/22/2017	7/17/2017	8/24/2017	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
Sherco Scrubber Solids Pond No.3

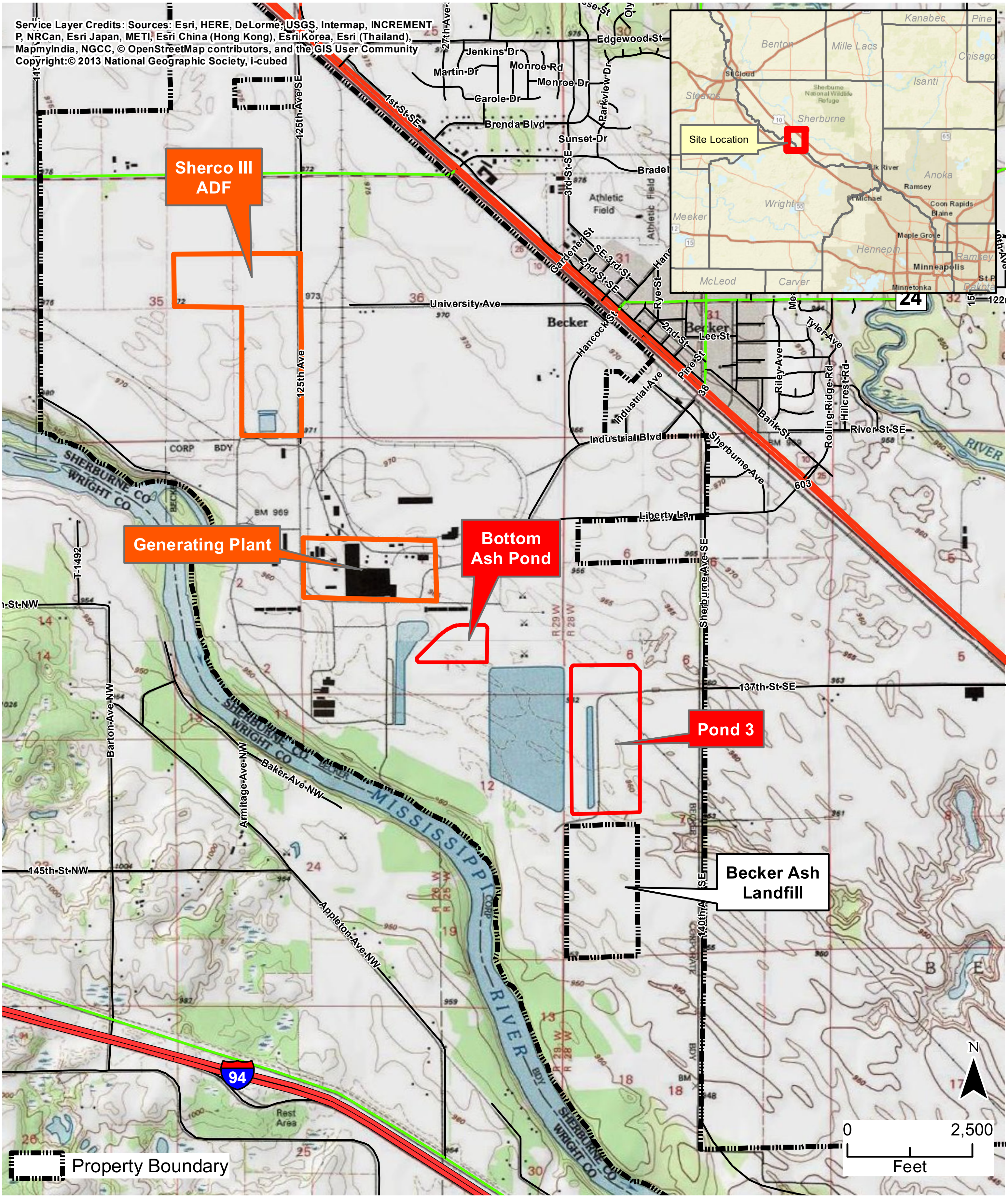
Appendix III Parameters

Parameter	Well ID and Number of Samples											
	P-130	P-131	P-132	P-150	P-151	P-152a	P-153	P-154a	P-162	P-163	P-164	P-165
Boron, total (mg/L)	10	10	11	10	10	10	10	10	11	11	10	10
Calcium, total (mg/L)	10	10	10	10	10	10	10	10	10	10	10	10
Chloride, total (mg/L)	10	10	10	10	10	10	10	10	10	10	10	10
Fluoride, total (mg/L)	10	10	10	10	10	10	10	10	10	10	10	10
pH (lab) (pH)	10	10	10	10	10	10	10	10	10	10	10	10
Sulfate, total (mg/L)	10	10	11	10	10	10	10	10	11	11	10	10
Total Dissolved Solids (mg/L)	10	10	10	10	10	10	10	10	10	11	10	10

Appendix IV Parameters

Parameter	Well ID and Number of Samples											
	P-130	P-131	P-132	P-150	P-151	P-152a	P-153	P-154a	P-162	P-163	P-164	P-165
Antimony, total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Arsenic, total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Barium, total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Beryllium, total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Cadmium,total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Chromium, total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Cobalt, total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Lead, total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Lithium Total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Mercury, total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Molybdenum, total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Selenium, total (mg/L)	9	9	9	9	9	9	9	9	9	9	9	9
Thallium, total (mg/L)	9	9	9	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	9	9	9

Figures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CCR ANNUAL GROUNDWATER MONITORING REPORT

Scrubber Solids Pond No. 3

Sherburne County Generating Plant
Becker, Minnesota

FIGURE 1

SITE LOCATION MAP

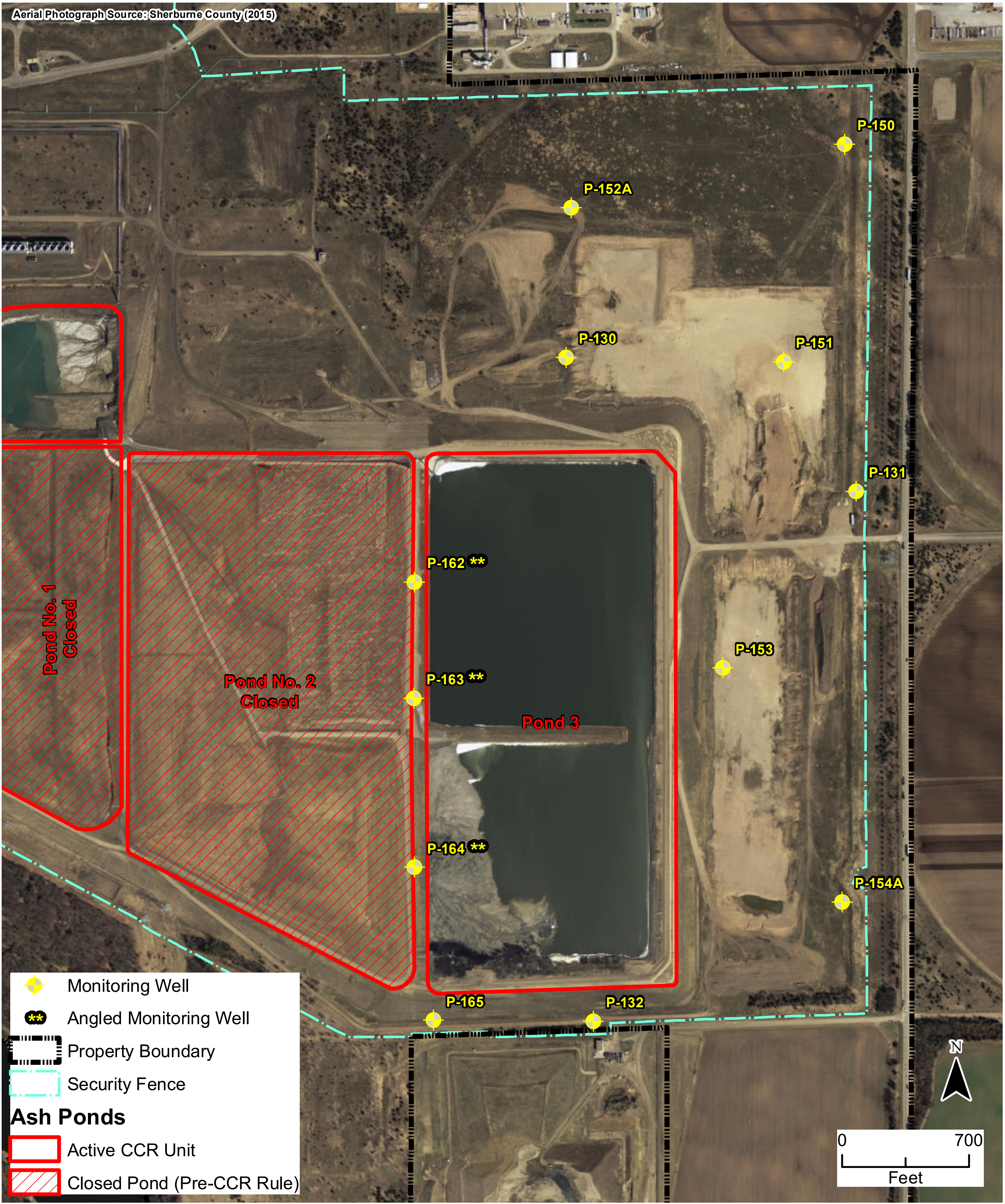

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FIGURE 2

CCR GROUNDWATER MONITORING SYSTEM

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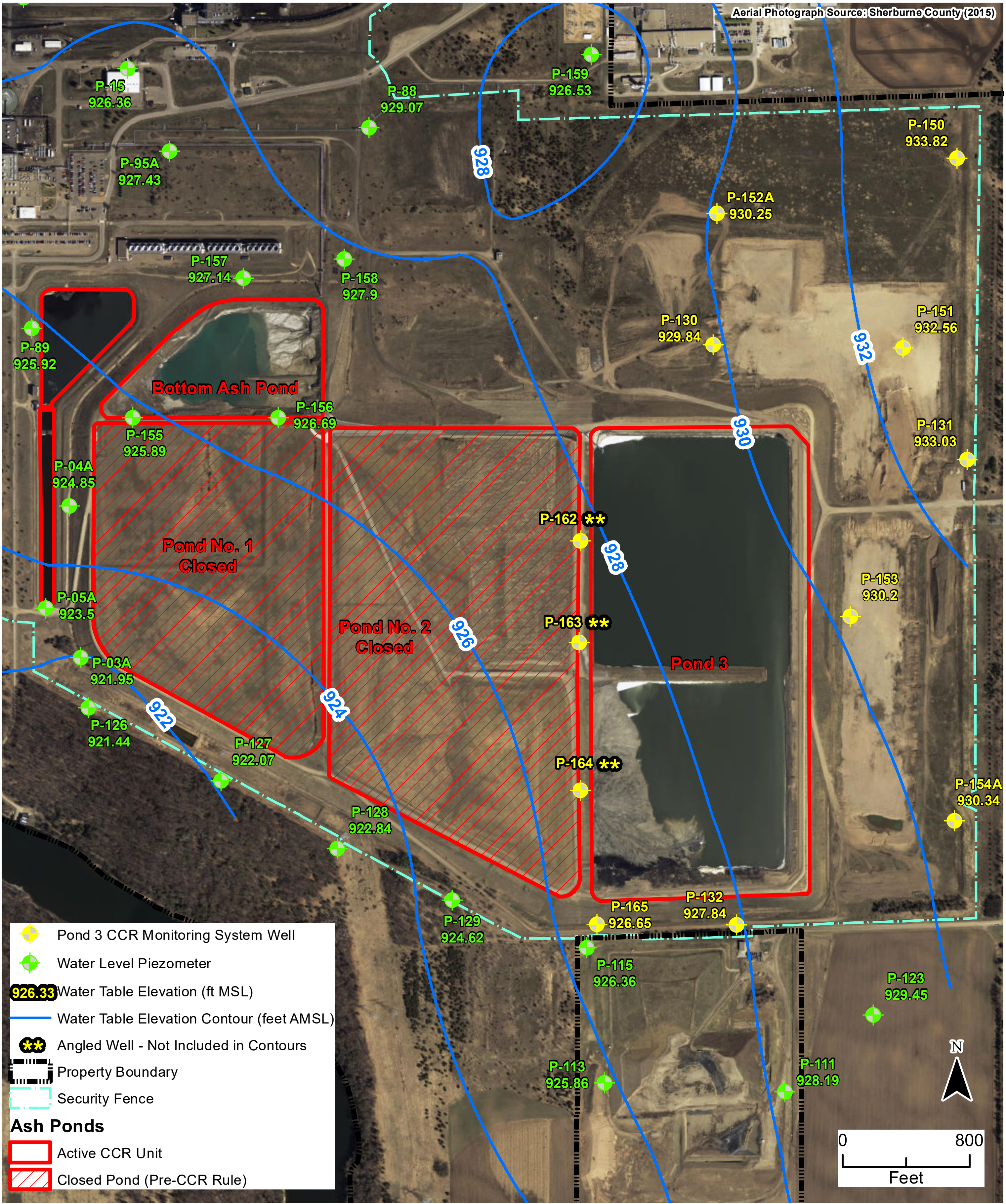

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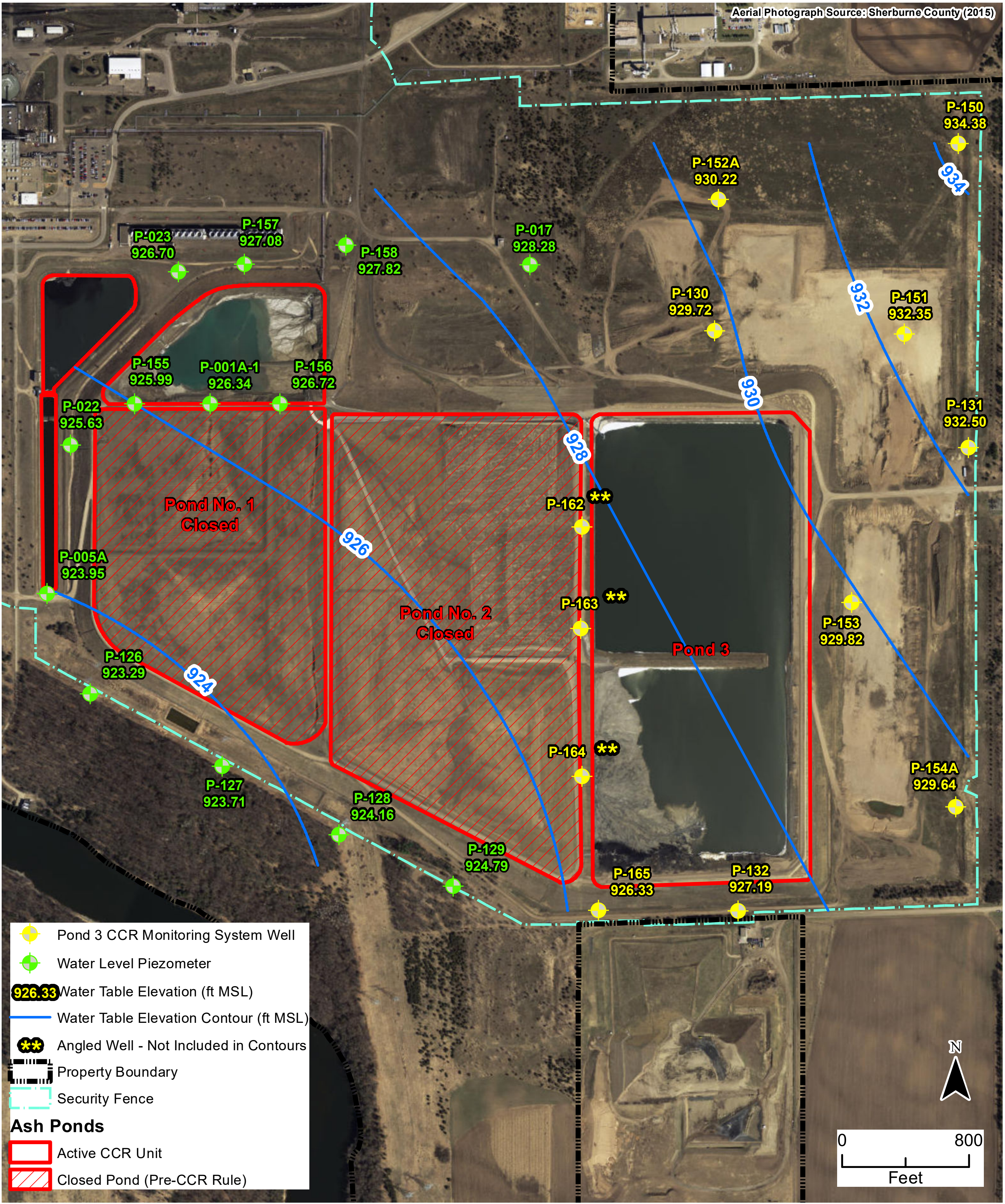
Scrubber Solids Pond No. 3
Sherburne County Generating Plant
Becker, Minnesota

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



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Scrubber Solids Pond No. 3
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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	1050	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)

High Standard Value 1413

Cond Std: 1413 umhos/cm
Fisher - Lot #: CC15030
Exp Date: 06/08/17
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1410	14.0

Initial Cal. Verification (ICV)

Low 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	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)

DJA 12/13/16

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: 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 Zobell's Lot No. 16F100570 Exp Date 12/2016		ORP Std. (Zobell's Soln.) YSI - Lot #: 15G100067 Exp Date: 07/13/17 Exp.	
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
Result (mV) 260　Temp (°C) 1.0　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 12-13-16

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)		Initial Cal. Verification (ICV)	
% Saturation		Zero Standard (mg/L)	
Ambient Temp: 14.0 °C Barometric Pressure 29.29 inches Hg Barometric Pressure 743.97 mm Hg Theoretical Value[1] NA mg/L		Mfg. Lot No. DJA Exp Date	
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
Result (mg/L) 15.0　Temp (°C) 1.0　Theoretical Value[1] NA
(CCV acceptable if ± 0.5 mg/L of saturation value)

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

DJA

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

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

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 C582192/C579784 C579786/C580573 Exp. Date 12/2016

IC	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	10.0	99	1000	IC Time 1120 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 1125 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	10.1	100	997	CCV Time 1710 Initials DJA CCV: Pass / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 12/13/16			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: 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

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*	4.01	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)

High Standard Value 1413

Cond Std: 1413 umhos/cm
Fisher - Lot #: CC15030
Exp Date: 06/08/17
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1410	10.0

Initial Cal. Verification (ICV)

Low 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	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)

DJA 12-14-16

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: 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 Zobell's Lot No. 16F100570 Exp Date 12/2016		ORP Std. (Zobell's Soln.) YSI - Lot #: 15G100067 Exp Date: 07/13/17 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 ____ Initials ____ Std. Value ____ ☐ Calibration Standard ☐ Secondary Source Standard
Result (mV) ____ Temp (°C) ____ CCV: Pass / Fail (CCV acceptable if ± 10 mV of standard value)

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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 Barometric Pressure 29.06 inches Hg Barometric Pressure 738.12 mm Hg Theoretical Value[1] NA mg/L		Mfg. Lot No. Exp Date DJA 12/14/16	
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 ____ CCV: Pass / Fail (CCV acceptable if ± 0.5 mg/L of saturation value)
Result (mg/L) ____ Temp (°C) ____ Theoretical Value[1] ____

DJA 12/14/16

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

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*	4.03	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	1008	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)

DJA 12-15-16

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: 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 Lot No. 16F100570 Exp Date 12/2016		ORP Std. (Zobell's Soln.) YSI - Lot #: 15G100067 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 ______ Initials ______ Std. Value ______ ☐ Calibration Standard ☐ Secondary Source Standard
Result (mV) ______ Temp (°C) ______ CCV: Pass / Fail (CCV acceptable if ± 10 mV of standard value)

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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 Barometric Pressure 29.35 inches Hg Barometric Pressure 745.49 mm Hg Theoretical Value[1] NA mg/L		Mfg. Lot No. Exp Date DJA 12-15-16	
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 ______ CCV: Pass / Fail (CCV acceptable if ± 0.5 mg/L of saturation value)
Result (mg/L) ______ Temp (°C) ______ Theoretical Value[1] ______

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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)

High Standard Value 1413

Cond Std: 1413 umhos/cm
Fisher - Lot #: CC15030
Exp Date: 06/08/17
Exp. Date

Meter Result (µS/cm)	Temp (°C)
1413	13.0

Initial Cal. Verification (ICV)

Low 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	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 Zobell's Lot No. 16F100570 Exp Date 12/2016		ORP Std. (Zobell's Soln.) YSI - Lot #: 15G100067 Exp Date: 07/13/17	
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 1705 Initials DJA Std. Value 254
Result (mV) 251 Temp (°C) 8.0 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 12-19-16

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)		Initial Cal. Verification (ICV)	
% Saturation		Zero Standard (mg/L)	
Ambient Temp: 13.0 °C Barometric Pressure 29.35 inches Hg Barometric Pressure 745.49 mm Hg Theoretical Value[1] NA mg/L		Mfg. Lot No. Exp Date DJA 12/19/16	
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 1650 Initials DJA CCV: [✓ Pass] / Fail
Result (mg/L) 11.7 Temp (°C) ~~13.0~~ 8.0 Theoretical Value[1] NA
(CCV acceptable if ± 0.5 mg/L of saturation value)

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

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

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

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 C582192/C579784 C579786/C580573 Exp. Date 12/2016

IC	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	10.0	99	999	IC Time 0830 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 0840 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	10.6	99	998	CCV Time 1710 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 12-19-16			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: 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: 7.0 units Ricca - Lot #: 4508D35 *Exp Date: 08/30/17*	7.08	7.0	0805	DJA
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 ______ 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 12/20/16

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 Zobell's Lot No. 16F100570 Exp Date 12/2016		ORP Std. (Zobell's Soln.) YSI - Lot #: 15G100067 Exp Date: 07/13/17 Exp.	
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 ______ Initials ______ Std. Value ______ DJA 12/20/16
☐ 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: 7.0 °C Barometric Pressure 28.89 inches Hg Barometric Pressure 733.81 mm Hg Theoretical Value[1] NA mg/L		Mfg. Lot No. Exp Date DJA 12/20/16	
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
Result (mg/L) ______ Temp (°C) ______ Theoretical Value[1] NA
(CCV acceptable if ± 0.5 mg/L of saturation value)

CCV Time ______ Initials ______ CCV: Pass / Fail DJA 12/20/16
Result (mg/L) ______ Temp (°C) ______ Theoretical Value[1] ______
(CCV acceptable if ± 0.5 mg/L of saturation value)

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

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

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 C582192/C579784 C579786/C580573 Exp. Date 12/2016

IC	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	10.0	100	1001	IC Time 0840 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 0845 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)	
					CCV Time ______ Initials DJA CCV: Pass / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 12/20/16			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: 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-130 Labeled P130

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 46.84 Feet
Static water level measurement before purging 35.23 Feet
Static water level measurement at time of sampling 35.23 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 12-13-16 Water Column 11.61 Feet
Time Purged 1600-1630 One Casing Volume 1.9 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 6.0 Gallons

Field Sampling Data

Date Sampled 12-13-16
Time Sampled 1640
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.1 (units) D.O 8.2 (mg/l)
Spec. Cond. 1420 (µmhos/cm) Turbidity 2.6 (NTU)
Temp. 8.5 (°C) 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: 4° + 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)
1610	7.1	1420	8.5	8.3	NA	183	2.0
1620	7.1	1420	8.5	8.3	NA	184	4.0
1630	7.1	1420	8.5	8.2	NA	185	6.0

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-131 Labeled P131

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 48.55 Feet
Static water level measurement before purging 32.56 Feet
Static water level measurement at time of sampling 32.56 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 12-14-16 Water Column 15.99 Feet
Time Purged 0905-0944 One Casing Volume 2.6 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 7.8 Gallons

Field Sampling Data

Date Sampled 12-14-16
Time Sampled 0950
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 9.7 (mg/l)
Spec. Cond. 1280 (µmhos/cm) Turbidity 4.0 (NTU)
Temp. 8.5 (°C) Eh 174 (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 15
Sample Description: clear + odorless
Observations: DJA 12/14/16

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0918	7.4	1300	8.5	9.5	NA	170	2.6
0931	7.4	1290	8.5	9.6	NA	172	5.2
0944	7.4	1280	8.5	9.7	NA	174	7.8

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

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-132 Labeled P132

Inside Diameter 2 (inches) Key # ~~2106~~3212 ☒ Locked ☐ Not Locked Had to cut lock + replace with #3212

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet
Well depth 36.51 Feet
Static water level measurement before purging 27.62 Feet
Static water level measurement at time of sampling 27.62 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 12-14-16 Water Column 8.89 Feet
Time Purged 1400-1424 One Casing Volume 1.5 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 12-14-16
Time Sampled 1430
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 11.0 (mg/l)
Spec. Cond. 830 (µmhos/cm) Turbidity 35.1 (NTU)
Temp. 7.5 (°C) Eh 213 (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: 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)
1408	7.4	840	7.5	11.2	NA	212	1.6
1416	7.3	830	7.5	11.1	NA	213	3.2
1424	7.3	830	7.5	11.0	NA	213	4.8
				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

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-150 Labeled 806320

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 36.66 Feet
Static water level measurement before purging 29.75 Feet
Static water level measurement at time of sampling 29.75 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 12-13-16 Water Column 6.91 Feet
Time Purged 1400 - 1418 One Casing Volume 1.1 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 3.6 Gallons

Field Sampling Data

Date Sampled 12-13-16
Time Sampled 1430
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 9.9 (mg/l)
Spec. Cond. 1480 (µmhos/cm) Turbidity 3.3 (NTU)
Temp. 7.5 (°C) 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: 5° + sunny, wind W 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)
1406	7.6	1530	7.5	10.0	NA	165	1.2
1412	7.5	1500	7.5	9.9	NA	169	2.4
1418	7.5	1480	7.5	9.9	NA	170	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-151 Labeled 506315

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 20.16 Feet

Static water level measurement before purging 9.40 Feet

Static water level measurement at time of sampling 9.40 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 12-14-16 Water Column 10.76 Feet

Time Purged 1000-1027 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 1040

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 9.8 (mg/l)

Spec. Cond. 1020 (µmhos/cm) Turbidity 23.3 (NTU)

Temp. 9.5 (°C) Eh 174 (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 15

Sample Description: clear + odorless

Observations:

DJA 12-14-16

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1009	7.7	1000	10.0	10.0	NA	171	1.8
1018	7.7	1010	9.5	9.9	NA	173	3.6
1027	7.6	1020	9.5	9.8	NA	174	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

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-1524 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)	Specifc 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-153 Labeled 806314

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 23.63 Feet
Static water level measurement before purging 14.20 Feet
Static water level measurement at time of sampling 14.20 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 12-14-16 Water Column 9.43 Feet
Time Purged 1055-1119 One Casing Volume 1.5 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 12-14-16
Time Sampled 1130
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 9.8 (mg/l)
Spec. Cond. 830 (μmhos/cm) Turbidity 5.1 (NTU)
Temp. 10.5 (°C) Eh 172 (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)
1103	7.6	840	10.5	9.9	NA	165	1.6
1111	7.7	830	10.5	9.8	NA	170	3.2
1119	7.6	830	10.5	9.8	NA	172	4.8

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

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-154a Labeled 806316

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 49.53 Feet
Static water level measurement before purging 30.66 Feet
Static water level measurement at time of sampling 30.67 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 12-14-16 Water Column 18.87 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 12-14-16
Time Sampled 1240
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 8.2 (mg/l)
Spec. Cond. 1200 (µmhos/cm) Turbidity 18.0 (NTU)
Temp. 7.0 (°C) Eh 160 (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: 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)
1201	7.7	1230	7.0	8.3	NA	168	3.2
1217	7.7	1210	7.0	8.2	NA	162	6.4
1233	7.6	1200	7.0	8.2	NA	160	9.6

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

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-162 Labeled 822156

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 166 Feet estimate

Static water level measurement before purging 151 Feet estimate

Static water level measurement at time of sampling NA Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump

Date Purged 12-20-16 Water Column 15.00 Feet

Time Purged 1035-1056 One Casing Volume 2.5 Gallons

Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 12-20-16

Time Sampled 1110

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 8.1 (units) D.O 1.2 (mg/l)

Spec. Cond. 1000 (μmhos/cm) Turbidity 145 (NTU)

Temp. 10.0 (°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: 20° + sunny, wind W25

Sample Description: clear + odorless

Observations: DJA 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)
1042	8.2	1020	10.0	1.5	NA	98	2.8
1049	8.1	1010	10.0	1.4	NA	93	5.6
1056	8.1	1000	10.0	1.2	NA	88	8.4
		DJA 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-163 Labeled 822157

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 176 Feet estimate
Static water level measurement before purging 161 Feet estimate
Static water level measurement at time of sampling NA Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump
Date Purged 12-20-16 Water Column 15.00 Feet
Time Purged 1145-1212 One Casing Volume 2.5 Gallons
Pump Rate 0.3 [✓ GPM] / LPM Volume Purged 8.1 Gallons

Field Sampling Data

Date Sampled 12-20-16
Time Sampled 1220
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 8.0 (units) D.O 5.8 (mg/l)
Spec. Cond. 1160 (µmhos/cm) Turbidity 66.9 (NTU)
Temp. 10.0 (°C) Eh 84 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 20° + sunny, wind W 25
Sample Description: clear + odorless
Observations:
DJA 12-20-16

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1154	8.1	1180	10.0	5.9	NA	90	2.7
1203	8.0	1170	10.0	5.8	NA	87	5.4
1212	8.0	1160	10.0	5.8	NA	84	8.1

DJA 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-164 Labeled 822158

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 166 Feet estimate
Static water level measurement before purging 151 Feet estimate
Static water level measurement at time of sampling NA Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump
Date Purged 12-20-16 Water Column 15.00 Feet
Time Purged 1240-1307 One Casing Volume 2.5 Gallons
Pump Rate 0.3 [✓ GPM] / LPM Volume Purged 8.1 Gallons

Field Sampling Data

Date Sampled 12-20-16
Time Sampled 1320
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 8.0 (units) D.O 6.8 (mg/l)
Spec. Cond. 1100 (µmhos/cm) Turbidity 21.5 (NTU)
Temp. 10.0 (°C) Eh 77 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 20° + sunny, wind W25
Sample Description: clear + odorless
Observations: DJA 12-20-16

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1249	8.0	1150	10.0	6.9	NA	84	2.7
1258	8.0	1120	10.0	6.8	NA	80	5.4
1307	8.0	1100	10.0	6.8	NA	77	8.1
			DJA 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-165 Labeled 822159

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 40.32 Feet
Static water level measurement before purging 30.05 Feet
Static water level measurement at time of sampling 30.05 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 12-14-16 Water Column 10.27 Feet
Time Purged 1300-1327 One Casing Volume 1.7 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 12-14-16
Time Sampled 1335
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 10.0 (mg/l)
Spec. Cond. 790 (µmhos/cm) Turbidity 76.2 (NTU)
Temp. 8.0 (°C) Eh 172 (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: 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)
1309	7.6	780	8.0	10.3	NA	168	1.8
1318	7.6	780	8.0	10.1	NA	170	3.6
1327	7.6	790	8.0	10.0	NA	172	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

10 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 Pond No. 3 CCR Groundwater Monitoring System. HSD 1/10/18

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

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: MBL0225 FINAL 01 10 2017 0111

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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-150		MBL0192-02	Water	12/13/2016 14:30	12/16/2016 12:20
P-152a		MBL0192-03	Water	12/13/2016 15:40	12/16/2016 12:20
P-130		MBL0192-04	Water	12/13/2016 16:40	12/16/2016 12:20
P-131		MBL0192-05	Water	12/14/2016 9:50	12/16/2016 12:20
P-151		MBL0192-06	Water	12/14/2016 10:40	12/16/2016 12:20
P-153		MBL0192-07	Water	12/14/2016 11:30	12/16/2016 12:20
P-154a		MBL0192-08	Water	12/14/2016 12:40	12/16/2016 12:20
P-165		MBL0192-09	Water	12/14/2016 13:35	12/16/2016 12:20
P-132		MBL0192-10	Water	12/14/2016 14:30	12/16/2016 12:20
Duplicate		MBL0192-21	Water	12/15/2016 16:30	12/16/2016 12:20
P-162		MBL0225-08	Water	12/20/2016 11:10	12/21/2016 6:00
P-163		MBL0225-09	Water	12/20/2016 12:20	12/21/2016 6:00
P-164		MBL0225-10	Water	12/20/2016 13:20	12/21/2016 6:00

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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

Amended Report

Original Report ID: MBL0225 FINAL 01 10 2017 0111

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

P-150

MBL0192-02 (Water) - Chain of Custody Number: 2020054/2020056

Anions by Ion Chromatography

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Chloride	36.8	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 15:47	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 15:47	EPA 300.0	CRL
Sulfate	7.19	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 15:47	EPA 300.0	CRL

Wet Chemistry

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
pH	7.93		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 11:11	SM 4500-H+ B	CRL
Total Dissolved Solids	282	20.0	mg/L		1	BBL0358	12/19/16 10:10	12/19/16 10:10	SM 2540C	CRL

Total Metals by ICPMS

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Arsenic	0.548	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:51	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:51	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:51	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:51	EPA 200.8	HSD
Chromium	1.33	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:51	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:51	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:51	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:51	EPA 200.8	HSD
Selenium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:51	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 9:51	EPA 200.8	HSD

Total Metals by ICP

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Boron	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 8:51	EPA 200.7	HSD
Barium	0.0563	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 8:49	EPA 200.7	HSD
Calcium	59.6	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 8:49	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 8:49	EPA 200.7	HSD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

P-150

MBL0192-02 (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 14:47	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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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

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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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MBL0192-04 (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	1.26	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 16:28	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 16:28	EPA 300.0	CRL
Sulfate	9.43	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 16:28	EPA 300.0	CRL
Wet Chemistry										
pH	7.56		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 11:26	SM 4500-H+ B	CRL
Total Dissolved Solids	446	20.0	mg/L		1	BBL0358	12/19/16 10:10	12/19/16 10:10	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.538	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:13	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:13	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:13	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:13	EPA 200.8	HSD
Chromium	1.53	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:13	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:13	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:13	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:13	EPA 200.8	HSD
Selenium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:13	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:13	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 9:15	EPA 200.7	HSD
Barium	0.0991	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:14	EPA 200.7	HSD
Calcium	125	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:13	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:14	EPA 200.7	HSD

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	01/10/2018 12:32

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MBL0192-04 (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 14:50	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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MBL0192-05 (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	25.4	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 16:48	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 16:48	EPA 300.0	CRL
Sulfate	28.7	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 16:48	EPA 300.0	CRL
Wet Chemistry										
pH	7.93		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 11:33	SM 4500-H+ B	CRL
Total Dissolved Solids	342	20.0	mg/L		1	BBL0358	12/19/16 10:10	12/19/16 10:10	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.532	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:18	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:18	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:18	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:18	EPA 200.8	HSD
Chromium	1.11	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:18	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:18	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:18	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:18	EPA 200.8	HSD
Selenium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:18	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:18	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 9:20	EPA 200.7	HSD
Barium	0.0778	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:19	EPA 200.7	HSD
Calcium	78.3	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:19	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:19	EPA 200.7	HSD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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MBL0192-05 (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 14:52	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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MBL0192-06 (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	24.4	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 17:09	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 17:09	EPA 300.0	CRL
Sulfate	20.1	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 17:09	EPA 300.0	CRL
Wet Chemistry										
pH	8.05		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 11:40	SM 4500-H+ B	CRL
Total Dissolved Solids	242	20.0	mg/L		1	BBL0358	12/19/16 10:10	12/19/16 10:10	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.520	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:23	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:23	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:23	EPA 200.8	HSD
Cobalt	1.34	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:23	EPA 200.8	HSD
Chromium	2.01	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:23	EPA 200.8	HSD
Molybdenum	0.588	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:23	EPA 200.8	HSD
Lead	0.503	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:23	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:23	EPA 200.8	HSD
Selenium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:23	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:23	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 9:25	EPA 200.7	HSD
Barium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:24	EPA 200.7	HSD
Calcium	60.0	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:24	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:24	EPA 200.7	HSD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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MBL0192-06 (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 14:53	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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MBL0192-07 (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 17:29	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 17:29	EPA 300.0	CRL
Sulfate	2.95	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 17:29	EPA 300.0	CRL
Wet Chemistry										
pH	8.19		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 11:46	SM 4500-H+ B	CRL
Total Dissolved Solids	110	20.0	mg/L		1	BBL0358	12/19/16 10:10	12/19/16 10:10	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.630	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:29	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:29	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:29	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:29	EPA 200.8	HSD
Chromium	2.69	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:29	EPA 200.8	HSD
Molybdenum	0.799	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:29	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:29	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:29	EPA 200.8	HSD
Selenium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:29	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:29	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 9:30	EPA 200.7	HSD
Barium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:29	EPA 200.7	HSD
Calcium	28.1	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:29	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:29	EPA 200.7	HSD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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MBL0192-07 (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 14:55	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

P-154a

MBL0192-08 (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	28.5	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 17:50	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 17:50	EPA 300.0	CRL
Sulfate	35.1	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 17:50	EPA 300.0	CRL
Wet Chemistry										
pH	8.02		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 11:54	SM 4500-H+ B	CRL
Total Dissolved Solids	302	20.0	mg/L		1	BBL0358	12/19/16 10:10	12/19/16 10:10	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.956	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:34	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:34	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:34	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:34	EPA 200.8	HSD
Chromium	2.05	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:34	EPA 200.8	HSD
Molybdenum	1.03	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:34	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:34	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:34	EPA 200.8	HSD
Selenium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:34	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:34	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 9:35	EPA 200.7	HSD
Barium	0.0513	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:34	EPA 200.7	HSD
Calcium	71.8	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:34	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:34	EPA 200.7	HSD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

P-154a

MBL0192-08 (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 14:57	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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MBL0192-09 (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	1.24	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 18:10	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 18:10	EPA 300.0	CRL
Sulfate	9.35	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 18:10	EPA 300.0	CRL
Wet Chemistry										
pH	7.97		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 12:01	SM 4500-H+ B	CRL
Total Dissolved Solids	214	20.0	mg/L		1	BBL0358	12/19/16 10:10	12/19/16 10:10	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.607	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:39	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:39	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:39	EPA 200.8	HSD
Cobalt	0.704	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:39	EPA 200.8	HSD
Chromium	3.23	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:39	EPA 200.8	HSD
Molybdenum	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:39	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:39	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:39	EPA 200.8	HSD
Selenium	0.604	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:39	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:39	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 9:40	EPA 200.7	HSD
Barium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:39	EPA 200.7	HSD
Calcium	60.6	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:39	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:39	EPA 200.7	HSD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

P-165

MBL0192-09 (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 14:58	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

P-132

MBL0192-10 (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	3.34	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 18:30	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 18:30	EPA 300.0	CRL
Sulfate	95.0	1.00	mg/L		1	BBL0397	12/20/16 9:12	12/20/16 18:30	EPA 300.0	CRL
Wet Chemistry										
pH	7.84		pH Units	M_TTT	1	BBL0360	12/19/16 8:41	12/19/16 12:08	SM 4500-H+ B	CRL
Total Dissolved Solids	438	20.0	mg/L		1	BBL0358	12/19/16 10:10	12/19/16 10:10	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.547	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:45	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:45	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:45	EPA 200.8	HSD
Cobalt	0.537	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:45	EPA 200.8	HSD
Chromium	7.29	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:45	EPA 200.8	HSD
Molybdenum	1.16	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:45	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:45	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:45	EPA 200.8	HSD
Selenium	1.22	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:45	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0395	12/20/16 15:06	12/21/16 10:45	EPA 200.8	HSD
Total Metals by ICP										
Boron	0.0616	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:45	EPA 200.7	HSD
Barium	0.0547	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:44	EPA 200.7	HSD
Calcium	107	0.500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:44	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0376	12/20/16 14:56	12/21/16 9:44	EPA 200.7	HSD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

P-132

MBL0192-10 (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 15:00	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco CCR

Project Manager: Charles A Donkers

Reported:
01/10/2018 12:32

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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MBL0225-08 (Water) - Chain of Custody Number: 2020055

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	28.2	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 22:03	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 22:03	EPA 300.0	CRL
Sulfate	84.4	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 22:03	EPA 300.0	CRL
Wet Chemistry										
pH	7.96		pH Units	M_TTT	1	BBL0417	12/21/16 9:29	12/21/16 11:18	SM 4500-H+ B	CRL
Total Dissolved Solids	410	20.0	mg/L		1	BBL0439	12/22/16 10:11	12/22/16 10:11	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	1.67	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:22	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:22	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:22	EPA 200.8	HSD
Cobalt	2.57	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:22	EPA 200.8	HSD
Chromium	28.4	1.00	ug/L	M_B-01	1	BBL0505	12/28/16 10:07	1/5/17 10:22	EPA 200.8	HSD
Molybdenum	17.2	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:22	EPA 200.8	HSD
Lead	1.19	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:22	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:22	EPA 200.8	HSD
Selenium	2.30	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:22	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:22	EPA 200.8	HSD
Total Metals by ICP										
Boron	0.246	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:07	EPA 200.7	HSD
Barium	0.0890	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:05	EPA 200.7	HSD
Calcium	75.2	1.25	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:05	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:05	EPA 200.7	HSD

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	01/10/2018 12:32

P-162

MBL0225-08 (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 16:05	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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MBL0225-09 (Water) - Chain of Custody Number: 2020055

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	32.3	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 22:24	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 22:24	EPA 300.0	CRL
Sulfate	225	5.00	mg/L		5	BBL0416	12/21/16 9:14	12/22/16 7:02	EPA 300.0	CRL
Wet Chemistry										
pH	7.95		pH Units	M_TTT	1	BBL0417	12/21/16 9:29	12/21/16 11:25	SM 4500-H+ B	CRL
Total Dissolved Solids	636	20.0	mg/L		1	BBL0439	12/22/16 10:11	12/22/16 10:11	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.790	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:27	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:27	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:27	EPA 200.8	HSD
Cobalt	1.29	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:27	EPA 200.8	HSD
Chromium	15.7	1.00	ug/L	M_B-01	1	BBL0505	12/28/16 10:07	1/5/17 10:27	EPA 200.8	HSD
Molybdenum	2.84	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:27	EPA 200.8	HSD
Lead	0.592	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:27	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:27	EPA 200.8	HSD
Selenium	66.3	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:27	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:27	EPA 200.8	HSD
Total Metals by ICP										
Boron	0.663	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:12	EPA 200.7	HSD
Barium	0.0951	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:11	EPA 200.7	HSD
Calcium	145	1.25	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:11	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:11	EPA 200.7	HSD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

P-163

MBL0225-09 (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 16:11	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

P-164

MBL0225-10 (Water) - Chain of Custody Number: 2020055

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	8.92	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 22:44	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 22:44	EPA 300.0	CRL
Sulfate	48.9	1.00	mg/L		1	BBL0416	12/21/16 9:14	12/21/16 22:44	EPA 300.0	CRL
Wet Chemistry										
pH	8.01		pH Units	M_TTT	1	BBL0417	12/21/16 9:29	12/21/16 11:32	SM 4500-H+ B	CRL
Total Dissolved Solids	292	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 10:43	EPA 200.8	HSD
Beryllium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:43	EPA 200.8	HSD
Cadmium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:43	EPA 200.8	HSD
Cobalt	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:43	EPA 200.8	HSD
Chromium	5.61	1.00	ug/L	M_B-01	1	BBL0505	12/28/16 10:07	1/5/17 10:43	EPA 200.8	HSD
Molybdenum	0.510	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:43	EPA 200.8	HSD
Lead	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:43	EPA 200.8	HSD
Antimony	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:43	EPA 200.8	HSD
Selenium	3.32	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:43	EPA 200.8	HSD
Thallium	< 0.500	0.500	ug/L		1	BBL0505	12/28/16 10:07	1/5/17 10:43	EPA 200.8	HSD
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:17	EPA 200.7	HSD
Barium	< 0.0500	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:16	EPA 200.7	HSD
Calcium	78.8	1.25	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:16	EPA 200.7	HSD
Lithium	< 0.0500	0.0500	mg/L		1	BBL0504	12/28/16 10:05	1/4/17 12:16	EPA 200.7	HSD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

P-164

MBL0225-10 (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 16:13	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.

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			

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	

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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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	

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							

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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	

Amended Report

Original Report ID: MBL0225 FINAL 01 10 2017 0111

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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			

Total Metals by ICPMS - Quality Control

Batch BBL0395 - EPA 200.2, EPA 3005

Matrix Spike Dup (BBL0395-MSD1) **Source: MBL0192-04** Prepared: 12/20/2016 Analyzed: 12/21/2016

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

Total Metals by ICPMS - Quality Control

Batch BBL0413 - EPA 200.2, EPA 3005

LCS (BBL0413-BS1) Prepared: 12/21/2016 Analyzed: 12/22/2016

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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	

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	

Total Metals by ICPMS - Quality Control

Batch BBL0413 - EPA 200.2, EPA 3005

Matrix Spike Dup (BBL0413-MSD2) **Source: MBL0192-18** Prepared: 12/21/2016 Analyzed: 12/22/2016

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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	

Total Metals by ICP - Quality Control

Batch BBL0376 - EPA 200.2, EPA 3005

Blank (BBL0376-BLK1) Prepared: 12/20/2016 Analyzed: 12/21/2016

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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			

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			

Total Metals by ICP - Quality Control

Batch BBL0411 - EPA 200.2, EPA 3005

Duplicate (BBL0411-DUP1) **Source: MBL0192-15** Prepared: 12/21/2016 Analyzed: 12/22/2016

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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	

Total Metals by ICP - Quality Control

Batch BBL0411 - EPA 200.2, EPA 3005

Matrix Spike Dup (BBL0411-MSD2) **Source: MBL0192-16** Prepared: 12/21/2016 Analyzed: 12/22/2016

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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			

Amended Report

Total Metals by ICP - Quality Control

Batch BBL0504 - EPA 200.2, EPA 3005

Matrix Spike Dup (BBL0504-MSD1) **Source: MBL0225-02** Prepared: 12/28/2016 Analyzed: 01/04/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:32

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:

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 - Dec. 2016
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	Rinse	WT				12/13/16	1350		4	1	1	2							✓		
2	P-150	↓				↓	1430		4	1	1	2							✓		
3	P-152 d	↓				↓	1540		4	1	1	2							✓		
4	P-130	↓				↓	1640		4	1	1	2							✓		
5	P-131	WT				12/14/16	0950		4	1	1	2							✓		
6	P-151	↓				↓	1040		4	1	1	2							✓		
7	P-153	↓				↓	1130		4	1	1	2							✓		
8	P-154 d	↓				↓	1240		4	1	1	2							✓		
9	P-165	↓				↓	1335		4	1	1	2							✓		
10	P-132	↓				↓	1430		4	1	1	2							✓		
11	P-17	↓				↓	1600		4	1	1	2							✓		
12	P-158	↓				↓	1650		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	12/16/16	1200		12/16/16	12:20	1	Y	N	Y

SAMPLER NAME AND SIGNATURE

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

ORIGINAL

2.6°C

*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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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 CCR - Dec. 2016
Project Number:

Section C
Invoice Information:
Attention: Steve Davis
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

Page: 1 of 1

2020055

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

Requested Analysis Filtered (Y/N)

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	Y/N ↓Analysis Test↓	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		12/20/16	1450	3.5°C	X	N	X
							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): 12/20/16

*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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IRon M400841

pHstrips MB00508

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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

2020056

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-Dec. 2016
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)

				COLLECTED						Preservatives								Y/N		
				COMPOSITE START		COMPOSITE END/GRAB														
ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	↓Analysis Test↓	CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-157	WT				12/5/16	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-73d-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

IRgun M400841
pHstrips MB00508

ORIGINAL

2.6 °C

SAMPLER NAME AND SIGNATURE

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

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.

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

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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

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

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

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

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

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

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	

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	

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	

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	

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	

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	

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 16-1407 Xcel-SchercoCCR 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	

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	

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	

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.

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	

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.

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	

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.

QUALITY CONTROL - RADIOCHEMISTRY

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

QC Batch: 246753
QC Batch Method: EPA 903.1
Associated Lab Samples: 10373901025

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

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	

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	

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.

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

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		

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		

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 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: 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

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	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-226EPA903.1	RA-228EPA904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-150	WT				12/13/16	1430		2			2							✓	✓		001
2	P-1524						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																						122116

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
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 5.9 4.9 6.2 5.8 7.1	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): 12-14-16

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms an 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 / Analytica quest 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-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	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-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																						

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① client needs to analyze for: Radium226+228pCi/L combined.	David Anderson / Pace	12/21/16	0900	Pace	12/21/16	9:00	6.8 5.9 4.9 6.2 5.8 7.1	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): 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.

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: 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

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-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	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 5.9 4.9 6.2 5.8 7.1	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): 12/20/16

*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.

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

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. ☒HNO₃ ☐H₂SO₄ ☐NaOH Positive for Res. Chlorine? Y N Sample # 2/2 01-32
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, NaOH >9 Sulfide, NaOH>12 Cyanide) BM 12/21/16	~~☒Yes~~	☒No	☐N/A	
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐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#:3020647

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

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3	Requested Analysis 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	At Pace	12/21/16 1126	Alyma R Mahoney 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 #: 7180926034579

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:	✓			5.
-Includes date/time/ID/Analysis 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.
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

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	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 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 2/20/17

~~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: 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. (Zobell's)		Mfg. ORP Std. (Zobell's)	
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)
238	20.0	240	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) ______ CCV: Pass / Fail~~
☐ Calibration Standard
☐ Secondary Source Standard
(CCV acceptable if ± 10 mV of standard value)

DJA 2/20/17

~~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: 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 (%)	ICV Meter Result (%)
97	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 ______ (%) CCV: Pass / Fail~~
(CCV acceptable if ± 2% of Calibration Value)

DJA 2/20/17

~~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 Andersen

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

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 C582192/C579784 Lot No C579786/C580573 Exp. Date 12/2016

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

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.03	9.9	99	997	ICV Time 0825 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)	
	6.03	9.9	98	997	CCV Time 1745 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 2/20/17			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: 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

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	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)

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)
1003	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)
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 2/21/17 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: 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)	
Calibration Std. Value (mV)	260	Secondary Source Std. Value (mV)	260
Mfg.	ORP Std. (Zobell's)	Mfg.	ORP Std. (Zobell's)
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)
261	3.0	260	3.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0730/0735

Initials DJA

ICV: [✓ Pass] / Fail

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) ______ CCV: Pass / Fail
(CCV acceptable if ± 10 mV of standard value)

DJA 2/21/17

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:	15.0 (°C)	Ambient Temp:	14.0 (°C)
Barometric Pressure	28.82 (in. Hg)	Barometric Pressure	28.82 (in. Hg)
Barometric Pressure	732.03 (mm Hg)	Barometric Pressure	732.03 (mm Hg)
Calibration Value[1]	96 (%)	Calibration Value[1]	96 (%)
IC Meter Result (%)	96	ICV Meter Result (%)	95

IC/ICV Time 0705 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 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 ______ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 2/21/17

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: 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 C582192/C579784 Lot No 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 2/22/17 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: 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. (Zobell's)	Mfg.	ORP Std. (Zobell's)
Lot No.	YSI#156100067	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
Result (mV) 254 Temp (°C) 9.0 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 2/22/17

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:	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 (%)	96	ICV Meter Result (%)	96

IC/ICV Time 0700 Initials DJA

DO Meter ID YSI Sonde #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 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 ______ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 2/22/17

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: 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

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 C582192/C579784 C579786/C580573 Exp. Date 12/2016

IC	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	9.9	98	998	IC Time 0745 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.8	98	997	ICV Time 0750 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	9.8	99	996	CCV Time 1800 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 2/22/17

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: 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 (%) 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*	7.20	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)		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)
1004	3.0	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 ____   Std. Value ____   ☐ High Standard ☐ Low Standard
Result (µS/cm) ____   Temp (°C) 2/23/17   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: 2/23/17

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. (Zobell's)		Mfg. ORP Std. (Zobell's)	
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)
261	3.0	264	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) ______ CCV: Pass / Fail
(CCV acceptable if ± 10 mV of standard value)

DJA 2/23/17

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: 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 (%)	ICV Meter Result (%)
97	96

IC/ICV Time 0640 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 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 ______ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 2/23/17

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: 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

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 C582192/C579784 C579786/C580573 Exp. Date 12/2016

IC	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	9.8	98	997	IC Time 0720 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.8	97	998	ICV Time 0725 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	9.8	98	997	CCV Time 1225 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 2/23/17			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: 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-130 Labeled P130

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 46.84 Feet
Static water level measurement before purging 35.75 Feet
Static water level measurement at time of sampling 35.75 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 2-21-17 Water Column 11.09 Feet
Time Purged 1640-1707 One Casing Volume 1.8 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 2-21-17
Time Sampled 1720
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 8.4 (mg/l)
Spec. Cond. 680 (µmhos/cm) Turbidity 1.7 (NTU)
Temp. 9.5 (°C) (ORP) 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: 54° + sunny, 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)
1649	7.2	690	9.0	8.5	NA	65	1.8
1658	7.2	680	9.5	8.4	NA	66	3.6
1707	7.2	680	9.5	8.4	NA	66	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

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-131 Labeled P131

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 48.55 Feet

Static water level measurement before purging 33.00 Feet

Static water level measurement at time of sampling 33.00 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-22-17 Water Column 15.55 Feet

Time Purged 1645-1724 One Casing Volume 2.5 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 7.8 Gallons

Field Sampling Data

Date Sampled 2-22-17

Time Sampled 1730

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 9.4 (mg/l)

Spec. Cond. 510 (µmhos/cm) Turbidity 2.4 (NTU)

Temp. 8.5 (°C) (ORP) Eh 35 (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 N5

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)
1658	7.7	520	8.5	9.4	NA	31	2.6
1711	7.6	510	8.5	9.4	NA	33	5.2
1724	7.6	510	8.5	9.4	NA	35	7.8
			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-132 Labeled P132

Inside Diameter 2 (inches) Key # ~~2106~~ 3212 ☒ 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	36.51	Feet
Static water level measurement before purging	28.12	Feet
Static water level measurement at time of sampling	28.12	Feet
Static Water Level Elevation Before Purging	NA	Feet

Purge Method dedicated bladder pump

Date Purged 2-22-17 Water Column 8.39 Feet

Time Purged 1415-1436 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 1445

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 9.8 (mg/l)

Spec. Cond. 600 (µmhos/cm) Turbidity 19.6 (NTU)

Temp. 9.5 (°C) (ORP) Eh 50 (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° + sunny, 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)
1422	7.5	610	9.5	9.9	NA	47	1.4
1429	7.5	600	9.5	9.8	NA	49	2.8
1436	7.4	600	9.5	9.8	NA	50	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-150 Labeled 806320

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 36.66 Feet

Static water level measurement before purging 30.59 Feet

Static water level measurement at time of sampling 30.59 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-23-17 Water Column 6.07 Feet

Time Purged 0930-0945 One Casing Volume 1.0 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 3.0 Gallons

Field Sampling Data

Date Sampled 2-23-17

Time Sampled 0950

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 11.0 (mg/l)

Spec. Cond. 810 (μmhos/cm) Turbidity 9.6 (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 N 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)
0935	7.8	820	9.0	11.2	NA	49	1.0
0940	7.8	810	9.0	11.0	NA	51	2.0
0945	7.7	810	9.0	11.0	NA	53	3.0

DJA 2/23/17

Samples chilled immediately after collection: ☒ Yes ☐ Other

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-151 Labeled 806315

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 20.16 Feet

Static water level measurement before purging 9.88 Feet

Static water level measurement at time of sampling 9.88 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-23-17

Time Purged 1125-1152

Pump Rate 0.2 [✓ GPM] / LPM

Water Column 10.28 Feet

One Casing Volume 1.7 Gallons

Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 2-23-17

Time Sampled 1200

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 10.7 (mg/l)

Spec. Cond. 650 (µmhos/cm) Turbidity 15.7 (NTU)

Temp. 6.5 (°C) (ORP) Eh 30 (mV)

Other NA

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

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

Weather Conditions During Sampling: 35° + partly cloudy, wind N10

Sample Description: clear + odorless

Observations:

DJA 2/23/17

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1134	7.7	660	6.5	10.8	NA	33	1.8
1143	7.7	650	6.5	10.7	NA	31	3.6
1152	7.7	650	6.5	10.7	NA	30	5.4
		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-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-153 Labeled 806314

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 23.63 Feet

Static water level measurement before purging 14.74 Feet

Static water level measurement at time of sampling 14.74 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-23-17

Time Purged 0730-0754

Pump Rate 0.2 [✓ GPM] / LPM

Water Column 8.89 Feet

One Casing Volume 1.5 Gallons

Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 2-23-17

Time Sampled 0810

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 10.9 (mg/l)

Spec. Cond. 390 (μmhos/cm) Turbidity 6.1 (NTU)

Temp. 8.0 (°C) (ORP) Eh 49 (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° + sunny, wind N10

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)
0738	7.8	390	8.0	11.3	NA	44	1.6
0746	7.8	390	8.0	11.1	NA	46	3.2
0754	7.8	390	8.0	10.9	NA	49	4.8

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-154d   Labeled 806316

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 49.53 Feet

Static water level measurement before purging 31.10 Feet

Static water level measurement at time of sampling 31.10 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-22-17   Water Column 18.43 Feet

Time Purged 1455-1540   One Casing Volume 3.0 Gallons

Pump Rate 0.2 [✓ GPM] / LPM   Volume Purged 9.0 Gallons

Field Sampling Data

Date Sampled 2-22-17

Time Sampled 1550

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.9 (units)   D.O 6.0 (mg/l)

Spec. Cond. 510 (µmhos/cm)   Turbidity 4.6 (NTU)

Temp. 8.5 (°C)   (ORP) Eh 24 (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° + sunny, 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)
1510	8.0	520	8.5	6.3	NA	31	3.0
1525	8.0	510	8.5	6.1	NA	26	6.0
1540	7.9	510	8.5	6.0	NA	24	9.0

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-162 Labeled 822156

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 166 Feet estimate

Static water level measurement before purging 151 Feet estimate

Static water level measurement at time of sampling NA Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump

Date Purged 2/22/17 Water Column 15.00 Feet

Time Purged 1605-1626 One Casing Volume 2.5 Gallons

Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 2/22/17

Time Sampled 1635

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 8.1 (units) D.O 2.6 (mg/l)

Spec. Cond. 590 (µmhos/cm) Turbidity 10.7 (NTU)

Temp. 9.5 (°C) (ORP) Eh 3 (mV)

Other NA

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

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

Weather Conditions During Sampling: 39° + sunny, 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)
1612	8.1	600	9.5	3.0	NA	8	2.8
1619	8.1	590	9.5	2.7	NA	6	5.6
1626	8.1	590	9.5	2.6	NA	3	8.4
			~~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-163 Labeled 822/57

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 176 Feet estimate
Static water level measurement before purging 161 Feet estimate
Static water level measurement at time of sampling NA Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump
Date Purged 2/22/17 Water Column 15.00 Feet
Time Purged 0820-0847 One Casing Volume 2.5 Gallons
Pump Rate 0.3 [✓ GPM] / LPM Volume Purged 8.1 Gallons

Field Sampling Data

Date Sampled 2/22/17
Time Sampled 0900
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 5.4 (mg/l)
Spec. Cond. 920 (μmhos/cm) Turbidity 2.9 (NTU)
Temp. 9.0 (°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: 40° + 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)
0829	7.8	930	8.5	5.6	NA	47	2.7
0838	7.7	920	8.5	5.5	NA	46	5.4
0847	7.7	920	9.0	5.4	NA	46	8.1

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-164 Labeled 822158

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 166 Feet estimate
Static water level measurement before purging 151 Feet estimate
Static water level measurement at time of sampling NA Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 2-22-17 Water Column 15.00 Feet
Time Purged 0915-0942 One Casing Volume 2.5 Gallons
Pump Rate 0.3 [✓ GPM] / LPM Volume Purged 8.1 Gallons

Field Sampling Data

Date Sampled 2-22-17
Time Sampled 0950
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 7.4 (mg/l)
Spec. Cond. 630 (µmhos/cm) Turbidity 2.5 (NTU)
Temp. 8.5 (°C) (ORP) Eh 28 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 41° + 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)
0924	7.6	660	8.5	7.5	NA	31	2.7
0933	7.7	646	8.5	7.4	NA	30	5.4
0942	7.7	630	8.5	7.4	NA	28	8.1

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-165 Labeled 822159

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 40.32 Feet

Static water level measurement before purging 30.48 Feet

Static water level measurement at time of sampling 30.48 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 2-22-17 Water Column 9.84 Feet

Time Purged 1330-1354 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 1400

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 9.3 (mg/l)

Spec. Cond. 550 (µmhos/cm) Turbidity 13.6 (NTU)

Temp. 10.0 (°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: 50° + sunny, 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)
1338	7.7	550	10.0	9.4	NA	36	1.6
1346	7.6	550	10.0	9.3	NA	37	3.2
1354	7.6	550	10.0	9.3	NA	39	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

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

10 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 Pond No. 3 CCR Groundwater Monitoring System. HSD 1/10/18

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

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: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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-130		MCB0211-19	Water	02/21/2017 17:20	02/23/2017 13:49
P-163		MCB0211-20	Water	02/22/2017 9:00	02/23/2017 13:49
P-164		MCB0211-21	Water	02/22/2017 9:50	02/23/2017 13:49
P-165		MCB0211-25	Water	02/22/2017 14:00	02/23/2017 13:49
P-132		MCB0211-26	Water	02/22/2017 14:45	02/23/2017 13:49
P-154a		MCB0211-27	Water	02/22/2017 15:50	02/23/2017 13:49
P-162		MCB0211-28	Water	02/22/2017 16:35	02/23/2017 13:49
P-131		MCB0211-29	Water	02/22/2017 17:30	02/23/2017 13:49
P-153		MCB0211-30	Water	02/23/2017 8:10	02/23/2017 13:49
Duplicate		MCB0211-31	Water	02/23/2017 8:10	02/23/2017 13:49
P-150		MCB0211-32	Water	02/23/2017 9:50	02/23/2017 13:49
P-152a		MCB0211-33	Water	02/23/2017 11:10	02/23/2017 13:49
P-151		MCB0211-34	Water	02/23/2017 12:00	02/23/2017 13:49

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-19 (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	1.20	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 13:45	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 13:45	EPA 300.0	CRL
Sulfate	12.2	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 13:45	EPA 300.0	CRL
Wet Chemistry										
pH	7.53		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 11:31	SM 4500-H+ B	CRL
Total Dissolved Solids	486	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 12:27	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:27	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:27	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:27	EPA 200.8	CRL
Chromium	0.998	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:27	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:27	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:27	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:27	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:27	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:27	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 12:20	EPA 200.7	HRD
Barium	0.0948	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:19	EPA 200.7	HRD
Calcium	125	0.500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:19	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:19	EPA 200.7	HRD

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	01/10/2018 12:54

P-130

MCB0211-19 (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 13:35	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-20 (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	24.0	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 14:06	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 14:06	EPA 300.0	CRL
Sulfate	298	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 14:06	EPA 300.0	CRL
Wet Chemistry										
pH	7.57		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 11:39	SM 4500-H+ B	CRL
Total Dissolved Solids	948	20.0	mg/L		1	BCB0468	2/27/17 9:06	2/27/17 9:06	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.606	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:12	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:12	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:12	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:12	EPA 200.8	CRL
Chromium	18.5	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:12	EPA 200.8	CRL
Molybdenum	1.34	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:12	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:12	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:12	EPA 200.8	CRL
Selenium	75.5	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:12	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCB0503	2/28/17 8:37	3/6/17 12:12	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.38	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:25	EPA 200.7	HRD
Barium	0.114	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:24	EPA 200.7	HRD
Calcium	198	0.500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:24	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCB0502	2/28/17 8:27	3/10/17 12:24	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

P-163

MCB0211-20 (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 13:58	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

P-164

MCB0211-21 (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	10.0	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 14:26	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 14:26	EPA 300.0	CRL
Sulfate	49.4	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 14:26	EPA 300.0	CRL
Wet Chemistry										
pH	8.04		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 11:52	SM 4500-H+ B	CRL
Total Dissolved Solids	320	20.0	mg/L		1	BCB0498	2/28/17 9:08	2/28/17 9:08	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.547	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:13	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:13	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:13	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:13	EPA 200.8	CRL
Chromium	4.45	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:13	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:13	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:13	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:13	EPA 200.8	CRL
Selenium	2.79	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:13	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:13	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 13:26	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:25	EPA 200.7	HRD
Calcium	75.2	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:25	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:25	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

P-164

MCB0211-21 (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 14:00	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

P-165

MCB0211-25 (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	1.42	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 17:31	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 17:31	EPA 300.0	CRL
Sulfate	14.9	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 17:31	EPA 300.0	CRL
Wet Chemistry										
pH	8.02		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 12:20	SM 4500-H+ B	CRL
Total Dissolved Solids	238	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 9:43	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:43	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:43	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:43	EPA 200.8	CRL
Chromium	1.73	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:43	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:43	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:43	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:43	EPA 200.8	CRL
Selenium	0.737	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:43	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:43	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 13:57	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:56	EPA 200.7	HRD
Calcium	59.3	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:56	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 13:56	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-25 (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 14:10	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-26 (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	3.74	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 17:52	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 17:52	EPA 300.0	CRL
Sulfate	97.7	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 17:52	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 12:27	SM 4500-H+ B	CRL
Total Dissolved Solids	436	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 9:48	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:48	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:48	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:48	EPA 200.8	CRL
Chromium	2.45	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:48	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:48	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:48	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:48	EPA 200.8	CRL
Selenium	1.12	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:48	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:48	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0687	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:02	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:01	EPA 200.7	HRD
Calcium	104	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:01	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:01	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-26 (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 14:12	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-27 (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	23.7	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 18:12	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 18:12	EPA 300.0	CRL
Sulfate	34.1	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 18:12	EPA 300.0	CRL
Wet Chemistry										
pH	8.05		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 12:34	SM 4500-H+ B	CRL
Total Dissolved Solids	286	20.0	mg/L		1	BCB0498	2/28/17 9:08	2/28/17 9:08	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.810	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:53	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:53	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:53	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:53	EPA 200.8	CRL
Chromium	0.811	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:53	EPA 200.8	CRL
Molybdenum	0.949	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:53	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:53	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:53	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:53	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:53	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 14:07	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:06	EPA 200.7	HRD
Calcium	67.8	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:06	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:06	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-27 (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 14:14	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-28 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Anions by Ion Chromatography

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Chloride	27.9	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 18:32	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 18:32	EPA 300.0	CRL
Sulfate	82.2	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 18:32	EPA 300.0	CRL

Wet Chemistry

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
pH	8.03		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 12:41	SM 4500-H+ B	CRL
Total Dissolved Solids	430	20.0	mg/L		1	BCB0498	2/28/17 9:08	2/28/17 9:08	SM 2540C	CRL

Total Metals by ICPMS

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Arsenic	0.887	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:58	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:58	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:58	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:58	EPA 200.8	CRL
Chromium	4.25	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:58	EPA 200.8	CRL
Molybdenum	13.2	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:58	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:58	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:58	EPA 200.8	CRL
Selenium	1.98	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:58	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 9:58	EPA 200.8	CRL

Total Metals by ICP

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Boron	0.225	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:12	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:11	EPA 200.7	HRD
Calcium	62.1	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:11	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:11	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-28 (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 14:15	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-29 (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	28.1	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 18:53	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 18:53	EPA 300.0	CRL
Sulfate	29.0	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 18:53	EPA 300.0	CRL
Wet Chemistry										
pH	7.98		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 12:47	SM 4500-H+ B	CRL
Total Dissolved Solids	300	20.0	mg/L		1	BCB0498	2/28/17 9:08	2/28/17 9:08	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.562	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:03	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:03	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:03	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:03	EPA 200.8	CRL
Chromium	0.767	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:03	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:03	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:03	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:03	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:03	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:03	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 14:17	EPA 200.7	HRD
Barium	0.0693	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:16	EPA 200.7	HRD
Calcium	73.7	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:16	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:16	EPA 200.7	HRD

Amended Report

Original Report ID: MCB0211 Xcel General Report FINAL 03 15 2017 1318 03 15 2017 0313

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-29 (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 14:17	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-30 (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 19:13	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 19:13	EPA 300.0	CRL
Sulfate	3.40	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 19:13	EPA 300.0	CRL
Wet Chemistry										
pH	8.20		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 12:53	SM 4500-H+ B	CRL
Total Dissolved Solids	104	20.0	mg/L		1	BCB0498	2/28/17 9:08	2/28/17 9:08	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.648	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:08	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:08	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:08	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:08	EPA 200.8	CRL
Chromium	0.726	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:08	EPA 200.8	CRL
Molybdenum	0.549	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:08	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:08	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:08	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:08	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:08	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 14:22	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:21	EPA 200.7	HRD
Calcium	25.3	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:21	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:21	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-30 (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 14:19	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

P-150

MCB0211-32 (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	28.3	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 19:54	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 19:54	EPA 300.0	CRL
Sulfate	6.74	1.00	mg/L		1	BCC0035	3/2/17 6:31	3/2/17 19:54	EPA 300.0	CRL
Wet Chemistry										
pH	8.05		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 13:12	SM 4500-H+ B	CRL
Total Dissolved Solids	212	20.0	mg/L		1	BCC0002	3/1/17 9:29	3/1/17 9:29	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.566	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:18	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:18	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:18	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:18	EPA 200.8	CRL
Chromium	0.694	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:18	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:18	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:18	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:18	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:18	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:18	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 14:33	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:31	EPA 200.7	HRD
Calcium	46.8	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:31	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:31	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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MCB0211-32 (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 14:22	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

P-152a

MCB0211-33 (Water) - Chain of Custody Number: 2052858/2052859/2052874

Anions by Ion Chromatography

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
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

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
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

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
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

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

P-151

MCB0211-34 (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	28.5	1.00	mg/L		1	BCC0087	3/6/17 7:52	3/6/17 12:25	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCC0087	3/6/17 7:52	3/6/17 12:25	EPA 300.0	CRL
Sulfate	24.5	1.00	mg/L		1	BCC0087	3/6/17 7:52	3/6/17 12:25	EPA 300.0	CRL
Wet Chemistry										
pH	8.07		pH Units	M_TTT	1	BCB0454	2/24/17 8:26	2/24/17 13:26	SM 4500-H+ B	CRL
Total Dissolved Solids	252	20.0	mg/L		1	BCC0002	3/1/17 9:29	3/1/17 9:29	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.516	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:38	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:38	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:38	EPA 200.8	CRL
Cobalt	1.11	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:38	EPA 200.8	CRL
Chromium	1.17	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:38	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:38	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:38	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:38	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:38	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0005	3/1/17 7:12	3/7/17 10:38	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 14:53	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:51	EPA 200.7	HRD
Calcium	60.0	1.25	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:51	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0004	3/1/17 7:09	3/10/17 14:51	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

P-151

MCB0211-34 (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 14:29	EPA 245.1, 7470A	HRD

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	

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							

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	

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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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	

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

Total Metals by ICPMS - Quality Control

Batch BCB0503 - EPA 200.2, EPA 3005

Duplicate (BCB0503-DUP2) **Source: MCB0211-05** Prepared: 02/28/2017 Analyzed: 03/06/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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			

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							

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	

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

Total Metals by ICPMS - Quality Control

Batch BCC0005 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCC0005-MSD2) **Source: MCB0211-24** Prepared: 03/01/2017 Analyzed: 03/07/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 12:54

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

2052858

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, Feb. 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	TIME	COLLECTED COMPOSITE END/GRAB DATE	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.

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
2052859

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, Feb. 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

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	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-010-1	↓				↓	1200		4	1	1	2							✓		
12	P-155	↓				↓	1300		4	1	1	2							✓		

Requested Analysis Filtered (Y/N)

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		2/23/17	13:49	
				Temp: 3.9°C DL 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.

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 3 of 3

2052874

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, Feb. 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

Requested Analysis Filtered (Y/N)

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	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-165	WT				2/22/17	1400		4	1	1	2							✓		
2	P-132						1445		4	1	1	2							✓		
3	P-154a						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-152a						1110		4	1	1	2							✓		
10	P-151	↓				↓	1200		4	1	1	2							✓		
11																					
12																					

DA 2/23/17

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		2/23/17	13:49	
				Temp: 3.9°C	IR 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.

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

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

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

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

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

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

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

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:

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:

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.

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	

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	

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	

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	

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	

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	

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	

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	

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	

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.

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	

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.

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	

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.

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	

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.

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

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 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 -
Project Number: Sherco CCR Feb. 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: ______

WO#: 30211785
30211785

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	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 Cl	Pace Project No./ Lab I.D.
1	P-74-1	WT				2/20/17	1110		2			2							✓	✓									001
2	P-73d-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+228 pCi/L combined.	David Anderson / Pace	2/23/17	1415	Karen Hill	2/24/17	1225	NA	N	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

(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

*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.

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 -
Project Number: Sherco CCR Feb. 2017

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

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	Y/N ↓Analysis Test↓	RA-226EPA903.1	RA-228EPA904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-22	WT				2/21/17	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				2/22/17	0900		2			2							✓	✓		019
8	P-164						0950		2			2							✓	✓		020
9	P-156						1110		2			2							✓	✓		021
10	P-014-1						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: 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	2/23/17	1445	Karen Hill	2/24/17	1725	NA	N	Y	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): 2/23/17

*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

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

30211785

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 -
Project Number: Sherco CCR Feb. 2017

Section C
Invoice Information:

Attention: Ciara Ruitkie
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	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-132	WT				2/22/17	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						DTA	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	1415	Karen Hill	2/24/17	1225	NA	N	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

② RA-226 EPA903.1
RA-228 EPA904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 2/23/17

*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 N/A **Type of Ice:** Wet Blue [✓ None]

Cooler Temperature **Observed Temp** N/A °C Correction Factor: N/A °C Final Temp: N/A °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:	✓			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 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 ☒ 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)		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	18.0	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 3/20/17 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: 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)		
Calibration Std. Value (mV)	240	Secondary Source Std. Value (mV)	240	Meter Make YSI Sonde ID #5
Mfg. Zobells ORP std.		Mfg. Zobells ORP std.		IC/ICV Time 0825 / 0827
Lot No. YSI#15G100067		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
☒ 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) ______ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

DTA 3/20/17

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: 18.0 (°C)	Ambient Temp: 18.0 (°C)	IC/ICV Time 0750 Initials DTA
Barometric Pressure 29.22 (in. Hg)	Barometric Pressure 29.22 (in. Hg)	DO Meter ID YSI Sonde #5
Barometric Pressure 742.19 (mm Hg)	Barometric Pressure 742.19 (mm Hg)	Barometer ID Skymaster DB-266W
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 ______ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

DTA 3/20/17

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: 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) DJA 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 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 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	0.02	9.9	99	998	CCV Time 1820 Initials DJA CCV: [✓ Pass] / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 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: Kent 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
Result (µS/cm) 1004 Temp (°C) 6.0 CCV: [✓ Pass] / Fail
☒ High Standard
☐ Low Standard
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time DJA 3/21/17 Initials Std. Value
Result (µS/cm) Temp (°C) CCV: Pass / Fail
☐ High Standard
☐ Low Standard
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

Time Initials Std. Value
Result (µS/cm) Temp (°C) CCV: Pass / Fail
☐ High Standard
☐ Low Standard
(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. Zabells ORP Std.		Mfg. Zabells 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)
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) ___ CCV: Pass / Fail
(CCV acceptable if ± 10 mV of standard value)

DJA 3/21/17

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: 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 PB-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 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 ___ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 3/21/17

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: 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) DJA Date 3/21/17 Page 3 of 3

Meter Make WTW Meter ID Turb 350 IR

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. C582192 / C579784 C579786 / C580573 Exp. Date 12/2016

IC	**Meter Value (NTU)**	**Meter Value (NTU)**	**Meter Value (NTU)**	**Meter Value (NTU)**	IC Time 0750 Initials DJA
	0.02	9.9	99	998	IC: Pass / Fail

ICV	**Meter Value (NTU)**	**Meter Value (NTU)**	**Meter Value (NTU)**	**Meter Value (NTU)**	ICV Time 0755 Initials DJA
	0.01	9.9	98	998	ICV: [✓ Pass] / Fail

ICV acceptable if ± 5% of standard value.

CCV	**Meter Value (NTU)**	**Meter Value (NTU)**	**Meter Value (NTU)**	**Meter Value (NTU)**	CCV Time 1820 Initials DJA
	0.01	9.9	99	998	CCV: [✓ Pass] / Fail

CCV	**Meter Value (NTU)**	**Meter Value (NTU)**	**Meter Value (NTU)**	**Meter Value (NTU)**	CCV Time ____ Initials ____
		DJA 3/21/17			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: 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
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 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 3-22-17

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: 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. Zabells ORP Std.		Mfg. Zabells ORP Std.	
Lot No. YSI#15E100067		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 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 (%)	ICV Meter Result (%)
98	97

IC/ICV Time 0710 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 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 3/22/17

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: 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) DTA
Date 3/22/17 Page 3 of 3

Meter Make WTW
Meter ID Turb 350 IR

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. C582192 / C579784 C579786 / C580573 Exp. Date 12/2016

IC	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	9.9	99	998	IC Time 0745 Initials DTA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.9	98	998	ICV Time 0750 Initials DTA 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	98	997	CCV Time 1820 Initials DTA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DTA 3/22/17			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:
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

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	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)

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	16.0

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	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 ______ 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 3/23/17

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: 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	Meter Make YSI Sonde ID #5
Mfg. Zobells ORP Std.		Mfg. Zobells ORP Std.		IC/ICV Time 0715 / 0718
Lot No. YSI#15G100067		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
242	16.0	241	16.0	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) DJA 3/23/17 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: 16.0 (°C)	Ambient Temp: 16.0 (°C)	IC/ICV Time 0640 Initials DJA
Barometric Pressure 29.10 (in. Hg)	Barometric Pressure 29.10 (in. Hg)	DO Meter ID YSI Sonde #5
Barometric Pressure 739.14 (mm Hg)	Barometric Pressure 739.14 (mm Hg)	Barometer ID Skymaster PB-266W
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 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 DJA 3/23/17 (%) 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: ____ 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

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. C582192 / C579784 C579786 / C580573 Exp. Date 12/2016

IC	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.9	99	999	IC Time 0720 Initials DTA IC: Pass / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.9	98	998	ICV Time 0730 Initials DTA 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	98	997	CCV Time 1200 Initials DTA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DTA 3/23/17			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:
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 March **Project No.** 17-0260

Monitoring Point ID P-130 Labeled P130

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 46.84 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 3-22-17 Water Column 10.95 Feet
Time Purged 0955-1022 One Casing Volume 1.8 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 3-22-17
Time Sampled 1030
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.1 (units) D.O 8.8 (mg/l)
Spec. Cond. 840 (µmhos/cm) Turbidity 2.7 (NTU)
Temp. 11.0 (°C) ORP Eh 264 (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: 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)
1004	7.0	850	11.0	9.4	NA	268	1.8
1013	7.1	840	11.0	9.0	NA	266	3.6
1022	7.1	840	11.0	8.8	NA	264	5.4
		DJA 3/22/17					

Samples chilled immediately after collection: ☒ Yes ☐ Other

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-131 Labeled P131

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 48.55 Feet
Static water level measurement before purging 33.23 Feet
Static water level measurement at time of sampling 33.23 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 3-21-17 Water Column 15.32 Feet
Time Purged 1705-1744 One Casing Volume 2.5 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 7.8 Gallons

Field Sampling Data

Date Sampled 3-21-17
Time Sampled 1750
Sampling Equip. abovepump
Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 9.6 (mg/l)
Spec. Cond. 590 (µmhos/cm) Turbidity 3.1 (NTU)
Temp. 9.5 (°C) (ORP) Eh 251 (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)
1718	7.6	590	9.5	9.8	NA	247	2.6
1731	7.6	590	9.5	9.7	NA	250	5.2
1744	7.6	590	9.5	9.6	NA	251	7.8
			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 March **Project No.** 17-0260

Monitoring Point ID P-132 Labeled P132

Inside Diameter 2 (inches) Key # ~~2106~~ 3212 ☒ 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 36.51 Feet

Static water level measurement before purging 28.25 Feet

Static water level measurement at time of sampling 28.25 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 3-21-17 Water Column 8.26 Feet

Time Purged 1405-1426 One Casing Volume 1.4 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 3-21-17

Time Sampled 1430

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 9.6 (mg/l)

Spec. Cond. 700 (µmhos/cm) Turbidity 26.0 (NTU)

Temp. 11.0 (°C) ORP Eh 278 (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 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)
1412	7.4	700	11.0	9.6	NA	279	1.4
1419	7.4	700	11.0	9.6	NA	278	2.8
1426	7.4	700	11.0	9.6	NA	278	4.2
		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 March **Project No.** 17-0260

Monitoring Point ID P-150 Labeled 806320

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 36.66 Feet
Static water level measurement before purging 30.79 Feet
Static water level measurement at time of sampling 30.79 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 3-22-17 Water Column 5.87 Feet
Time Purged 0755-0810 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 0820
Sampling Equip. above pump
Analyzed by DVA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 10.1 (mg/l)
Spec. Cond. 430 (µmhos/cm) Turbidity 10.8 (NTU)
Temp. 11.0 (°C) ORP Eh 237 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 20° + sunny wind SE 5
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)
0800	7.7	440	10.5	10.3	NA	236	1.0
0805	7.6	430	10.5	10.1	NA	236	2.0
0810	7.6	430	11.0	10.1	NA	237	3.0
			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 March **Project No.** 17-0260

Monitoring Point ID P-151 Labeled 806315

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 20.16 Feet
Static water level measurement before purging 10.20 Feet
Static water level measurement at time of sampling 10.20 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 1520-1544 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 1600
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 11.2 (mg/l)
Spec. Cond. 380 (µmhos/cm) Turbidity 11.0 (NTU)
Temp. 8.0 (°C) (ORP) Eh 245 (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 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)
1528	7.8	390	8.0	11.4	NA	248	1.6
1536	7.8	380	8.0	11.3	NA	247	3.2
1544	7.8	380	8.0	11.2	NA	245	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-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 DJA

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 SE5-10
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)
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
		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-153 Labeled 806314

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 23.63 Feet

Static water level measurement before purging 14.82 Feet

Static water level measurement at time of sampling 14.82 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 3-22-17 Water Column 8.81 Feet

Time Purged 1415-1436 One Casing Volume 1.4 Gallons

Pump Rate 0.2 [✓ GPM] LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 3-22-17

Time Sampled 1445

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 8.0 (units) D.O 11.4 (mg/l)

Spec. Cond. 190 (µmhos/cm) Turbidity 19.4 (NTU)

Temp. 9.5 (°C) ORP Eh 247 (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° + partly 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)
1422	8.1	200	9.0	11.5	NA	244	1.4
1429	8.1	190	9.5	11.5	NA	246	2.8
1436	8.0	190	9.5	11.4	NA	247	4.2
			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-154d Labeled 806316

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 49.53 Feet

Static water level measurement before purging 31.35 Feet

Static water level measurement at time of sampling 31.35 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 3-21-17 Water Column 18.18 Feet

Time Purged 1445-1530 One Casing Volume 3.0 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 9.0 Gallons

Field Sampling Data

Date Sampled 3-21-17

Time Sampled 1540

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 6.3 (mg/l)

Spec. Cond. 520 (µmhos/cm) Turbidity 4.2 (NTU)

Temp. 9.5 (°C) ORP Eh 266 (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)
1500	7.7	530	9.5	6.4	NA	268	3.0
1515	7.7	520	9.5	6.3	NA	267	6.0
1530	7.7	520	9.5	6.3	NA	266	9.0
			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 March **Project No.** 17-0260

Monitoring Point ID P-162 Labeled 822156

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 166 Feet estimate

Static water level measurement before purging 151 Feet estimate

Static water level measurement at time of sampling 151 Feet estimate

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump

Date Purged 3-23-17 Water Column 15.00 Feet

Time Purged 0855-0916 One Casing Volume 2.5 Gallons

Pump Rate 0.4 [✓ GPM] LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 3-23-17

Time Sampled 0930

Sampling Equip. above pump

Analyzed by

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 2.8 (mg/l)

Spec. Cond. 650 (μmhos/cm) Turbidity 8.2 (NTU)

Temp. 10.0 (°C) [✓ ORP] Eh 256 (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° + cloudy, wind S 20

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)
0902	8.0	660	10.0	3.1	NA	266	2.8
0909	8.0	650	10.0	2.9	NA	260	5.6
0916	7.9	650	10.0	2.8	NA	256	8.4
		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 March **Project No.** 17-0260

Monitoring Point ID P-163 Labeled 822157

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 176 Feet estimate

Static water level measurement before purging 161 Feet estimate

Static water level measurement at time of sampling 161 Feet estimate

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump

Date Purged 3-23-17 Water Column 15.00 Feet

Time Purged 0950-1017 One Casing Volume 2.5 Gallons

Pump Rate 0.3 [✓ GPM] / LPM Volume Purged 8.1 Gallons

Field Sampling Data

Date Sampled 3-23-17

Time Sampled 1030

Sampling Equip. above pump

Analyzed by DNA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 5.5 (mg/l)

Spec. Cond. 1220 (µmhos/cm) Turbidity 6.6 (NTU)

Temp. 10.0 (°C) [✓ ORP] Eh 218 (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° + cloudy, wind S20

Sample Description: clear + odorless

Observations: DNA 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)
0959	7.4	1230	10.0	5.7	NA	223	2.7
1008	7.4	1220	10.0	5.6	NA	220	5.4
1017	7.3	1220	10.0	5.5	NA	218	8.1
		DNA 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 March **Project No.** 17-0260

Monitoring Point ID P-164 Labeled 822158

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 166 Feet estimate
Static water level measurement before purging 151 Feet estimate
Static water level measurement at time of sampling 151 Feet estimate
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ Waterra pump
Date Purged 3-23-17 Water Column 15.00 Feet
Time Purged 1050-1117 One Casing Volume 2.5 Gallons
Pump Rate 0.3 [✓ GPM] LPM Volume Purged 8.1 Gallons

Field Sampling Data

Date Sampled 3-23-17
Time Sampled 1130
Sampling Equip. above pump
Analyzed by

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 7.3 (mg/l)
Spec. Cond. 560 (µmhos/cm) Turbidity 2.6 (NTU)
Temp. 10.5 (°C) (ORP) Eh 245 (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° + cloudy, wind S20
Sample Description: clear + odorless
Observations:

DJA 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)
1059	7.7	580	10.5	7.4	NA	250	2.7
1108	7.7	570	10.5	7.3	NA	247	5.4
1117	7.7	560	10.5	7.3	NA	245	8.1

DJA 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 March Project No. 17-0260

Monitoring Point ID P-165 Labeled 822159

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 40.32 Feet
Static water level measurement before purging 30.47 Feet
Static water level measurement at time of sampling 30.47 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 3-21-17 Water Column 9.85 Feet
Time Purged 1315-1339 One Casing Volume 1.6 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 3-21-17
Time Sampled 1345
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 9.6 (mg/l)
Spec. Cond. 430 (µmhos/cm) Turbidity 31.3 (NTU)
Temp. 10.5 (°C) [✓ ORP] Eh 279 (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 NW 15
Sample Description: clear + odorless
Observations: ~~DJA 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)
1323	7.6	430	10.5	9.7	NA	278	1.6
1331	7.6	430	10.5	9.6	NA	279	3.2
1339	7.6	430	10.5	9.6	NA	279	4.8

~~DJA 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

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

10 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 Pond No. 3 CCR Groundwater Monitoring System. HSD 1/10/18

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

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	01/10/2018 13:03

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
Duplicate		MCC0209-15	Water	03/21/2017 12:40	03/23/2017 13:23
P-165		MCC0209-16	Water	03/21/2017 13:45	03/23/2017 13:23
P-132		MCC0209-17	Water	03/21/2017 14:30	03/23/2017 13:23
P-154a		MCC0209-18	Water	03/21/2017 15:40	03/23/2017 13:23
P-131		MCC0209-20	Water	03/21/2017 17:50	03/23/2017 13:23
P-150		MCC0209-21	Water	03/22/2017 8:20	03/23/2017 13:23
P-152a		MCC0209-22	Water	03/22/2017 9:30	03/23/2017 13:23
P-130		MCC0209-23	Water	03/22/2017 10:30	03/23/2017 13:23
P-153		MCC0209-27	Water	03/22/2017 14:45	03/23/2017 13:23
P-151		MCC0209-28	Water	03/22/2017 16:00	03/23/2017 13:23
P-162		MCC0209-32	Water	03/23/2017 9:30	03/23/2017 13:23
P-163		MCC0209-33	Water	03/23/2017 10:30	03/23/2017 13:23
P-164		MCC0209-34	Water	03/23/2017 11:30	03/23/2017 13:23

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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

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	01/10/2018 13:03

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-16 (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	2.05	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 14:48	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 14:48	EPA 300.0	CRL
Sulfate	17.0	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 14:48	EPA 300.0	CRL
Wet Chemistry										
pH	7.91		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 12:40	SM 4500-H+ B	CRL
Total Dissolved Solids	238	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	0.776	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:50	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:50	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:50	EPA 200.8	CRL
Cobalt	1.04	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:50	EPA 200.8	CRL
Chromium	3.46	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:50	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:50	EPA 200.8	CRL
Lead	0.604	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:50	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:50	EPA 200.8	CRL
Selenium	0.745	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:50	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:50	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 18:39	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:15	EPA 200.7	HRD
Calcium	66.6	0.500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:15	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:15	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-16 (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 12:32	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-17 (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	3.75	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 15:09	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 15:09	EPA 300.0	CRL
Sulfate	78.2	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 15:09	EPA 300.0	CRL
Wet Chemistry										
pH	7.72		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 12:48	SM 4500-H+ B	CRL
Total Dissolved Solids	416	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 11:55	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:55	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:55	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:55	EPA 200.8	CRL
Chromium	3.10	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:55	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:55	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:55	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:55	EPA 200.8	CRL
Selenium	1.52	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:55	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 11:55	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0703	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/6/17 18:43	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:21	EPA 200.7	HRD
Calcium	101	0.500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:21	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:21	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-17 (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 12:34	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

P-154a

MCC0209-18 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Anions by Ion Chromatography

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Chloride	19.3	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 15:29	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 15:29	EPA 300.0	CRL
Sulfate	34.7	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 15:29	EPA 300.0	CRL

Wet Chemistry

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
pH	7.95		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 12:55	SM 4500-H+ B	CRL
Total Dissolved Solids	298	20.0	mg/L		1	BCC0473	3/27/17 9:28	3/27/17 9:28	SM 2540C	HSD

Total Metals by ICPMS

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Arsenic	0.872	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:00	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:00	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:00	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:00	EPA 200.8	CRL
Chromium	0.813	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:00	EPA 200.8	CRL
Molybdenum	0.882	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:00	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:00	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:00	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:00	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:00	EPA 200.8	CRL

Total Metals by ICP

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Boron	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/6/17 18:47	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:26	EPA 200.7	HRD
Calcium	70.5	0.500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:26	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:26	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

P-154a

MCC0209-18 (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 12:36	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-20 (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	25.7	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 17:52	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 17:52	EPA 300.0	CRL
Sulfate	30.5	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 17:52	EPA 300.0	CRL
Wet Chemistry										
pH	7.89		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 13:08	SM 4500-H+ B	CRL
Total Dissolved Solids	332	20.0	mg/L		1	BCC0473	3/27/17 9:28	3/27/17 9:28	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.545	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:10	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:10	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:10	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:10	EPA 200.8	CRL
Chromium	0.843	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:10	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:10	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:10	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:10	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:10	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0598	3/31/17 7:56	4/5/17 12:10	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 18:54	EPA 200.7	HRD
Barium	0.0755	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:36	EPA 200.7	HRD
Calcium	78.2	0.500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:36	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0597	3/31/17 7:39	4/4/17 20:36	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

P-131

MCC0209-20 (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 14:56	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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-21 (Water) - Chain of Custody Number: 2052868/2052871/2052872

Anions by Ion Chromatography

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Chloride	29.3	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 18:12	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 18:12	EPA 300.0	CRL
Sulfate	6.12	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 18:12	EPA 300.0	CRL

Wet Chemistry

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
pH	7.95		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 13:22	SM 4500-H+ B	CRL
Total Dissolved Solids	236	20.0	mg/L		1	BCC0473	3/27/17 9:28	3/27/17 9:28	SM 2540C	HSD

Total Metals by ICPMS

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Arsenic	0.694	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:17	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:17	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:17	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:17	EPA 200.8	CRL
Chromium	4.55	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:17	EPA 200.8	CRL
Molybdenum	0.645	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:17	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:17	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:17	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:17	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:17	EPA 200.8	CRL

Total Metals by ICP

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Boron	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 11:51	EPA 200.7	HRD
Barium	0.0506	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 11:50	EPA 200.7	HRD
Calcium	52.7	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 11:50	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 11:50	EPA 200.7	HRD

Amended Report

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-21 (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 15:01	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-23 (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	1.38	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 18:53	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 18:53	EPA 300.0	CRL
Sulfate	12.0	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 18:53	EPA 300.0	CRL
Wet Chemistry										
pH	7.52		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 13:37	SM 4500-H+ B	CRL
Total Dissolved Solids	490	20.0	mg/L		1	BCC0473	3/27/17 9:28	3/27/17 9:28	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.534	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:37	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:37	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:37	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:37	EPA 200.8	CRL
Chromium	1.07	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:37	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:37	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:37	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:37	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:37	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:37	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:12	EPA 200.7	HRD
Barium	0.102	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:10	EPA 200.7	HRD
Calcium	129	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:10	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:10	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-23 (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 15:05	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-27 (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 20:15	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 20:15	EPA 300.0	CRL
Sulfate	2.67	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 20:15	EPA 300.0	CRL
Wet Chemistry										
pH	8.14		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 14:04	SM 4500-H+ B	CRL
Total Dissolved Solids	104	20.0	mg/L		1	BCC0473	3/27/17 9:28	3/27/17 9:28	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.675	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:57	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:57	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:57	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:57	EPA 200.8	CRL
Chromium	0.999	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:57	EPA 200.8	CRL
Molybdenum	0.581	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:57	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:57	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:57	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:57	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 10:57	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:31	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:30	EPA 200.7	HRD
Calcium	27.4	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:30	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:30	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-27 (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 15:11	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-28 (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	16.6	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 20:35	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 20:35	EPA 300.0	CRL
Sulfate	17.1	1.00	mg/L		1	BCD0088	4/5/17 8:55	4/5/17 20:35	EPA 300.0	CRL
Wet Chemistry										
pH	8.02		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 14:11	SM 4500-H+ B	CRL
Total Dissolved Solids	222	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 11:02	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:02	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:02	EPA 200.8	CRL
Cobalt	1.09	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:02	EPA 200.8	CRL
Chromium	1.27	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:02	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:02	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:02	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:02	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:02	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:02	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:36	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:35	EPA 200.7	HRD
Calcium	55.1	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:35	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:35	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-28 (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 15:13	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-32 (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	26.7	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 13:09	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 13:09	EPA 300.0	CRL
Sulfate	78.5	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 13:09	EPA 300.0	CRL
Wet Chemistry										
pH	8.03		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 14:38	SM 4500-H+ B	CRL
Total Dissolved Solids	446	20.0	mg/L		1	BCC0501	3/28/17 9:35	3/28/17 9:35	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.725	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:22	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:22	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:22	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:22	EPA 200.8	CRL
Chromium	9.45	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:22	EPA 200.8	CRL
Molybdenum	12.3	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:22	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:22	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:22	EPA 200.8	CRL
Selenium	2.18	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:22	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:22	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.236	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:56	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:55	EPA 200.7	HRD
Calcium	63.1	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:55	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 12:55	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-32 (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 15:23	EPA 245.1, 7470A	HRD

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MCC0209-33 (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	17.5	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 13:30	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 13:30	EPA 300.0	CRL
Sulfate	226	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 13:30	EPA 300.0	CRL
Wet Chemistry										
pH	7.54		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 14:45	SM 4500-H+ B	CRL
Total Dissolved Solids	854	20.0	mg/L		1	BCC0501	3/28/17 9:35	3/28/17 9:35	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.537	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:43	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:43	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:43	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:43	EPA 200.8	CRL
Chromium	7.50	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:43	EPA 200.8	CRL
Molybdenum	0.862	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:43	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:43	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:43	EPA 200.8	CRL
Selenium	50.4	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:43	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:43	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.01	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 13:11	EPA 200.7	HRD
Barium	0.104	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 13:10	EPA 200.7	HRD
Calcium	172	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 13:10	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 13:10	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-33 (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 15:25	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

P-164

MCC0209-34 (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	9.59	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 13:50	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 13:50	EPA 300.0	CRL
Sulfate	46.6	1.00	mg/L		1	BCD0133	4/6/17 6:24	4/6/17 13:50	EPA 300.0	CRL
Wet Chemistry										
pH	8.06		pH Units	M_TTT	1	BCC0458	3/24/17 9:12	3/24/17 14:53	SM 4500-H+ B	CRL
Total Dissolved Solids	324	20.0	mg/L		1	BCC0501	3/28/17 9:35	3/28/17 9:35	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.586	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:48	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:48	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:48	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:48	EPA 200.8	CRL
Chromium	5.07	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:48	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:48	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:48	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:48	EPA 200.8	CRL
Selenium	2.55	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:48	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCC0600	3/31/17 8:07	4/6/17 11:48	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 13:17	EPA 200.7	HRD
Barium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 13:15	EPA 200.7	HRD
Calcium	76.3	0.500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 13:15	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCC0599	3/31/17 8:05	4/5/17 13:15	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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MCC0209-34 (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 15:27	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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							

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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			

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	

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	01/10/2018 13:03

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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	

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						
Cadmium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Selenium	<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			
Arsenic	102	0.500	ug/L	100.00		102	85-115			
Molybdenum	106	0.500	ug/L	100.00		106	85-115			
Cadmium	102	0.500	ug/L	100.00		102	85-115			
Antimony	102	0.500	ug/L	100.00		102	85-115			
Selenium	102	0.500	ug/L	100.00		102	85-115			
Beryllium	105	0.500	ug/L	100.00		105	85-115			
Cobalt	102	0.500	ug/L	100.00		102	85-115			
Thallium	105	0.500	ug/L	100.00		105	85-115			
Chromium	101	0.500	ug/L	100.00		101	85-115			
Duplicate (BCC0598-DUP1)		**Source: MCC0209-04**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Selenium	0.221	0.500	ug/L		0.221			0.184	20	
Arsenic	0.662	0.500	ug/L		0.669			1.02	20	
Cobalt	0.0970	0.500	ug/L		0.0829			15.6	20	
Thallium	0.0394	0.500	ug/L		0.00648			143	20	M_D-RL
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
Chromium	0.611	0.500	ug/L		0.616			0.801	20	
Molybdenum	0.165	0.500	ug/L		0.129			24.1	20	M_D-RL
Beryllium	0.0360	0.500	ug/L		0.00900			120	20	M_D-RL

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						
Lead	0.318	0.500	ug/L		0.320			0.492	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
Thallium	0.0129	0.500	ug/L		0.00841			41.9	20	M_D-RL
Cobalt	0.899	0.500	ug/L		0.913			1.53	20	
Selenium	0.430	0.500	ug/L		0.262			48.5	20	M_D-RL
Arsenic	0.933	0.500	ug/L		0.976			4.48	20	
Beryllium	0.0163	0.500	ug/L		0.0173			6.42	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Molybdenum	0.255	0.500	ug/L		0.261			2.22	20	
Matrix Spike (BCC0598-MS1)		**Source: MCC0209-04**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Thallium	98.3	0.500	ug/L	100.00	0.00648	98.2	70-130			
Cobalt	105	0.500	ug/L	100.00	0.0829	105	70-130			
Antimony	102	0.500	ug/L	100.00	0.0320	102	70-130			
Beryllium	102	0.500	ug/L	100.00	0.00900	102	70-130			
Chromium	103	0.500	ug/L	100.00	0.616	103	70-130			
Lead	95.7	0.500	ug/L	100.00	0.0260	95.7	70-130			
Cadmium	104	0.500	ug/L	100.00	<0.500	104	70-130			
Selenium	105	0.500	ug/L	100.00	0.221	105	70-130			
Molybdenum	106	0.500	ug/L	100.00	0.129	106	70-130			
Arsenic	105	0.500	ug/L	100.00	0.669	104	70-130			
Matrix Spike (BCC0598-MS2)		**Source: MCC0209-05**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Chromium	105	0.500	ug/L	100.00	1.34	104	70-130			
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			
Lead	97.3	0.500	ug/L	100.00	0.320	97.0	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			
Molybdenum	107	0.500	ug/L	100.00	0.261	107	70-130			
Arsenic	109	0.500	ug/L	100.00	0.976	108	70-130			
Thallium	101	0.500	ug/L	100.00	0.00841	101	70-130			
Beryllium	106	0.500	ug/L	100.00	0.0173	106	70-130			

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						
Arsenic	105	0.500	ug/L	100.00	0.669	104	70-130	0.235	20	
Chromium	105	0.500	ug/L	100.00	0.616	105	70-130	1.97	20	
Thallium	97.6	0.500	ug/L	100.00	0.00648	97.6	70-130	0.637	20	
Antimony	101	0.500	ug/L	100.00	0.0320	101	70-130	1.47	20	
Cobalt	103	0.500	ug/L	100.00	0.0829	103	70-130	1.41	20	
Lead	95.6	0.500	ug/L	100.00	0.0260	95.6	70-130	0.0647	20	
Cadmium	102	0.500	ug/L	100.00	<0.500	102	70-130	2.00	20	
Molybdenum	104	0.500	ug/L	100.00	0.129	104	70-130	1.92	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	
Matrix Spike Dup (BCC0598-MSD2)		**Source: MCC0209-05**		Prepared: 03/31/2017 Analyzed: 04/05/2017						
Selenium	105	0.500	ug/L	100.00	0.262	104	70-130	1.45	20	
Chromium	106	0.500	ug/L	100.00	1.34	105	70-130	0.918	20	
Beryllium	106	0.500	ug/L	100.00	0.0173	106	70-130	0.0830	20	
Lead	95.2	0.500	ug/L	100.00	0.320	94.9	70-130	2.12	20	
Arsenic	106	0.500	ug/L	100.00	0.976	105	70-130	2.60	20	
Cobalt	103	0.500	ug/L	100.00	0.913	102	70-130	3.43	20	
Thallium	97.0	0.500	ug/L	100.00	0.00841	97.0	70-130	3.56	20	
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130	3.38	20	
Antimony	101	0.500	ug/L	100.00	0.0552	101	70-130	2.60	20	
Molybdenum	105	0.500	ug/L	100.00	0.261	105	70-130	2.28	20	
Batch BCC0600 - EPA 200.2, EPA 3005										
Blank (BCC0600-BLK1)				Prepared: 03/31/2017 Analyzed: 04/06/2017						
Chromium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Molybdenum	<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							
Beryllium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

Total Metals by ICPMS - Quality Control

Batch BCC0600 - EPA 200.2, EPA 3005

LCS (BCC0600-BS1) Prepared: 03/31/2017 Analyzed: 04/06/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	97.3	0.500	ug/L	100.00		97.3	85-115			
Thallium	102	0.500	ug/L	100.00		102	85-115			
Lead	101	0.500	ug/L	100.00		101	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			
Selenium	98.2	0.500	ug/L	100.00		98.2	85-115			
Molybdenum	98.6	0.500	ug/L	100.00		98.6	85-115			
Beryllium	102	0.500	ug/L	100.00		102	85-115			
Chromium	100	0.500	ug/L	100.00		100	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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Beryllium	0.0256	0.500	ug/L		0.00551			129	20	M_D-RL
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	
Arsenic	0.455	0.500	ug/L		0.534			15.9	20	
Cobalt	0.0521	0.500	ug/L		0.0554			6.21	20	
Lead	0.0304	0.500	ug/L		0.0411			29.8	20	M_D-RL
Thallium	0.0412	0.500	ug/L		0.0100			122	20	M_D-RL
Selenium	0.169	0.500	ug/L		0.0659			87.6	20	M_D-RL
Chromium	0.961	0.500	ug/L		1.07			10.5	20	

Duplicate (BCC0600-DUP2) **Source: MCC0209-24** Prepared: 03/31/2017 Analyzed: 04/06/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	0.587	0.500	ug/L		0.541			8.15	20	
Beryllium	0.0138	0.500	ug/L		0.0132			4.46	20	
Thallium	0.0121	0.500	ug/L		0.00695			53.8	20	M_D-RL
Cadmium	<0.500	0.500	ug/L		0.0282				20	
Antimony	0.0650	0.500	ug/L		0.0631			2.92	20	
Molybdenum	0.617	0.500	ug/L		0.635			2.85	20	
Cobalt	0.334	0.500	ug/L		0.348			3.95	20	
Lead	0.125	0.500	ug/L		0.111			11.7	20	
Selenium	2.41	0.500	ug/L		2.22			8.37	20	
Chromium	4.05	0.500	ug/L		4.04			0.167	20	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130			
Arsenic	106	0.500	ug/L	100.00	0.534	106	70-130			
Selenium	102	0.500	ug/L	100.00	0.0659	102	70-130			
Molybdenum	104	0.500	ug/L	100.00	0.116	104	70-130			
Chromium	105	0.500	ug/L	100.00	1.07	104	70-130			
Thallium	101	0.500	ug/L	100.00	0.0100	101	70-130			
Cobalt	104	0.500	ug/L	100.00	0.0554	104	70-130			
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			
Lead	96.8	0.500	ug/L	100.00	0.0411	96.8	70-130			

Matrix Spike (BCC0600-MS2) **Source: MCC0209-24** Prepared: 03/31/2017 Analyzed: 04/06/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	105	0.500	ug/L	100.00	0.541	104	70-130			
Antimony	101	0.500	ug/L	100.00	0.0631	101	70-130			
Cadmium	101	0.500	ug/L	100.00	0.0282	101	70-130			
Lead	98.0	0.500	ug/L	100.00	0.111	97.9	70-130			
Selenium	107	0.500	ug/L	100.00	2.22	105	70-130			
Molybdenum	103	0.500	ug/L	100.00	0.635	102	70-130			
Beryllium	103	0.500	ug/L	100.00	0.0132	103	70-130			
Chromium	108	0.500	ug/L	100.00	4.04	104	70-130			
Cobalt	104	0.500	ug/L	100.00	0.348	103	70-130			
Thallium	100	0.500	ug/L	100.00	0.00695	100	70-130			

Matrix Spike Dup (BCC0600-MSD1) **Source: MCC0209-23** Prepared: 03/31/2017 Analyzed: 04/06/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Molybdenum	103	0.500	ug/L	100.00	0.116	102	70-130	1.12	20	
Lead	97.2	0.500	ug/L	100.00	0.0411	97.2	70-130	0.416	20	
Cobalt	103	0.500	ug/L	100.00	0.0554	103	70-130	0.856	20	
Cadmium	102	0.500	ug/L	100.00	<0.500	102	70-130	0.917	20	
Beryllium	104	0.500	ug/L	100.00	0.00551	104	70-130	5.93	20	
Selenium	106	0.500	ug/L	100.00	0.0659	106	70-130	3.69	20	
Thallium	101	0.500	ug/L	100.00	0.0100	101	70-130	0.0858	20	
Chromium	105	0.500	ug/L	100.00	1.07	104	70-130	0.260	20	
Arsenic	106	0.500	ug/L	100.00	0.534	105	70-130	0.459	20	
Antimony	102	0.500	ug/L	100.00	0.0641	102	70-130	1.89	20	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

Total Metals by ICPMS - Quality Control

Batch BCC0600 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCC0600-MSD2) **Source: MCC0209-24** Prepared: 03/31/2017 Analyzed: 04/06/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	101	0.500	ug/L	100.00	0.0631	101	70-130	0.295	20	
Thallium	100	0.500	ug/L	100.00	0.00695	100	70-130	0.227	20	
Chromium	108	0.500	ug/L	100.00	4.04	104	70-130	0.0227	20	
Cobalt	104	0.500	ug/L	100.00	0.348	104	70-130	0.792	20	
Beryllium	107	0.500	ug/L	100.00	0.0132	107	70-130	3.94	20	
Arsenic	108	0.500	ug/L	100.00	0.541	107	70-130	2.77	20	
Molybdenum	102	0.500	ug/L	100.00	0.635	101	70-130	0.534	20	
Cadmium	104	0.500	ug/L	100.00	0.0282	104	70-130	3.34	20	
Lead	97.8	0.500	ug/L	100.00	0.111	97.6	70-130	0.212	20	
Selenium	107	0.500	ug/L	100.00	2.22	104	70-130	0.250	20	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

Total Metals by ICP - Quality Control

Batch BCC0597 - EPA 200.2, EPA 3005

Blank (BCC0597-BLK1) Prepared: 03/31/2017 Analyzed: 04/06/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Boron	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
Barium	<0.0500	0.0500	mg/L							

LCS (BCC0597-BS1) Prepared: 03/31/2017 Analyzed: 04/04/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Calcium	100	0.500	mg/L	100.00		100	85-115			
Barium	0.991	0.0500	mg/L	1.0000		99.1	85-115			
Lithium	1.02	0.0500	mg/L	1.0000		102	85-115			
Boron	1.00	0.0500	mg/L	1.0000		100	85-115			

Duplicate (BCC0597-DUP1) **Source: MCC0209-02** Prepared: 03/31/2017 Analyzed: 04/04/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Calcium	83.6	0.500	mg/L		89.3			6.56	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Barium	0.0931	0.0500	mg/L		0.102			8.86	20	
Boron	0.121	0.0500	mg/L		0.122			1.27	20	

Duplicate (BCC0597-DUP2) **Source: MCC0209-03** Prepared: 03/31/2017 Analyzed: 04/04/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Barium	0.0514	0.0500	mg/L		0.0542			5.20	20	
Boron	0.0561	0.0500	mg/L		0.0584			4.02	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: 04/04/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lithium	1.07	0.0500	mg/L	1.0000	<0.0500	107	75-125			
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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

Total Metals by ICP - Quality Control

Batch BCC0597 - EPA 200.2, EPA 3005

Matrix Spike (BCC0597-MS2) **Source: MCC0209-03** Prepared: 03/31/2017 Analyzed: 04/06/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Boron	1.05	0.0500	mg/L	1.0000	0.0584	99.2	70-130			
Barium	1.10	0.0500	mg/L	1.0000	0.0542	104	70-130			
Lithium	1.06	0.0500	mg/L	1.0000	<0.0500	106	75-125			
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: 04/04/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Calcium	188	0.500	mg/L	100.00	89.3	98.4	70-130	1.39	20	
Barium	1.09	0.0500	mg/L	1.0000	0.102	99.3	70-130	1.52	20	
Boron	1.15	0.0500	mg/L	1.0000	0.122	103	70-130	1.93	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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Barium	1.10	0.0500	mg/L	1.0000	0.0542	105	70-130	0.580	20	
Boron	1.07	0.0500	mg/L	1.0000	0.0584	101	70-130	1.94	20	
Lithium	1.07	0.0500	mg/L	1.0000	<0.0500	107	75-125	0.933	20	
Calcium	182	0.500	mg/L	100.00	71.1	111	70-130	1.02	20	

Batch BCC0599 - EPA 200.2, EPA 3005

Blank (BCC0599-BLK1) Prepared: 03/31/2017 Analyzed: 04/05/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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 (BCC0599-BS1) Prepared: 03/31/2017 Analyzed: 04/05/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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			
Lithium	1.01	0.0500	mg/L	1.0000		101	85-115			

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						
Boron	<0.0500	0.0500	mg/L		<0.0500				20	
Barium	0.0478	0.0500	mg/L		0.0506			5.77	20	
Calcium	50.0	0.500	mg/L		52.7			5.30	20	
Lithium	<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	
Calcium	57.2	0.500	mg/L		58.4			2.19	20	
Boron	0.0592	0.0500	mg/L		0.0632			6.42	20	
Barium	0.0394	0.0500	mg/L		0.0408			3.55	20	
Matrix Spike (BCC0599-MS1)	**Source: MCC0209-21**			Prepared: 03/31/2017 Analyzed: 04/05/2017						
Calcium	153	0.500	mg/L	100.00	52.7	101	70-130			
Boron	1.02	0.0500	mg/L	1.0000	<0.0500	102	70-130			
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125			
Barium	1.04	0.0500	mg/L	1.0000	0.0506	99.2	70-130			
Matrix Spike (BCC0599-MS2)	**Source: MCC0209-22**			Prepared: 03/31/2017 Analyzed: 04/05/2017						
Barium	1.04	0.0500	mg/L	1.0000	0.0408	100	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	0.0632	100	70-130			
Calcium	161	0.500	mg/L	100.00	58.4	103	70-130			
Matrix Spike Dup (BCC0599-MSD1)	**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	0.00883	20	
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125	1.62	20	
Calcium	155	0.500	mg/L	100.00	52.7	102	70-130	1.06	20	
Barium	1.06	0.0500	mg/L	1.0000	0.0506	101	70-130	1.43	20	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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						
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	
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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:03

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

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

Page: 1 of 3

2052868

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

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 (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	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	CCR parameters	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Rinse	WT				3/20/17	1030		4	1	1	2							✓		
2	P-74-1						1115		4	1	1	2							✓		
3	P-73a-1						1205		4	1	1	2							✓		
4	P-125						1320		4	1	1	2							✓		
5	P-141						1415		4	1	1	2							✓		
6	P-134						1520		4	1	1	2							✓		
7	P-138A						1620		4	1	1	2							✓		
8	P-137A						1710		4	1	1	2							✓		
9	P-120						1740		4	1	1	2							✓		
10	P-117	WT				3/21/17	0830		4	1	1	2							✓		
11	P-75-1						0925		4	1	1	2							✓		
12	P-97						1020		4	1	1	2							✓		M400841

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
① Marked HNO3 bottles filtered (dissolved) and unfiltered (total).	Dand Anderson/Pace	3/23/17	1316	/Xcel	3/23/17	1325	5.0	Y	Y	Y
							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: Dand 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

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Page: 2 of 3

2052871

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	Y/N Analysis Test	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							✓								M488341

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	3/23/17	1310	/ Xcel	3/23/17	1325	5.0	Y	Y	Y
							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): 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.

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 3

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	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-01a-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			
① marked HNO3 bottles filtered (dissolved) and unfiltered (total)	David Anderson / Pace	3/23/17	1310	H / Xcel	3/23/17	1325	5.0	Y	Y	Y
							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): 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 L Robl

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

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

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

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

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

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

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:

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:

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.

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	

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	

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	

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	

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	

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	

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	

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	

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.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0260, XCEL Energy- Sherco C
Pace Project No.: 30214254

QC Batch: 253580
QC Batch Method: EPA 903.1
Analysis 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.

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.

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.

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

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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

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	Y/N ⇓ Analysis Test ⇓	RA-226EPA903.1	RA-228EPA904.0	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			
① client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson / Pace	3/23/17	1630	Ashley / Pace	3-27-17	0920	NA	N	N	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

① RA-226EPA 903.1
RA-228EPA 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

Page: 2 of 3

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, 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

Requested Analysis Filtered (Y/N)

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	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-226EPA903.1	RA-228EPA904.0	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 Brad / Pace	3-27-17	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): 3/22/17

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

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

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 -
Project Number: ShercoCCR 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

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	Y/N ⇒ Analysis Test ⇒	Requested Analysis Filtered (Y/N) RA-226EPA903.1	RA-228EPA904.0											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																																

DJA 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 Pace	3-27-17	0920	N/A	N	N	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

② RA-226EPA 903.1
RA-228EPA 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

*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: acnA 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:	X			5.
-Includes date/time/ID Matrix:	WT			
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 acnA 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: acnA 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.

J:\QAQC\Master\Document Management\Sample Mgt\Sample Condition Upon Receipt Pittsburgh (C056-4 15Dec2016)

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

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	20.5	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 ~~092~~ 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)

DJA 4/24/17

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: 4-24-17

Sherco CCR – April 2017
Field Proj# 17-0438

Pace Analytical®
Field Services Division

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)	
Calibration Std. Value (mV)	238	Secondary Source Std. Value (mV)	238
Mfg. Zabells ORP std.		Mfg. Zabells 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)
239	20.0	237	20.0

Meter Make YSI Sonde ID #5
IC/ICV Time 0935 / 0940
Initials DJA

ICV: [✓ Pass] / Fail
ICV acceptable if ± 10 mV of standard value.

CCV Time 1815 Initials DJA Std. Value 240
Result (mV) 235 Temp (°C) 18.0 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 4/24/17

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: 20.0 (°C)	Ambient Temp: 20.0 (°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 (%)	ICV Meter Result (%)
97	96

IC/ICV Time 0900 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 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 ______ Initials ______ Barometric Pressure ______ (in. Hg / mm Hg)
Calibration Value ______ (%) Result ______ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 4/24/17

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 Amlon 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 Turb 350 IR Meter ID #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	99	999	IC Time 0945 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.9	98	997	ICV Time 0955 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	99	997	CCV Time 1820 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 4/24/17			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: 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: ______ Date: 4/25/17

Sherco Cck – April 2017

Pace Analytical® Field Proj# 17-0438
Field Services Division

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	Meter Make YSI Sonde ID #5
Mfg. Zobells ORP std.		Mfg. Zobells ORP std.		IC/ICV Time 0720 / 0725
Lot No. YSI#15G100067		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 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 ___ 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 4/25/17

Dissolved Oxygen (D.O.)

Initial Calibration (IC) % Saturation	Initial Cal. Verification (ICV) % Saturation	
Ambient Temp: 14.0 (°C)	Ambient Temp: 14.0 (°C)	IC/ICV Time 0645 Initials DJA
Barometric Pressure 28.50 (in. Hg)	Barometric Pressure 28.50 (in. Hg)	DO Meter ID YSI Sonde #5
Barometric Pressure 723.90 (mm Hg)	Barometric Pressure 723.90 (mm Hg)	Barometer ID Skymaster DB-266W
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)
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 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 ___ 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 4/25/17

n Revised: 02/03/17

Lead Technician Signature: Dave 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

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)	IC Time 0730 Initials DJA
	0.01	9.9	98	998	IC: [✓ Pass] / Fail
ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	ICV Time 0740 Initials DJA
	0.01	9.9	98	998	ICV: [✓ Pass] / Fail

ICV acceptable if ± 5% of standard value.

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	CCV Time 1825 Initials DJA
	0.01	9.9	97	997	CCV: [✓ Pass] / Fail
CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	CCV Time ______ Initials ______
		DJA	4/25/17		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: 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

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	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 Amlen Date: 4/26/17

Sherco CCR – April 2017
Field Proj # 17-0438

Pace Analytical® Field Services Division

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)	
Calibration Std. Value (mV)	244	Secondary Source Std. Value (mV)	244
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI #156100067	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 0725 / 0727
Initials DJA
ICV: [✓ Pass] / Fail
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	
Ambient Temp:	13.0 (°C)	Ambient Temp:	13.0 (°C)
Barometric Pressure	28.54 (in. Hg)	Barometric Pressure	28.54 (in. Hg)
Barometric Pressure	724.92 (mm Hg)	Barometric Pressure	724.92 (mm Hg)
Calibration Value[1]	95 (%)	Calibration Value[1]	95 (%)
IC Meter Result (%)	95	ICV Meter Result (%)	95

IC/ICV Time 0700 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 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)*

Lead Technician Signature: D and Amlen
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

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	99	997	IC Time 0730 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.9	98	997	ICV Time 0740 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	98	997	CCV Time 1250 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 4/26/17			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: 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 XcelEnergy Project ShercoCCR April Project No. 17-0438

Monitoring Point ID P-130 Labeled P130

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 46.84 Feet
Static water level measurement before purging 35.93 Feet
Static water level measurement at time of sampling 35.93 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 4-24-17
Time Purged 1515-1542
Pump Rate 0.2 [✓ GPM] / LPM
Water Column 10.91 Feet
One Casing Volume 1.8 Gallons
Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 4-24-17
Time Sampled 1550
Sampling Equip. above pump
Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 11.5 (mg/l)
Spec. Cond. 840 (µmhos/cm) Turbidity 1.6 (NTU)
Temp. 12.0 (°C) (ORP) 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: 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)
1524	7.3	840	12.0	11.8	NA	193	1.8
1533	7.2	840	12.0	11.6	NA	194	3.6
1542	7.2	840	12.0	11.5	NA	194	5.4

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: Date: 4/24/17

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-131 Labeled P131

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 48.55 Feet

Static water level measurement before purging 33.15 Feet

Static water level measurement at time of sampling 33.15 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 4-25-17 Water Column 15.40 Feet

Time Purged 1710-1749 One Casing Volume 2.5 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 7.8 Gallons

Field Sampling Data

Date Sampled 4-25-17

Time Sampled 1800

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 8.4 (mg/l)

Spec. Cond. 600 (µmhos/cm) Turbidity 0.9 (NTU)

Temp. 10.5 (°C) (ORP) Eh 214 (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° + light rain, wind SE 5

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)
1723	7.6	600	10.5	8.5	NA	215	2.6
1736	7.6	600	10.5	8.4	NA	214	5.2
1749	7.6	600	10.5	8.4	NA	214	7.8

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 ShercoCCR April Project No. 17-0438

Monitoring Point ID P-132 Labeled P132

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 36.51 Feet
Static water level measurement before purging 28.17 Feet
Static water level measurement at time of sampling 28.17 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 4-25-17 Water Column 8.34 Feet
Time Purged 1625-1646 One Casing Volume 1.4 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 4-25-17
Time Sampled 1650
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 9.0 (mg/l)
Spec. Cond. 690 (µmhos/cm) Turbidity 28.3 (NTU)
Temp. 11.0 (°C) (ORP) Eh 222 (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 NW 5
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)
1632	7.4	690	11.0	9.1	NA	224	1.4
1639	7.4	690	11.0	9.0	NA	223	2.8
1646	7.4	690	11.0	9.0	NA	222	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: Date: 4/25/17

Pace Analytical®
Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy **Project** ShercoCCR April **Project No.** 17-0438

Monitoring Point ID P-150 Labeled 806320

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 36.66 Feet
Static water level measurement before purging 30.98 Feet
Static water level measurement at time of sampling 30.98 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 4-24-17 Water Column 5.68 Feet
Time Purged 1330-1345 One Casing Volume 0.9 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 3.0 Gallons

Field Sampling Data

Date Sampled 4-24-17
Time Sampled 1350
Sampling Equip. above pump
Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 12.4 (mg/l)
Spec. Cond. 400 (µmhos/cm) Turbidity 24.6 (NTU)
Temp. 11.5 (°C) (ORP) 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: 53° + 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)
1335	7.8	400	11.5	13.1	NA	167	1.0
1340	7.7	400	11.5	12.7	NA	167	2.0
1345	7.7	400	11.5	12.4	NA	167	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

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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-151 Labeled 806315

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 20.16 Feet
Static water level measurement before purging 10.12 Feet
Static water level measurement at time of sampling 10.12 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 4-26-17 Water Column 10.04 Feet
Time Purged 0840 - 0904 One Casing Volume 1.6 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 4-26-17
Time Sampled 0920
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 9.7 (mg/l)
Spec. Cond. 320 (µmhos/cm) Turbidity 8.4 (NTU)
Temp. 8.0 (°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: 40° + rain, wind N 15
Sample Description: clear + odorless
Observations: DJA 4/26/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0848	7.9	320	8.0	9.8	NA	206	1.6
0856	7.9	320	8.0	9.7	NA	204	3.2
0904	7.8	320	8.0	9.7	NA	203	4.8
			DJA 4/26/17				

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: 4/26/17

Pace Analytical®
Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy **Project** ShercoCCR ApHI **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 DVA

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 SE20

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)
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

DVA 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** Sherco CCR April **Project No.** 17-0438

Monitoring Point ID P-153 Labeled 806314

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 23.63 Feet

Static water level measurement before purging 14.85 Feet

Static water level measurement at time of sampling 14.85 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 4-26-17 Water Column 8.78 Feet

Time Purged 0750 - 0811 One Casing Volume 1.4 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 4-26-17

Time Sampled 0820

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 8.1 (units) D.O 10.8 (mg/l)

Spec. Cond. 190 (µmhos/cm) Turbidity 3.0 (NTU)

Temp. 9.0 (°C) (ORP) Eh 150 (mV)

Other NA

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

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

Weather Conditions During Sampling: 40° + rain, wind N20

Sample Description: clear + odorless

Observations: ~~DJA 4/26/17~~

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0757	8.1	190	9.0	11.0	NA	148	1.4
0804	8.1	190	9.0	10.8	NA	150	2.8
0811	8.1	190	9.0	10.8	NA	150	4.2
				~~DJA 4/26/17~~			

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: 4-26-17

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-154a Labeled 806316

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 49.53 Feet
Static water level measurement before purging 31.40 Feet
Static water level measurement at time of sampling 31.40 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 4-24-17 Water Column 18.13 Feet
Time Purged 1410 - 1455 One Casing Volume 3.0 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 9.0 Gallons

Field Sampling Data

Date Sampled 4-24-17
Time Sampled 1500
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 4.2 (mg/l)
Spec. Cond. 470 (µmhos/cm) Turbidity 3.5 (NTU)
Temp. 11.5 (°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: 55° + cloudy, wind SE 20
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)
1425	7.9	470	11.5	4.0	NA	171	3.0
1440	7.8	470	11.5	4.1	NA	170	6.0
1455	7.8	470	11.5	4.2	NA	170	9.0
				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: Date: 4/24/17

Pace Analytical®
Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy **Project** ShercoCCR ApH1 **Project No.** 17-0438

Monitoring Point ID P-162 Labeled 822156

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 166 Feet estimate

Static water level measurement before purging 151 Feet estimate

Static water level measurement at time of sampling 151 Feet estimate

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump

Date Purged 4-26-17 Water Column 15.00 Feet

Time Purged 1000-1021 One Casing Volume 2.5 Gallons

Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 4-26-17

Time Sampled 1030

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 2.4 (mg/l)

Spec. Cond. 670 (µmhos/cm) Turbidity 3.8 (NTU)

Temp. 9.5 (°C) (ORP) 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: 40° + light rain, wind N 20

Sample Description: clear + odorless

Observations: DJA 4-26-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1007	7.9	680	9.0	2.5	NA	199	2.8
1014	7.9	670	9.5	2.4	NA	197	5.6
1021	7.9	670	9.5	2.4	NA	194	8.4
			DJA	4/26/17			

Samples chilled immediately after collection: ☒ Yes ☐ Other

Form Revised: 03/10/2016

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

Lead Technician Signature: Date: 4-26-17

Pace Analytical®
Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy Project ShercoCCR April Project No. 17-0438

Monitoring Point ID P-163 Labeled 822157

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 176 Feet estimate

Static water level measurement before purging 161 Feet estimate

Static water level measurement at time of sampling 161 Feet estimate

Static Water Level Elevation Before Purging ____ Feet

Purge Method dedicated ~~bladder pump~~ waterra pump

Date Purged 4-26-17 Water Column 15.00 Feet

Time Purged 1055-1116 One Casing Volume 2.5 Gallons

Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 4-26-17

Time Sampled 1130

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 4.1 (mg/l)

Spec. Cond. 1130 (µmhos/cm) Turbidity 1.7 (NTU)

Temp. 9.5 (°C) (ORP) Eh 200 (mV)

Other NA

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

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

Weather Conditions During Sampling: 40° + cloudy, wind N20

Sample Description: clear + odorless

Observations: DJA 4/26/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1102	7.5	1140	9.5	4.2	NA	205	2.8
1109	7.4	1130	9.5	4.1	NA	203	5.6
1116	7.4	1130	9.5	4.1	NA	200	8.4
				DJA 4/26/17			

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: 4/26/17

Pace Analytical®
Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy   Project ShercoCCR April   Project No. 17-0438

Monitoring Point ID P-164   Labeled 822158

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 166 Feet estimate
Static water level measurement before purging 151 Feet estimate
Static water level measurement at time of sampling 151 Feet estimate
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump
Date Purged 4-26-17   Water Column 15.00 Feet
Time Purged 1150 - 1211   One Casing Volume 2.5 Gallons
Pump Rate 0.4 [✓ GPM] / LPM   Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 4-26-17
Time Sampled 1220
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units)   D.O 6.3 (mg/l)
Spec. Cond. 550 (µmhos/cm)   Turbidity 2.2 (NTU)
Temp. 9.5 (°C)   (ORP) 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: 39° + light rain, wind N20
Sample Description: clear + odorless
Observations: DJA 4/26/17

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1157	7.8	560	9.5	6.3	NA	197	2.8
1204	7.8	550	9.5	6.3	NA	196	5.6
1211	7.8	550	9.5	6.3	NA	194	8.4

DJA 4/26/17

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: 4-26-17

Pace Analytical®
Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy **Project** ShercoCCR April **Project No.** 17-0438

Monitoring Point ID P-165 Labeled 822/59

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 40.32 Feet
Static water level measurement before purging 30.39 Feet
Static water level measurement at time of sampling 30.39 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 4-25-17 Water Column 9.93 Feet
Time Purged 1530-1554 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 1600
Sampling Equip. above pump
Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 9.0 (mg/l)
Spec. Cond. 420 (µmhos/cm) Turbidity 31.4 (NTU)
Temp. 11.5 (°C) (ORP) Eh 215 (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 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)
1538	7.7	420	11.5	9.1	NA	217	1.6
1546	7.7	420	11.5	9.0	NA	216	3.2
1554	7.6	420	11.5	9.0	NA	215	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: Date: 4/25/17

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

10 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 Pond No. 3 CCR Groundwater Monitoring System. HSD 1/10/18

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

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: MCD0271 Xcel General Report FINAL 05 24 2017 0918 05 24 2017 0509

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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-150		MCD0271-03	Water	04/24/2017 13:50	04/26/2017 14:00
P-154a		MCD0271-04	Water	04/24/2017 15:00	04/26/2017 14:00
P-130		MCD0271-05	Water	04/24/2017 15:50	04/26/2017 14:00
Duplicate		MCD0271-12	Water	04/25/2017 12:00	04/26/2017 14:00
P-165		MCD0271-16	Water	04/25/2017 16:00	04/26/2017 14:00
P-132		MCD0271-17	Water	04/25/2017 16:50	04/26/2017 14:00
P-131		MCD0271-18	Water	04/25/2017 18:00	04/26/2017 14:00
P-153		MCD0271-19	Water	04/26/2017 8:20	04/26/2017 14:00
P-151		MCD0271-20	Water	04/26/2017 9:20	04/26/2017 14:00
P-162		MCD0271-21	Water	04/26/2017 10:30	04/26/2017 14:00
P-163		MCD0271-22	Water	04/26/2017 11:30	04/26/2017 14:00
P-164		MCD0271-23	Water	04/26/2017 12:20	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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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

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	01/10/2018 13:10

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

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	01/10/2018 13:10

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

P-150

MCD0271-03 (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	21.6	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 17:49	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 17:49	EPA 300.0	CRL
Sulfate	5.68	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 17:49	EPA 300.0	CRL
Wet Chemistry										
pH	7.88		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:12	SM 4500-H+ B	CRL
Total Dissolved Solids	208	20.0	mg/L		1	BCD0591	4/27/17 9:24	4/27/17 9:24	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	12.1	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:36	EPA 200.8	CRL
Barium	356	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:36	EPA 200.8	CRL
Beryllium	0.724	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:36	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:36	EPA 200.8	CRL
Cobalt	29.8	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:36	EPA 200.8	CRL
Chromium	63.9	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:36	EPA 200.8	CRL
Molybdenum	1.97	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:36	EPA 200.8	CRL
Lead	12.1	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:36	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:36	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:36	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:36	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 12:46	EPA 200.7	HRD
Calcium	212	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:44	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:44	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

P-150

MCD0271-03 (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 14:42	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

P-154a

MCD0271-04 (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	17.0	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 18:10	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 18:10	EPA 300.0	CRL
Sulfate	39.3	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 18:10	EPA 300.0	CRL
Wet Chemistry										
pH	7.90		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:15	SM 4500-H+ B	CRL
Total Dissolved Solids	306	20.0	mg/L		1	BCD0591	4/27/17 9:24	4/27/17 9:24	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.945	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:40	EPA 200.8	CRL
Barium	50.8	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:40	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:40	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:40	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:40	EPA 200.8	CRL
Chromium	0.958	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:40	EPA 200.8	CRL
Molybdenum	1.12	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:40	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:40	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:40	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:40	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:40	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 12:51	EPA 200.7	HRD
Calcium	68.8	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:49	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:49	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

P-154a

MCD0271-04 (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 14:43	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

P-130

MCD0271-05 (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	1.20	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 18:30	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 18:30	EPA 300.0	CRL
Sulfate	12.0	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 18:30	EPA 300.0	CRL
Wet Chemistry										
pH	7.37		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 8:19	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 9:44	EPA 200.8	CRL
Barium	101	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:44	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:44	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:44	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:44	EPA 200.8	CRL
Chromium	0.964	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:44	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:44	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:44	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:44	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:44	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 9:44	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 12:56	EPA 200.7	HRD
Calcium	128	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:54	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 12:54	EPA 200.7	HRD

Amended Report

Original Report ID: MCD0271 Xcel General Report FINAL 05 24 2017 0918 05 24 2017 0509

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-05 (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 14:45	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.

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

Amended Report

Original Report ID: MCD0271 Xcel General Report FINAL 05 24 2017 0918 05 24 2017 0509

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-16 (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	1.94	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 23:57	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 23:57	EPA 300.0	CRL
Sulfate	17.6	1.00	mg/L		1	BCE0217	5/10/17 5:55	5/10/17 23:57	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 9:02	SM 4500-H+ B	CRL
Total Dissolved Solids	262	20.0	mg/L		1	BCD0617	4/28/17 9:16	4/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	1.79	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:37	EPA 200.8	CRL
Barium	68.2	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:37	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:37	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:37	EPA 200.8	CRL
Cobalt	3.57	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:37	EPA 200.8	CRL
Chromium	9.72	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:37	EPA 200.8	CRL
Molybdenum	0.559	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:37	EPA 200.8	CRL
Lead	2.06	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:37	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:37	EPA 200.8	CRL
Selenium	0.781	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:37	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:37	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0503	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:01	EPA 200.7	HRD
Calcium	74.6	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:00	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:00	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-16 (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 15:07	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-17 (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	3.91	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 12:19	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 12:19	EPA 300.0	CRL
Sulfate	68.2	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 12:19	EPA 300.0	CRL
Wet Chemistry										
pH	7.67		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 9:06	SM 4500-H+ B	CRL
Total Dissolved Solids	426	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 10:41	EPA 200.8	CRL
Barium	45.7	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:41	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:41	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:41	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:41	EPA 200.8	CRL
Chromium	4.61	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:41	EPA 200.8	CRL
Molybdenum	0.590	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:41	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:41	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:41	EPA 200.8	CRL
Selenium	1.59	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:41	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:41	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0601	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:06	EPA 200.7	HRD
Calcium	97.8	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:05	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:05	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-17 (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 15:09	EPA 245.1, 7470A	HRD

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	01/10/2018 13:10

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MCD0271-18 (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	24.8	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 12:39	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 12:39	EPA 300.0	CRL
Sulfate	34.0	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 12:39	EPA 300.0	CRL
Wet Chemistry										
pH	7.84		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 9:09	SM 4500-H+ B	CRL
Total Dissolved Solids	334	20.0	mg/L		1	BCD0617	4/28/17 9:16	4/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.522	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:45	EPA 200.8	CRL
Barium	79.7	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:45	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:45	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:45	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:45	EPA 200.8	CRL
Chromium	0.938	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:45	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:45	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:45	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:45	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:45	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:45	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 14:11	EPA 200.7	HRD
Calcium	74.7	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:10	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:10	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-18 (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	BCE0163	5/8/17 6:49	5/8/17 12:23	EPA 245.1, 7470A	KMR

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-19 (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	BCE0264	5/11/17 5:57	5/11/17 13:00	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 13:00	EPA 300.0	CRL
Sulfate	2.56	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 13:00	EPA 300.0	CRL
Wet Chemistry										
pH	8.14		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 9:13	SM 4500-H+ B	CRL
Total Dissolved Solids	114	20.0	mg/L		1	BCD0617	4/28/17 9:16	4/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.608	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:49	EPA 200.8	CRL
Barium	13.3	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:49	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:49	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:49	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:49	EPA 200.8	CRL
Chromium	0.611	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:49	EPA 200.8	CRL
Molybdenum	0.539	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:49	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:49	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:49	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:49	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:49	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 14:16	EPA 200.7	HRD
Calcium	25.0	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:15	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:15	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-19 (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	BCE0163	5/8/17 6:49	5/8/17 12:25	EPA 245.1, 7470A	KMR

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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-20 (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	11.7	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 13:20	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 13:20	EPA 300.0	CRL
Sulfate	12.4	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 13:20	EPA 300.0	CRL
Wet Chemistry										
pH	8.02		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 9:16	SM 4500-H+ B	CRL
Total Dissolved Solids	200	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 10:53	EPA 200.8	CRL
Barium	31.9	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:53	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:53	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:53	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:53	EPA 200.8	CRL
Chromium	0.866	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:53	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:53	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:53	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:53	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:53	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0004	5/1/17 8:16	5/22/17 10:53	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 14:21	EPA 200.7	HRD
Calcium	43.8	0.500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:20	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0003	5/1/17 8:13	5/4/17 14:20	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-20 (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	BCE0163	5/8/17 6:49	5/8/17 12:27	EPA 245.1, 7470A	KMR

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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

P-162

MCD0271-21 (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	26.8	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 13:40	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 13:40	EPA 300.0	CRL
Sulfate	78.6	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 13:40	EPA 300.0	CRL
Wet Chemistry										
pH	8.01		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 9:23	SM 4500-H+ B	CRL
Total Dissolved Solids	426	20.0	mg/L		1	BCE0002	5/1/17 9:06	5/1/17 9:06	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.685	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:02	EPA 200.8	CRL
Barium	43.9	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:02	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:02	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:02	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:02	EPA 200.8	CRL
Chromium	6.48	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:02	EPA 200.8	CRL
Molybdenum	10.3	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:02	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:02	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:02	EPA 200.8	CRL
Selenium	2.19	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:02	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:02	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.221	0.0500	mg/L		1	BCE0055	5/2/17 11:43	5/3/17 12:39	EPA 200.7	HRD
Calcium	64.8	0.500	mg/L		1	BCE0055	5/2/17 11:43	5/3/17 12:38	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0055	5/2/17 11:43	5/3/17 12:38	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-21 (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	BCE0163	5/8/17 6:49	5/8/17 12:28	EPA 245.1, 7470A	KMR

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-22 (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	15.5	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 14:01	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 14:01	EPA 300.0	CRL
Sulfate	190	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 14:01	EPA 300.0	CRL
Wet Chemistry										
pH	7.46		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 9:27	SM 4500-H+ B	CRL
Total Dissolved Solids	772	20.0	mg/L		1	BCE0002	5/1/17 9:06	5/1/17 9:06	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:06	EPA 200.8	CRL
Barium	103	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:06	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:06	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:06	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:06	EPA 200.8	CRL
Chromium	6.86	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:06	EPA 200.8	CRL
Molybdenum	0.698	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:06	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:06	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:06	EPA 200.8	CRL
Selenium	30.9	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:06	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:06	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.751	0.0500	mg/L		1	BCE0055	5/2/17 11:43	5/3/17 12:45	EPA 200.7	HRD
Calcium	164	0.500	mg/L		1	BCE0055	5/2/17 11:43	5/3/17 12:43	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0055	5/2/17 11:43	5/3/17 12:43	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-22 (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	BCE0163	5/8/17 6:49	5/8/17 12:34	EPA 245.1, 7470A	KMR

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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MCD0271-23 (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	9.95	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 14:21	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 14:21	EPA 300.0	CRL
Sulfate	44.6	1.00	mg/L		1	BCE0264	5/11/17 5:57	5/11/17 14:21	EPA 300.0	CRL
Wet Chemistry										
pH	7.99		pH Units	M_TTT	1	BCD0593	4/27/17 7:37	4/27/17 9:31	SM 4500-H+ B	CRL
Total Dissolved Solids	310	20.0	mg/L		1	BCE0002	5/1/17 9:06	5/1/17 9:06	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:10	EPA 200.8	CRL
Barium	40.6	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:10	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:10	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:10	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:10	EPA 200.8	CRL
Chromium	1.91	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:10	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:10	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:10	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:10	EPA 200.8	CRL
Selenium	2.27	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:10	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0056	5/2/17 11:45	5/17/17 11:10	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0055	5/2/17 11:43	5/3/17 12:50	EPA 200.7	HRD
Calcium	76.6	0.500	mg/L		1	BCE0055	5/2/17 11:43	5/3/17 12:48	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0055	5/2/17 11:43	5/3/17 12:48	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

P-164

MCD0271-23 (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	BCE0163	5/8/17 6:49	5/8/17 12:35	EPA 245.1, 7470A	KMR

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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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	

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							

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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							

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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						
Barium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Arsenic	<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							
Thallium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Cobalt	<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	

Total Metals by ICPMS - Quality Control

Batch BCE0004 - EPA 200.2, EPA 3005

Duplicate (BCE0004-DUP2) **Source: MCD0271-05** Prepared: 05/01/2017 Analyzed: 05/22/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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			

Total Metals by ICPMS - Quality Control

Batch BCE0004 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCE0004-MSD1) **Source: MCD0271-04** Prepared: 05/01/2017 Analyzed: 05/22/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Beryllium	95.8	0.500	ug/L	100.00	<0.500	95.8	70-130	1.83	20	
Cadmium	101	0.500	ug/L	100.00	<0.500	101	70-130	0.911	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	
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	
Antimony	101	0.500	ug/L	100.00	<0.500	101	70-130	0.413	20	
Thallium	95.3	0.500	ug/L	100.00	<0.500	95.3	70-130	1.54	20	
Selenium	97.9	0.500	ug/L	100.00	<0.500	97.9	70-130	2.99	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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Barium	<0.500	0.500	ug/L							
Selenium	<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							
Thallium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							

Total Metals by ICPMS - Quality Control

Batch BCE0056 - EPA 200.2, EPA 3005

LCS (BCE0056-BS1) Prepared: 05/02/2017 Analyzed: 05/17/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	98.3	0.500	ug/L	100.00		98.3	85-115			
Cobalt	96.5	0.500	ug/L	100.00		96.5	85-115			
Beryllium	99.9	0.500	ug/L	100.00		99.9	85-115			
Barium	95.0	0.500	ug/L	100.00		95.0	85-115			
Cadmium	97.5	0.500	ug/L	100.00		97.5	85-115			
Antimony	97.5	0.500	ug/L	100.00		97.5	85-115			
Molybdenum	96.3	0.500	ug/L	100.00		96.3	85-115			
Chromium	99.8	0.500	ug/L	100.00		99.8	85-115			
Thallium	97.4	0.500	ug/L	100.00		97.4	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			

Duplicate (BCE0056-DUP1) **Source: MCD0271-22** Prepared: 05/02/2017 Analyzed: 05/17/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Thallium	0.124	0.500	ug/L		0.0249			133	20	M_D-RL
Cadmium	0.0603	0.500	ug/L		0.0366			48.8	20	M_D-RL
Barium	101	0.500	ug/L		103			1.64	20	
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	
Beryllium	0.208	0.500	ug/L		0.0101			182	20	M_D-RL
Cobalt	0.238	0.500	ug/L		0.238			0.381	20	
Chromium	6.70	0.500	ug/L		6.86			2.34	20	
Lead	0.0606	0.500	ug/L		0.0148			121	20	M_D-RL
Selenium	30.5	0.500	ug/L		30.9			1.59	20	
Molybdenum	0.767	0.500	ug/L		0.698			9.32	20	

Matrix Spike (BCE0056-MS1) **Source: MCD0271-22** Prepared: 05/02/2017 Analyzed: 05/17/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Thallium	88.8	0.500	ug/L	100.00	0.0249	88.7	70-130			
Molybdenum	98.2	0.500	ug/L	100.00	0.698	97.5	70-130			
Cobalt	97.7	0.500	ug/L	100.00	0.238	97.5	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			
Arsenic	106	0.500	ug/L	100.00	0.462	105	70-130			
Beryllium	92.7	0.500	ug/L	100.00	0.0101	92.7	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			
Antimony	98.7	0.500	ug/L	100.00	0.0334	98.6	70-130			
Chromium	109	0.500	ug/L	100.00	6.86	102	70-130			

Total Metals by ICPMS - Quality Control

Batch BCE0056 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCE0056-MSD1) **Source: MCD0271-22** Prepared: 05/02/2017 Analyzed: 05/17/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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	
Lead	90.7	0.500	ug/L	100.00	0.0148	90.7	70-130	5.73	20	
Cadmium	95.3	0.500	ug/L	100.00	0.0366	95.2	70-130	0.490	20	
Selenium	130	0.500	ug/L	100.00	30.9	98.7	70-130	0.0595	20	
Chromium	110	0.500	ug/L	100.00	6.86	103	70-130	1.27	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	
Beryllium	97.9	0.500	ug/L	100.00	0.0101	97.9	70-130	5.51	20	
Cobalt	98.7	0.500	ug/L	100.00	0.238	98.5	70-130	0.960	20	
Molybdenum	104	0.500	ug/L	100.00	0.698	104	70-130	6.03	20	

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	01/10/2018 13:10

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							
Boron	<0.0500	0.0500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
LCS (BCE0003-BS1)				Prepared: 05/01/2017 Analyzed: 05/04/2017						
Boron	1.01	0.0500	mg/L	1.0000		101	85-115			
Calcium	102	0.500	mg/L	100.00		102	85-115			
Lithium	0.988	0.0500	mg/L	1.0000		98.8	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						
Boron	0.0366	0.0500	mg/L		0.0368			0.744	20	
Calcium	214	0.500	mg/L		212			1.20	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						
Boron	1.03	0.0500	mg/L	1.0000	0.0578	96.7	70-130			
Lithium	1.00	0.0500	mg/L	1.0000	<0.0500	100	75-125			
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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

Total Metals by ICP - Quality Control

Batch BCE0003 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCE0003-MSD1) **Source: MCD0271-02** Prepared: 05/01/2017 Analyzed: 05/04/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Calcium	315	0.500	mg/L	100.00	212	103	70-130	0.949	20	
Lithium	0.964	0.0500	mg/L	1.0000	<0.0500	96.4	75-125	0.550	20	
Boron	0.960	0.0500	mg/L	1.0000	0.0368	92.3	70-130	0.461	20	

Batch BCE0055 - EPA 200.2, EPA 3005

Blank (BCE0055-BLK1) Prepared: 05/02/2017 Analyzed: 05/03/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lithium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
Boron	<0.0500	0.0500	mg/L							

LCS (BCE0055-BS1) Prepared: 05/02/2017 Analyzed: 05/03/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Calcium	103	0.500	mg/L	100.00		103	85-115			
Lithium	0.992	0.0500	mg/L	1.0000		99.2	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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	78.2	0.500	mg/L		76.6			2.12	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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lithium	1.00	0.0500	mg/L	1.0000	<0.0500	100	75-125			
Calcium	185	0.500	mg/L	100.00	76.6	109	70-130			
Boron	1.05	0.0500	mg/L	1.0000	0.0373	101	70-130			

Amended Report

Original Report ID: MCD0271 Xcel General Report FINAL 05 24 2017 0918 05 24 2017 0509

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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							
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	
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125	1.25	20	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:10

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							

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	

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:	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, April 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	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			
① marked HNO3 bottles filtered, and unfiltered.	David Anderson / Pace	4/26/17	1400	/Xcel	4/26/17	1405	3.1	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Clint Dalzey

ORIGINAL

pH strips: MB00508

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 4/25/17

[illegible]

*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

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	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	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	HD /Xcel	4/26/17	1405	3.1	Y	Y	Y

Client Deliv/
pH strips: MB00508

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 4/26/17

MJ00841:

*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

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 L Robl

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

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

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

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

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

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

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:

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:

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.

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	

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	

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	

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	

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	

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	

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	

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	

REPORT OF LABORATORY ANALYSIS

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	

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.

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	

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.

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	

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.

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	

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.

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

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CU

The Chain-of-Custody is a

WO#:30217613

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: 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

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	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-74-1	WT				4/19/17	1150		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																						

Requested Analysis Filtered (Y/N)

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	5-1-17	945	N/A	N	N	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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

*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.

30217613

Page: 2 of 3

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 -
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: 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	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-152a	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-014-1						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 / Pace	5-1-17	945	N/A	n	n	y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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): 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.

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

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CHAIN-OF-CUSTODY / Analytical Request Document

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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: Clara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: ~~Tom Halverson~~
Pace Profile #: Robbin Robl

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	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-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-133	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					DTA 4/26/17																	
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	4/27/17	0920	Michael L	5-1-17	945	NA	n	n	y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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): 4/26/17

*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.

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

RTB

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: XCel nrgy 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: ML 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:	X			5.
-Includes date/time/ID Matrix: WT				
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 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. # 17-0570

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)		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	19.0	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 #156100067		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

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

DJA 5/23/17

	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: ____________ 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)

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	13.0

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

DJA 5/24/17

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: 5/24/17

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 #15G100067	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)*

DJA 5/24/17

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: (°C)	12.0	Ambient Temp: (°C)	12.0
Barometric Pressure (in. Hg)	28.94	Barometric Pressure (in. Hg)	28.94
Barometric Pressure (mm Hg)	735.08	Barometric Pressure (mm Hg)	735.08
Calibration Value[1] (%)	97	Calibration Value[1] (%)	97
IC Meter Result (%)	97	ICV Meter Result (%)	97

IC/ICV Time 0700 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 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)*

DJA 5/24/17

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: 5/24/17

Sherco 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

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 5/24/17			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: 5/24/17

Form Revised: 11/14/2013

Attach additional notes if necessary.

Sherco CCR - May 2017
Field Proj. # 17-0576

Pace Analytical®
Field Services Division

pH and Conductivity
Field Calibration and Verification Sheet

Technician(s) DJA Date 5/25/17 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	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)

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	13.0

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	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)**	
Calibration Std. Value (mV)	247	Secondary Source Std. Value (mV)	247
Mfg.	Zabells ORP std.	Mfg.	Zabells 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)**
247	13.0	247	13.0

Meter Make YSI Sonde **ID** #5

IC/ICV Time 0705 / 0707

Initials DJA

ICV: [✓ Pass] / Fail

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)*

DJA 5/25/17

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: (°C)	11.0	Ambient Temp: (°C)	11.0
Barometric Pressure (in. Hg)	28.94	Barometric Pressure (in. Hg)	28.94
Barometric Pressure (mm Hg)	735.08	Barometric Pressure (mm Hg)	735.08
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-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 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** ____ (%) **CCV:** Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

DJA 5/25/17

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

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

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	99	998	IC Time 0710 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 0720 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	98	997	CCV Time 1115 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 5/25/17			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: 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-130 Labeled P130

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 46.84 Feet

Static water level measurement before purging 35.78 Feet

Static water level measurement at time of sampling 35.78 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 5-16-17 Water Column 11.06 Feet

Time Purged 0835-0902 One Casing Volume 1.8 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 5-16-17

Time Sampled 0910

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.0 (units) D.O 10.1 (mg/l)

Spec. Cond. 850 (µmhos/cm) Turbidity 2.7 (NTU)

Temp. 11.5 (°C) Eh 254 (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° + light rain, wind SE 5-10

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)
0844	7.0	850	11.5	9.5	NA	256	1.8
0853	7.0	850	11.5	9.8	NA	255	3.6
0902	7.0	850	11.5	10.1	NA	254	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-131 Labeled P131

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 48.55 Feet
Static water level measurement before purging 33.40 Feet
Static water level measurement at time of sampling 33.40 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 5-15-17 Water Column 15.15 Feet
Time Purged 1725-1804 One Casing Volume 2.5 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 7.8 Gallons

Field Sampling Data

Date Sampled 5-15-17
Time Sampled 1810
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 12.5 (mg/l)
Spec. Cond. 600 (µmhos/cm) Turbidity 2.5 (NTU)
Temp. 11.0 (°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: 69° + partly cloudy, wind SE10
Sample Description: clear + odorless
Observations: DJA 5/15/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1738	7.4	600	11.0	13.3	NA	221	2.6
1751	7.4	600	11.0	12.7	NA	220	5.2
1804	7.4	600	11.0	12.5	NA	220	7.8

DJA 5/15/17

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: 5/15/17

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-132 Labeled P132

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 36.51 Feet
Static water level measurement before purging 27.95 Feet
Static water level measurement at time of sampling 27.95 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 5-15-17 Water Column 8.56 Feet
Time Purged 1645-1706 One Casing Volume 1.4 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 5-15-17
Time Sampled 1710
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 12.7 (mg/l)
Spec. Cond. 720 (µmhos/cm) Turbidity ~~NA~~ 4.3 (NTU)
Temp. 11.5 (°C) Eh 243 (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° + partly cloudy, wind SE10
Sample Description: clear + odorless
Observations: DJA 5/15/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1652	7.6	730	12.0	13.4	NA	243	1.4
1659	7.5	720	11.5	12.9	NA	243	2.8
1706	7.5	720	11.5	12.7	NA	243	4.2
			DJA	5/15/17			

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: 5/15/17

Pace Analytical®
Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy **Project** Sherco CCR May17 **Project No.** 17-0570

Monitoring Point ID P-150 Labeled 806320

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 36.66 Feet

Static water level measurement before purging 30.42 Feet

Static water level measurement at time of sampling 30.42 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method ~~dedicated bladder pump~~ *Grundfos sub pump

Date Purged 5-24-17 Water Column 6.24 Feet

Time Purged 1505-1511 One Casing Volume 1.0 Gallons

Pump Rate 0.5 [✓ GPM] / LPM Volume Purged 3.0 Gallons

Field Sampling Data

Date Sampled 5-24-17

Time Sampled 1520

Sampling Equip. above pump

Analyzed by DA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 9.1 (mg/l)

Spec. Cond. 420 (µmhos/cm) Turbidity 46.9 (NTU)

Temp. 11.5 (°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: 58° + cloudy, wind NE 10

Sample Description: clear + odorless

Observations: * dedicated bladder pump not working, used Grundfos pump, needs new bladder.

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1507	8.0	420	11.5	9.4	NA	252	1.0
1509	7.9	420	11.5	9.3	NA	245	2.0
1511	7.9	420	11.5	9.1	NA	240	3.0

DA 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 May17 **Project No.** 17-0570

Monitoring Point ID P-151 Labeled 806315

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 20.16 Feet

Static water level measurement before purging 9.75 Feet

Static water level measurement at time of sampling 9.75 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 5-24-17 Water Column 10.41 Feet

Time Purged 1750-1817 One Casing Volume 1.7 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 5-24-17

Time Sampled 1830

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 8.1 (units) D.O 10.3 (mg/l)

Spec. Cond. 300 (µmhos/cm) Turbidity 4.3 (NTU)

Temp. 10.5 (°C) (ORP) Eh 195 (mV)

Other NA

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

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

Weather Conditions During Sampling: 60° + cloudy, wind NE 10

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)
1759	8.1	300	10.5	10.4	NA	200	1.8
1808	8.1	300	10.5	10.3	NA	197	3.6
1817	8.1	300	10.5	10.3	NA	195	5.4

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 May/17 **Project No.** 17-0570

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 35.58 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 DJA

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)	Specific 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

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 May/17 **Project No.** 17-0570

Monitoring Point ID P-153 Labeled 806314

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 23.63 Feet

Static water level measurement before purging 14.47 Feet

Static water level measurement at time of sampling 14.47 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 5-24-17 Water Column 9.16 Feet

Time Purged 1650-1714 One Casing Volume 1.5 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 5-24-17

Time Sampled 1720

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 8.2 (units) D.O 11.1 (mg/l)

Spec. Cond. 190 (µmhos/cm) Turbidity 2.1 (NTU)

Temp. 10.5 (°C) (ORP) Eh 158 (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°+ partly 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)
1658	8.3	190	10.5	11.2	NA	153	1.6
1706	8.3	190	10.5	11.1	NA	156	3.2
1714	8.2	190	10.5	11.1	NA	158	4.8

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 May/17 Project No. 17-0570

Monitoring Point ID P-154d Labeled 806316

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 49.53 Feet
Static water level measurement before purging 31.04 Feet
Static water level measurement at time of sampling 31.04 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 5-24-17 Water Column 18.49 Feet
Time Purged 1540-1625 One Casing Volume 3.0 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 9.0 Gallons

Field Sampling Data

Date Sampled 5-24-17
Time Sampled 1630
Sampling Equip. above pump
Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 4.8 (mg/l)
Spec. Cond. 500 (µmhos/cm) Turbidity 4.9 (NTU)
Temp. 11.0 (°C) (ORP) Eh 216 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 59° + cloudy, wind NE 10
Sample Description: clear + odorless
Observations: DTA 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)
1555	8.0	480	11.0	4.5	NA	229	3.0
1610	7.9	500	11.0	4.6	NA	221	6.0
1625	7.9	500	11.0	4.8	NA	216	9.0
		DTA 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 May'17 **Project No.** 17-0570

Monitoring Point ID P-162 Labeled 822156

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 166 Feet estimate
Static water level measurement before purging 151 Feet estimate
Static water level measurement at time of sampling 151 Feet estimate
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump
Date Purged 5-25-17 Water Column 15.00 Feet
Time Purged 0820-0841 One Casing Volume 2.5 Gallons
Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 5-25-17
Time Sampled 0850
Sampling Equip. above pump
Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 2.7 (mg/l)
Spec. Cond. 700 (µmhos/cm) Turbidity 5.4 (NTU)
Temp. 11.5 (°C) (ORP) Eh 241 (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° + sunny, wind SE 5-10
Sample Description: clear + odorless
Observations:

DTA 5/25/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0827	7.7	700	11.0	2.7	NA	268	2.8
0834	7.7	700	11.5	2.7	NA	253	5.6
0841	7.7	700	11.5	2.7	NA	241	8.4

DTA 5/25/17

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: 5/25/17

Pace Analytical®
Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy **Project** Sherco CCR May17 **Project No.** 17-0570

Monitoring Point ID P-163 Labeled 822157

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 176 Feet estimate
Static water level measurement before purging 161 Feet estimate
Static water level measurement at time of sampling 161 Feet estimate
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump
Date Purged 5-25-17 Water Column 15.00 Feet
Time Purged 0920 - 0941 One Casing Volume 2.5 Gallons
Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 5-25-17
Time Sampled 0950
Sampling Equip. above
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 4.8 (mg/l)
Spec. Cond. 830 (µmhos/cm) Turbidity 3.9 (NTU)
Temp. 12.0 (°C) (ORP) Eh 214 (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° + sunny, wind SE 10-15.
Sample Description: clear + odorless
Observations: DJA 5/25/17

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0927	7.8	810	12.0	4.9	NA	231	2.8
0934	7.7	820	12.0	4.8	NA	220	5.6
0941	7.7	830	12.0	4.8	NA	214	8.4
		DJA 5/25/17					

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: 5/25/17

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-164 Labeled 822158

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 166 Feet estimate
Static water level measurement before purging 151 Feet estimate
Static water level measurement at time of sampling 151 Feet estimate
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated waterra pump
Date Purged 5-25-17 Water Column 15.00 Feet
Time Purged 1010-1031 One Casing Volume 2.5 Gallons
Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 5-25-17
Time Sampled 1040
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 6.6 (mg/l)
Spec. Cond. 540 (µmhos/cm) Turbidity 4.4 (NTU)
Temp. 12.0 (°C) Eh 144 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 56° + sunny, wind E20
Sample Description: clear + odorless
Observations: DJA 5/25/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1017	8.0	550	12.5	6.3	NA	148	2.8
1024	7.9	540	12.0	6.5	NA	146	5.6
1031	7.9	540	12.0	6.6	NA	144	8.4
			DJA 5/25/17				

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: 5/25/17

Pace Analytical®
Field Services Division

Well Sampling Field Data Log Sheet

Well Description and Presampling Information

Client Xcel Energy **Project** Sherco CCR May17 **Project No.** 17-0570

Monitoring Point ID P-165 Labeled 822/59

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 40.32 Feet

Static water level measurement before purging 29.97 Feet

Static water level measurement at time of sampling 29.97 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 5-25-17 Water Column 10.35 Feet

Time Purged 0725-0752 One Casing Volume 1.7 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 5-25-17

Time Sampled 0800

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 9.5 (mg/l)

Spec. Cond. 440 (µmhos/cm) Turbidity 6.5 (NTU)

Temp. 11.0 (°C) (ORP) Eh 208 (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 SE 5

Sample Description: clear + odorless

Observations: DJA 5/25/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp. (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0734	7.2	440	11.0	9.5	NA	213	1.8
0743	7.2	440	11.0	9.5	NA	210	3.6
0752	7.2	440	11.0	9.5	NA	208	5.4

DJA 5/25/17

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: 5/25/17

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

10 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 Pond No. 3 CCR Groundwater Monitoring System. HSD 1/10/18

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

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	01/10/2018 13:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	**Sample Qualifier**	**Laboratory ID**	**Matrix**	**Sampled**	**Received**
P-132		MCE0177-09	Water	05/15/2017 17:10	05/18/2017 9:20
P-131		MCE0177-10	Water	05/15/2017 18:10	05/18/2017 9:20
P-130		MCE0177-11	Water	05/16/2017 9:10	05/18/2017 9:20
Rinse		MCE0257-01	Water	05/23/2017 11:00	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
P-150		MCE0257-17	Water	05/24/2017 15:20	05/25/2017 12:26
P-154a		MCE0257-18	Water	05/24/2017 16:30	05/25/2017 12:26
P-153		MCE0257-19	Water	05/24/2017 17:20	05/25/2017 12:26
P-151		MCE0257-20	Water	05/24/2017 18:30	05/25/2017 12:26
P-165		MCE0257-21	Water	05/25/2017 8:00	05/25/2017 12:26
P-162		MCE0257-22	Water	05/25/2017 8:50	05/25/2017 12:26
P-163		MCE0257-23	Water	05/25/2017 9:50	05/25/2017 12:26
P-164		MCE0257-24	Water	05/25/2017 10:40	05/25/2017 12:26

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

P-132

MCE0177-09 (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	3.25	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 14:50	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 14:50	EPA 300.0	CRL
Sulfate	75.4	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 14:50	EPA 300.0	CRL
Wet Chemistry										
pH	7.74		pH Units	M_TTT	1	BCE0462	5/18/17 14:17	5/18/17 16:44	SM 4500-H+ B	CRL
Total Dissolved Solids	446	20.0	mg/L		1	BCE0452	5/19/17 8:54	5/19/17 8:54	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:50	EPA 200.8	CRL
Barium	46.4	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:50	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:50	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:50	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:50	EPA 200.8	CRL
Chromium	1.82	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:50	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:50	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:50	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:50	EPA 200.8	CRL
Selenium	1.44	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:50	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:50	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 15:45	EPA 200.7	HRD
Calcium	104	0.500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 15:42	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 15:42	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

P-132

MCE0177-09 (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 14:28	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

P-131

MCE0177-10 (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	23.4	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 15:11	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 15:11	EPA 300.0	CRL
Sulfate	31.2	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 15:11	EPA 300.0	CRL
Wet Chemistry										
pH	7.90		pH Units	M_TTT	1	BCE0462	5/18/17 14:17	5/18/17 16:52	SM 4500-H+ B	CRL
Total Dissolved Solids	334	20.0	mg/L		1	BCE0452	5/19/17 8:54	5/19/17 8:54	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.544	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:54	EPA 200.8	CRL
Barium	81.0	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:54	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:54	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:54	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:54	EPA 200.8	CRL
Chromium	0.732	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:54	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:54	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:54	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:54	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:54	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:54	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 15:50	EPA 200.7	HRD
Calcium	79.5	0.500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 15:48	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 15:48	EPA 200.7	HRD

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	01/10/2018 13:29

P-131

MCE0177-10 (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 14:30	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

P-130

MCE0177-11 (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	1.12	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 17:13	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 17:13	EPA 300.0	CRL
Sulfate	11.2	1.00	mg/L		1	BCE0554	5/24/17 8:17	5/24/17 17:13	EPA 300.0	CRL
Wet Chemistry										
pH	7.50		pH Units	M_TTT	1	BCE0462	5/18/17 14:17	5/18/17 16:59	SM 4500-H+ B	CRL
Total Dissolved Solids	496	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 10:58	EPA 200.8	CRL
Barium	111	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:58	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:58	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:58	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:58	EPA 200.8	CRL
Chromium	1.04	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:58	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:58	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:58	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:58	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:58	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0495	5/22/17 10:18	5/24/17 10:58	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 15:56	EPA 200.7	HRD
Calcium	130	0.500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 15:54	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0494	5/22/17 10:16	6/6/17 15:54	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

P-130

MCE0177-11 (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 14:31	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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

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	01/10/2018 13:29

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

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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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

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	01/10/2018 13:29

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

P-150

MCE0257-17 (Water) - Chain of Custody Number: 2052836/2052894

Anions by Ion Chromatography

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Chloride	26.5	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 22:35	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 22:35	EPA 300.0	CRL
Sulfate	5.35	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 22:35	EPA 300.0	CRL

Wet Chemistry

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
pH	7.92		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 14:38	SM 4500-H+ B	CRL
Total Dissolved Solids	218	20.0	mg/L		1	BCE0644	5/30/17 9:50	5/30/17 9:50	SM 2540C	CRL

Total Metals by ICPMS

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Arsenic	0.932	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:15	EPA 200.8	CRL
Barium	54.1	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:15	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:15	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:15	EPA 200.8	CRL
Cobalt	0.852	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:15	EPA 200.8	CRL
Chromium	5.91	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:15	EPA 200.8	CRL
Molybdenum	0.580	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:15	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:15	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:15	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:15	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:15	EPA 200.8	CRL

Total Metals by ICP

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Boron	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:20	EPA 200.7	HRD
Calcium	51.3	0.500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:18	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:18	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-17 (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 14:38	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-18 (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	16.7	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 22:56	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 22:56	EPA 300.0	CRL
Sulfate	39.7	1.00	mg/L		1	BCF0082	6/5/17 10:11	6/5/17 22:56	EPA 300.0	CRL
Wet Chemistry										
pH	7.96		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 14:42	SM 4500-H+ B	CRL
Total Dissolved Solids	262	20.0	mg/L		1	BCE0644	5/30/17 9:50	5/30/17 9:50	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.887	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:19	EPA 200.8	CRL
Barium	48.3	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:19	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:19	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:19	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:19	EPA 200.8	CRL
Chromium	0.650	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:19	EPA 200.8	CRL
Molybdenum	0.917	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:19	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:19	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:19	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:19	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:19	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 15:25	EPA 200.7	HRD
Calcium	71.4	0.500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:23	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:23	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-18 (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 14:40	EPA 245.1, 7470A	HRD

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MCE0257-19 (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	BCF0124	6/7/17 7:04	6/7/17 11:28	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 11:28	EPA 300.0	CRL
Sulfate	3.08	1.00	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 11:28	EPA 300.0	CRL
Wet Chemistry										
pH	8.17		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 14:45	SM 4500-H+ B	CRL
Total Dissolved Solids	86.0	20.0	mg/L		1	BCE0644	5/30/17 9:50	5/30/17 9:50	SM 2540C	CRL
Total Metals by ICPMS										
Arsenic	0.635	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:23	EPA 200.8	CRL
Barium	14.3	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:23	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:23	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:23	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:23	EPA 200.8	CRL
Chromium	0.558	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:23	EPA 200.8	CRL
Molybdenum	0.893	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:23	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:23	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:23	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:23	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:23	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 15:31	EPA 200.7	HRD
Calcium	26.1	0.500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:28	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:28	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-19 (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 14:41	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-20 (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	10.1	1.00	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 11:48	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 11:48	EPA 300.0	CRL
Sulfate	10.2	1.00	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 11:48	EPA 300.0	CRL
Wet Chemistry										
pH	8.04		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 14:49	SM 4500-H+ B	CRL
Total Dissolved Solids	174	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 11:27	EPA 200.8	CRL
Barium	29.9	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:27	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:27	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:27	EPA 200.8	CRL
Cobalt	0.525	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:27	EPA 200.8	CRL
Chromium	0.917	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:27	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:27	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:27	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:27	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:27	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0679	5/31/17 12:10	6/5/17 11:27	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 15:35	EPA 200.7	HRD
Calcium	40.4	0.500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:34	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0678	5/31/17 12:07	6/12/17 15:34	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-20 (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	BCF0272	6/13/17 8:27	6/13/17 13:48	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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-21 (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	2.14	1.00	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 12:09	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 12:09	EPA 300.0	CRL
Sulfate	18.5	1.00	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 12:09	EPA 300.0	CRL
Wet Chemistry										
pH	7.89		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 14:56	SM 4500-H+ B	CRL
Total Dissolved Solids	250	20.0	mg/L		1	BCE0664	5/31/17 9:16	5/31/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:01	EPA 200.8	CRL
Barium	32.4	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:01	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:01	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:01	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:01	EPA 200.8	CRL
Chromium	1.40	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:01	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:01	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:01	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:01	EPA 200.8	CRL
Selenium	0.801	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:01	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:01	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:05	EPA 200.7	HRD
Calcium	65.9	0.500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:03	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:03	EPA 200.7	HRD

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MCE0257-21 (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	BCF0272	6/13/17 8:27	6/13/17 13:50	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-22 (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	25.6	1.00	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 12:29	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 12:29	EPA 300.0	CRL
Sulfate	79.6	1.00	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 12:29	EPA 300.0	CRL
Wet Chemistry										
pH	7.92		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 15:00	SM 4500-H+ B	CRL
Total Dissolved Solids	440	20.0	mg/L		1	BCE0664	5/31/17 9:16	5/31/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.849	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:05	EPA 200.8	CRL
Barium	47.9	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:05	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:05	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:05	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:05	EPA 200.8	CRL
Chromium	6.26	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:05	EPA 200.8	CRL
Molybdenum	9.59	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:05	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:05	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:05	EPA 200.8	CRL
Selenium	2.30	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:05	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:05	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.204	0.0500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:10	EPA 200.7	HRD
Calcium	74.2	0.500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:08	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:08	EPA 200.7	HRD

Amended Report

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-22 (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	BCF0272	6/13/17 8:27	6/13/17 13:52	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-23 (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	22.6	1.00	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 12:49	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 12:49	EPA 300.0	CRL
Sulfate	128	1.00	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 12:49	EPA 300.0	CRL
Wet Chemistry										
pH	7.75		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 15:04	SM 4500-H+ B	CRL
Total Dissolved Solids	540	20.0	mg/L		1	BCE0664	5/31/17 9:16	5/31/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:09	EPA 200.8	CRL
Barium	59.2	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:09	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:09	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:09	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:09	EPA 200.8	CRL
Chromium	7.29	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:09	EPA 200.8	CRL
Molybdenum	1.63	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:09	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:09	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:09	EPA 200.8	CRL
Selenium	20.9	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:09	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:09	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.381	0.0500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:39	EPA 200.7	HRD
Calcium	109	0.500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:37	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:37	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-23 (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	BCF0272	6/13/17 8:27	6/13/17 13:54	EPA 245.1, 7470A	HRD

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	01/10/2018 13:29

P-164

MCE0257-24 (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	10.0	1.00	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 13:10	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 13:10	EPA 300.0	CRL
Sulfate	40.3	1.00	mg/L		1	BCF0124	6/7/17 7:04	6/7/17 13:10	EPA 300.0	CRL
Wet Chemistry										
pH	8.00		pH Units	M_TTT	1	BCE0611	5/25/17 13:09	5/25/17 15:07	SM 4500-H+ B	CRL
Total Dissolved Solids	324	20.0	mg/L		1	BCE0664	5/31/17 9:16	5/31/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:13	EPA 200.8	CRL
Barium	41.6	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:13	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:13	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:13	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:13	EPA 200.8	CRL
Chromium	4.18	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:13	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:13	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:13	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:13	EPA 200.8	CRL
Selenium	2.12	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:13	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCE0681	5/31/17 12:15	6/5/17 12:13	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:45	EPA 200.7	HRD
Calcium	76.3	0.500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:43	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCE0680	5/31/17 12:12	6/6/17 12:43	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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MCE0257-24 (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	BCF0272	6/13/17 8:27	6/13/17 13:59	EPA 245.1, 7470A	HRD

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	

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							

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			

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			

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	01/10/2018 13:29

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			

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			

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	

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	

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							

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			

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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			

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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	

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	

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

Total Metals by ICPMS - Quality Control

Batch BCE0681 - EPA 200.2, EPA 3005

LCS (BCE0681-BS1) Prepared: 05/31/2017 Analyzed: 06/05/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

Total Metals by ICPMS - Quality Control

Batch BCE0681 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCE0681-MSD1) **Source: MCE0257-21** Prepared: 05/31/2017 Analyzed: 06/05/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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	

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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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	

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							

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			

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:29

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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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 4

2052831

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: ShercoNPDES, 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

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	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	GW-B	Totalmetals	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			
① marked HNO3 bottles filtered and unfiltered. ② * Well is on CCR schedule also, Line Item #s 9, 10, 11	David Anderson / Pace	5/18/17	0920	/ Xcel	5/18/17	0920	4.3 °C M400341	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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.

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Page: 1 of 2

2052836

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, 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

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 (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	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				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			
① marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	5/25/17	1205	/ Xcel	5/25/17	1226	MU00341 5.3	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

ORIGINAL

pH strips: MB00508

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 5/24/17

*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.

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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

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	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						1425		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	SAMPLE CONDITIONS			
① marked HNO3 bottles filtered and unfiltered. ② * Well is on CCR schedule also, Line Item #5	David Anderson / Pace	5/18/17	0920	/ Xcel	5/18/17	0920	MV00941 : 4.32	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

1, 2, 3, 4, 5, 6, 7 Client Delivery

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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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 Donkers
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

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-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			
① marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	5/25/17	1205	HS / Xcel	5/25/17	1226	5.6 °C MB00941	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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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Page: 3 of 4

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 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

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	Y/N ↓Analysis Test↓	GW-B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-50D	WT				5/17/17	1050		3	/	/	/							✓		
2	P-50B						1145		3	/	/	/							✓		
3	P-50						1220		3	/	/	/							✓		
4	P-66						1300		3	/	/	/							✓		
5	Duplicate						1300		3	/	/	/							✓		
6	P-42						1330		3	/	/	/							✓		
7	P-92A						1410		3	/	/	/							✓		
8	P-93A						1505		3	/	/	/							✓		
9	P101B						1600		3	/	/	/							✓		
10	P101A						1630		3	/	/	/							✓		
11	P-56						1710		3	/	/	/							✓		
12	P-62						1755		3	/	/	/							✓		

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	5/18/17	0920	4.3°C M1008411	Y	Y	Y

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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Page: 4 of 4

2052835

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: ShercoNPDES, 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

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	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) 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																					

CDJA 5/17/17

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
① marked HNO3 bottles filtered.	David Anderson Pace	5/18/17	0920	/ xcel	5/18/17	0920	4.3°C ✓ MU00841	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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®
www.pacelabs.com

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
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

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

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

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

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

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

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:

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:

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.

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	

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	

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	

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	

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	

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	

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	

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	

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0570,Xcel Energy
Pace Project No.: 30220129

QC Batch: 260233
QC Batch Method: EPA 903.1
Analysis 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.

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.

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.

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.

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

Pace Analytical®
www.pacelabs.com

CH WO#: 220129 Document

The pleted accurately.

30220129

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 #:

Page: 1 of 3

2052832

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

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	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-019-1						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			
1.) client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson / Pace	5/25/17	1315	Ashleaphan / Pace	5-30-17	0920	NA	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

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

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 -
Project Number: Sherco CCR, May 2017

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

Requested Analysis Filtered (Y/N)

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	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-226EPA903.1	RA-228EPA904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-734-1	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						1640		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			
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

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

*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-CU)DY / Analytical Request Document

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

30220129

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 #:

Page: 3 of 3
2052895

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	TIME	COLLECTED COMPOSITE END/GRAB DATE	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-17	WT				5/24/17	1335		2			2							✓	✓		023
2	P-152d	↓				↓	1430		2			2							✓	✓		024
3	P-150	↓				↓	1520		2			2							✓	✓		025
4	P-154d	↓				↓	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		DJA 5/25/17																				

Requested Analysis Filtered (Y/N)

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 [illegible] / Pace	5-30-17	0920	NA	N	N	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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): 5/25/17

*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.

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

Sample Condition Upon Receipt Pittsburgh

AN

Pace 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: AQTR 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:	X			5.
-Includes date/time/ID Matrix: WT				
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 AQTR 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: AQTR 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

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	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) DJA 6/19/17 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: 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)	
Calibration Std. Value (mV)	231	Secondary Source Std. Value (mV)	231
Mfg.	Zobells ORP std.	Mfg.	Zobells ORP std.
Lot No.	YSI #156100067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
231	25.0	231	25.0

Meter Make YSI Sonde ID #5

IC/ICV Time 1110 / 1112

Initials DJA

ICV: [✓ Pass] / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1805 Initials DJA Std. Value 232
☒ Calibration Standard
☐ Secondary Source Standard
Result (mV) 230 Temp (°C) 24.0 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 6-19-17

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:	24.0 (°C)	Ambient Temp:	24.0 (°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 (%)	96	ICV Meter Result (%)	96

IC/ICV Time 1045 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 1750 Initials DJA Barometric Pressure 734.82 (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 6/19/17

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: ______ 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

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	10.0	99	999	IC Time 1120 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	10.0	100	999	ICV Time 1125 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	99	998	CCV Time 1810 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA	6/19/17		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: ____________ 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

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	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)		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	20.0	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)*

DJA 6/20/17

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)*

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 Andersen 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) DTA   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 #156100067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
238	20.0	237	20.0

Meter Make YSI Sonde ID #5

IC/ICV Time 0730/0732

Initials DTA

ICV: [✓ Pass] / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1850   Initials DTA   Std. Value 232   ☒ Calibration Standard ☐ Secondary Source Standard
Result (mV) 231   Temp (°C) 24.0   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)*

DTA 6/20/17

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	28.90 (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 DTA

DO Meter ID YSI Sonde #5

Barometer ID Skymaster DB-26 6W

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 DTA   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 ______ (%)   CCV: Pass / Fail   *(CCV acceptable if ± 2% of Calibration Value)*

DTA 6/20/17

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: 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

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	10.0	99	999	IC Time 0735 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	10.0	99	998	ICV Time 0745 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	99	998	CCV Time 1855 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 6/20/17			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:
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#156100067		Lot No. 16L100376	
Exp Date 07/2017		Exp. Date 11/2017	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
240	18.0	238	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
☒ Calibration Standard
☐ Secondary Source Standard
Result (mV) 230 Temp (°C) 25.0 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 6/21/17

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: 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 (%)	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 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 ______ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 6/21/17

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: 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

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	99	998	IC Time 0740 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 0750 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	98	998	CCV Time 1840 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 6/21/17			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: 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)

DJA 6/22/17

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: 6/22/17

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.	Zabells 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 (%)	96	ICV Meter Result (%)	96

IC/ICV Time 0705   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 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: David 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

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)	IC Time 0740 Initials DJA
	0.01	9.9	99	997	IC: [✓ Pass] / Fail
ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	ICV Time 0745 Initials DJA
	0.01	9.9	98	997	ICV: [✓ Pass] / Fail

ICV acceptable if ± 5% of standard value.

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	CCV Time 1110 Initials DJA
	0.01	9.9	98	998	CCV: Pass / Fail
CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	CCV Time Initials
		DJA	6/22/17		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:
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-130 Labeled P130

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 46.84 Feet

Static water level measurement before purging 34.84 Feet

Static water level measurement at time of sampling 34.84 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 6-19-17 Water Column 12.00 Feet

Time Purged 1340-1410 One Casing Volume 2.0 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 6.0 Gallons

Field Sampling Data

Date Sampled 6-19-17

Time Sampled 1420

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.1 (units) D.O 7.9 (mg/l)

Spec. Cond. 780 (µmhos/cm) Turbidity 2.7 (NTU)

Temp. 12.0 (°C) Eh 87 (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 W 10

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)
1350	7.1	780	12.0	7.8	NA	105	2.0
1400	7.1	780	12.0	7.9	NA	96	4.0
1410	7.1	780	12.0	7.9	NA	87	6.0

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-131 Labeled P131

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 48.55 Feet
Static water level measurement before purging 32.27 Feet
Static water level measurement at time of sampling 32.27 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 6-19-17 Water Column 16.28 Feet
Time Purged 1440-1522 One Casing Volume 2.7 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 6-19-17
Time Sampled 1530
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 8.7 (mg/l)
Spec. Cond. 590 (µmhos/cm) Turbidity 2.3 (NTU)
Temp. 11.0 (°C) Eh 80 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 69° + partly cloudy, wind w/10
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)
1454	7.6	590	11.0	8.8	NA	85	2.8
1508	7.6	590	11.0	8.7	NA	83	5.6
1522	7.6	590	11.0	8.7	NA	80	8.4
				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-132 Labeled P132

Inside Diameter 2 (inches) Key # ~~2106~~ 3212 ☒ Locked ☐ Not Locked

Casing Material: ☒ PVC ☐ Steel ☐ Stainless Steel Needs 2106 Lock

Depth Measurement and Elevations (from top of well casing)

Top of Casing Elevation NA Feet
Well depth 36.51 Feet
Static water level measurement before purging 27.54 Feet
Static water level measurement at time of sampling 27.54 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 6-19-17 Water Column 8.97 Feet
Time Purged 1700-1724 One Casing Volume 1.5 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 6-19-17
Time Sampled 1740
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 8.6 (mg/l)
Spec. Cond. 740 (µmhos/cm) Turbidity 3.6 (NTU)
Temp. 11.5 (°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: 70° + sunny, wind W 10
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)
1708	7.5	750	11.5	8.9	NA	100	1.6
1716	7.4	740	11.5	8.7	NA	94	3.2
1724	7.4	740	11.5	8.6	NA	89	4.8
				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-150 Labeled 806320

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 36,66 Feet

Static water level measurement before purging 29.05 Feet

Static water level measurement at time of sampling 29.05 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 6-19-17 Water Column 7.61 Feet

Time Purged 1140-1210 One Casing Volume 1.2 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 6.0 Gallons

Field Sampling Data

Date Sampled 6-19-17

Time Sampled 1220

Sampling Equip. above pump

Analyzed by DVA

Field Parameter Measurements of Sample

pH 6.8 (units) D.O 9.1 (mg/l)

Spec. Cond. 460 (µmhos/cm) Turbidity 2.3 (NTU)

Temp. 11.0 (°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: 68° + sunny wind W 10

Sample Description: clear + odorless

Observations: Removed 2 extra volumes after pump was repaired, and collected Rinse Blank.

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1146	6.8	460	11.5	9.1	NA	116	1.2
1152	6.7	460	11.5	9.1	NA	102	2.4
1158	6.7	460	11.0	9.1	NA	90	3.6
1204	6.8	460	11.0	9.1	NA	90	4.8
1210	6.8	460	11.0	9.1	NA	89	6.0

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-151 Labeled 806315

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 20.16 Feet

Static water level measurement before purging 9.00 Feet

Static water level measurement at time of sampling 9.00 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 6-21-17 Water Column 11.16 Feet

Time Purged 1620-1647 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 1700

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 10.2 (mg/l)

Spec. Cond. 520 (µmhos/cm) Turbidity 3.0 (NTU)

Temp. 12.5 (°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: 76° + sunny, wind SE10

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)
1629	7.9	530	12.5	10.3	NA	123	1.8
1638	7.9	520	12.5	10.2	NA	120	3.6
1647	7.9	520	12.5	10.2	NA	119	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-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-153 Labeled 806314

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 23.63 Feet

Static water level measurement before purging 13.86 Feet

Static water level measurement at time of sampling 13.86 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 6-21-17 Water Column 9.77 Feet

Time Purged 1730-1754 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 1810

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 8.1 (units) D.O 11.2 (mg/l)

Spec. Cond. 190 (µmhos/cm) Turbidity 2.5 (NTU)

Temp. 12.0 (°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: 78° + 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)
1738	8.1	190	12.0	11.3	NA	104	1.6
1746	8.1	190	12.0	11.2	NA	99	3.2
1754	8.1	190	12.0	11.2	NA	91	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-154a Labeled 806316

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 49.53 Feet
Static water level measurement before purging 30.54 Feet
Static water level measurement at time of sampling 30.54 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 6-19-17 Water Column 18.99 Feet
Time Purged 1545-1633 One Casing Volume 3.1 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 6-19-17
Time Sampled 1640
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 5.0 (mg/l)
Spec. Cond. 520 (µmhos/cm) Turbidity 4.0 (NTU)
Temp. 11.0 (°C) Eh 71 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 69° + cloudy, wind W 10
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)
1601	7.8	490	11.0	2.7	NA	91	3.2
1617	7.7	510	11.0	4.3	NA	82	6.4
1633	7.7	520	11.0	5.0	NA	71	9.6

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-162 Labeled 822156

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 166 Feet estimate

Static water level measurement before purging 151 Feet estimate

Static water level measurement at time of sampling 151 Feet estimate

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump

Date Purged 6-22-17 Water Column 15.00 Feet

Time Purged 0840-0901 One Casing Volume 2.5 Gallons

Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 6-22-17

Time Sampled 0910

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 5.5 (mg/l)

Spec. Cond. 730 (µmhos/cm) Turbidity 4.6 (NTU)

Temp. 11.5 (°C) Eh 159 (mV)

Other NA

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

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

Weather Conditions During Sampling: 63° + light rain, wind 5 S

Sample Description: clear + odorless

Observations:

DJA 6-22-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0847	7.9	730	11.5	6.0	NA	172	2.8
0854	7.9	730	11.5	5.8	NA	163	5.6
0901	7.9	730	11.5	5.5	NA	159	8.4

DJA 6/22/17

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: 6/22/17

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-163 Labeled 822157

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 176 Feet estimate

Static water level measurement before purging 161 Feet estimate

Static water level measurement at time of sampling 161 Feet estimate

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ Waterra pump

Date Purged 6-22-17 Water Column 15.0 Feet

Time Purged 0920 - 0941 One Casing Volume 2.5 Gallons

Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 6-22-17

Time Sampled 0950

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 6.8 (mg/l)

Spec. Cond. 630 (µmhos/cm) Turbidity 2.0 (NTU)

Temp. 12.0 (°C) Eh 120 (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° + light rain, wind S 5

Sample Description: clear + odorless

Observations: DJA 6/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0927	8.0	630	12.0	7.2	NA	134	2.8
0934	7.9	630	12.0	6.9	NA	126	5.6
0941	7.9	630	12.0	6.8	NA	120	8.4
		DJA 6/22/17					

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: 6/22/17

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-164 Labeled 822158

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 166 Feet estimate
Static water level measurement before purging 151 Feet estimate
Static water level measurement at time of sampling 151 Feet estimate
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump
Date Purged 6-22-17 Water Column 15.00 Feet
Time Purged 1010-1031 One Casing Volume 2.5 Gallons
Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 6-22-17
Time Sampled 1040
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 6.7 (mg/l)
Spec. Cond. 550 (µmhos/cm) Turbidity 2.5 (NTU)
Temp. 12.5 (°C) Eh 128 (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° + light rain, wind SS
Sample Description: clear + odorless
Observations: DJA 6/22/17

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1017	7.9	550	12.5	7.0	NA	137	2.8
1024	7.9	550	12.5	6.7	NA	131	5.6
1031	7.9	550	12.5	6.7	NA	128	8.4

DJA 6/22/17

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: 6/22/17

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-165 Labeled 822159

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 40.32 Feet
Static water level measurement before purging 29.87 Feet
Static water level measurement at time of sampling 29.87 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 6-22-17 Water Column 10.45 Feet
Time Purged 0750-0817 One Casing Volume 1.7 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 6-22-17
Time Sampled 0825
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 9.8 (mg/l)
Spec. Cond. 440 (µmhos/cm) Turbidity 4.2 (NTU)
Temp. 11.5 (°C) Eh 144 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 63° + light rain, wind S 5
Sample Description: clear + odorless
Observations:
DJA 6/22/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0759	7.4	440	11.5	10.2	NA	151	1.8
0808	7.4	440	11.5	9.9	NA	147	3.6
0817	7.4	440	11.5	9.8	NA	144	5.4
				DJA	6/22/17		

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: 6/22/17

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

10 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 Pond No. 3 CCR Groundwater Monitoring System. HSD 1/10/18

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	01/10/2018 13:36

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-150		MCF0235-02	Water	06/19/2017 12:20	06/22/2017 12:40
P-152a		MCF0235-03	Water	06/19/2017 13:25	06/22/2017 12:40
P-130		MCF0235-04	Water	06/19/2017 14:20	06/22/2017 12:40
P-131		MCF0235-05	Water	06/19/2017 15:30	06/22/2017 12:40
P-154a		MCF0235-06	Water	06/19/2017 16:40	06/22/2017 12:40
P-132		MCF0235-07	Water	06/19/2017 17:40	06/22/2017 12:40
Duplicate		MCF0235-22	Water	06/21/2017 10:00	06/22/2017 12:40
P-151		MCF0235-29	Water	06/21/2017 17:00	06/22/2017 12:40
P-153		MCF0235-30	Water	06/21/2017 18:10	06/22/2017 12:40
P-165		MCF0235-31	Water	06/22/2017 8:25	06/22/2017 12:40
P-162		MCF0235-32	Water	06/22/2017 9:10	06/22/2017 12:40
P-163		MCF0235-33	Water	06/22/2017 9:50	06/22/2017 12:40
P-164		MCF0235-34	Water	06/22/2017 10:40	06/22/2017 12:40

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco CCR
Project Manager: Charles A Donkers

Reported:
01/10/2018 13:36

P-150

MCF0235-02 (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	37.8	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 12:25	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 12:25	EPA 300.0	CRL
Sulfate	6.32	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 12:25	EPA 300.0	CRL
Wet Chemistry										
pH	7.82		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 14:02	SM 4500-H+ B	CRL
Total Dissolved Solids	240	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 8:50	EPA 200.8	CRL
Barium	49.4	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:50	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:50	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:50	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:50	EPA 200.8	CRL
Chromium	0.689	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:50	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:50	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:50	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:50	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:50	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 8:50	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 12:29	EPA 200.7	HRD
Calcium	52.0	0.500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:27	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:27	EPA 200.7	HRD

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	01/10/2018 13:36

P-150

MCF0235-02 (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 13:56	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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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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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-04 (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	1.15	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 13:06	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 13:06	EPA 300.0	CRL
Sulfate	10.5	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 13:06	EPA 300.0	CRL
Wet Chemistry										
pH	7.35		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 14:10	SM 4500-H+ B	CRL
Total Dissolved Solids	436	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 9:07	EPA 200.8	CRL
Barium	96.6	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:07	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:07	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:07	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:07	EPA 200.8	CRL
Chromium	0.871	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:07	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:07	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:07	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:07	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:07	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:07	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 12:52	EPA 200.7	HRD
Calcium	123	0.500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:50	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:50	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-04 (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 13:59	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-05 (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	22.1	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 13:26	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 13:26	EPA 300.0	CRL
Sulfate	33.8	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 13:26	EPA 300.0	CRL
Wet Chemistry										
pH	7.78		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 14:13	SM 4500-H+ B	CRL
Total Dissolved Solids	314	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 9:11	EPA 200.8	CRL
Barium	79.2	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:11	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:11	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:11	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:11	EPA 200.8	CRL
Chromium	0.883	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:11	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:11	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:11	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:11	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:11	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:11	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 12:58	EPA 200.7	HRD
Calcium	79.4	0.500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:56	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 12:56	EPA 200.7	HRD

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	01/10/2018 13:36

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MCF0235-05 (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 14:01	EPA 245.1, 7470A	HRD

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	01/10/2018 13:36

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MCF0235-06 (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	16.3	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 13:47	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 13:47	EPA 300.0	CRL
Sulfate	42.0	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 13:47	EPA 300.0	CRL
Wet Chemistry										
pH	7.88		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 14:17	SM 4500-H+ B	CRL
Total Dissolved Solids	292	20.0	mg/L		1	BCF0527	6/23/17 8:27	6/23/17 8:27	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.905	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:15	EPA 200.8	CRL
Barium	50.1	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:15	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:15	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:15	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:15	EPA 200.8	CRL
Chromium	0.560	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:15	EPA 200.8	CRL
Molybdenum	0.844	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:15	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:15	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:15	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:15	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:15	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 13:04	EPA 200.7	HRD
Calcium	72.3	0.500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 13:01	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 13:01	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-06 (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 14:03	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: 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	01/10/2018 13:36

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MCF0235-07 (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	3.75	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 14:07	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 14:07	EPA 300.0	CRL
Sulfate	91.4	1.00	mg/L		1	BCF0596	6/27/17 8:31	6/27/17 14:07	EPA 300.0	CRL
Wet Chemistry										
pH	7.60		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 14:20	SM 4500-H+ B	CRL
Total Dissolved Solids	440	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 9:19	EPA 200.8	CRL
Barium	48.0	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:19	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:19	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:19	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:19	EPA 200.8	CRL
Chromium	1.71	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:19	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:19	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:19	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:19	EPA 200.8	CRL
Selenium	1.29	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:19	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0522	6/22/17 13:18	6/23/17 9:19	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0605	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 13:09	EPA 200.7	HRD
Calcium	112	0.500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 13:07	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0521	6/22/17 13:16	6/23/17 13:07	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-07 (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 14:04	EPA 245.1, 7470A	HRD

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-29 (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	22.1	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 15:19	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 15:19	EPA 300.0	CRL
Sulfate	22.2	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 15:19	EPA 300.0	CRL
Wet Chemistry										
pH	7.93		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:47	SM 4500-H+ B	CRL
Total Dissolved Solids	332	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 10:02	EPA 200.8	CRL
Barium	48.4	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:02	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:02	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:02	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:02	EPA 200.8	CRL
Chromium	0.715	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:02	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:02	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:02	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:02	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:02	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:02	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:27	EPA 200.7	HRD
Calcium	63.1	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:25	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:25	EPA 200.7	HRD

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	01/10/2018 13:36

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MCF0235-29 (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 14:22	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-30 (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	BCF0625	6/28/17 7:41	6/28/17 15:40	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 15:40	EPA 300.0	CRL
Sulfate	2.66	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 15:40	EPA 300.0	CRL
Wet Chemistry										
pH	8.15		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:50	SM 4500-H+ B	CRL
Total Dissolved Solids	106	20.0	mg/L		1	BCF0614	6/28/17 9:16	6/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.750	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:06	EPA 200.8	CRL
Barium	14.5	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:06	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:06	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:06	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:06	EPA 200.8	CRL
Chromium	0.601	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:06	EPA 200.8	CRL
Molybdenum	0.791	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:06	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:06	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:06	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:06	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:06	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:33	EPA 200.7	HRD
Calcium	26.1	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:31	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:31	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-30 (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 14:24	EPA 245.1, 7470A	HRD

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	01/10/2018 13:36

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MCF0235-31 (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	1.95	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 17:42	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 17:42	EPA 300.0	CRL
Sulfate	18.5	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 17:42	EPA 300.0	CRL
Wet Chemistry										
pH	7.89		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 15:57	SM 4500-H+ B	CRL
Total Dissolved Solids	304	20.0	mg/L		1	BCF0614	6/28/17 9:16	6/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:10	EPA 200.8	CRL
Barium	33.7	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:10	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:10	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:10	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:10	EPA 200.8	CRL
Chromium	1.28	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:10	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:10	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:10	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:10	EPA 200.8	CRL
Selenium	0.854	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:10	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:10	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:39	EPA 200.7	HRD
Calcium	66.1	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:36	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:36	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-31 (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 14:26	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-32 (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	25.4	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 18:03	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 18:03	EPA 300.0	CRL
Sulfate	83.4	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 18:03	EPA 300.0	CRL
Wet Chemistry										
pH	7.94		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 16:01	SM 4500-H+ B	CRL
Total Dissolved Solids	458	20.0	mg/L		1	BCF0614	6/28/17 9:16	6/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.580	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:14	EPA 200.8	CRL
Barium	51.5	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:14	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:14	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:14	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:14	EPA 200.8	CRL
Chromium	15.5	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:14	EPA 200.8	CRL
Molybdenum	8.40	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:14	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:14	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:14	EPA 200.8	CRL
Selenium	2.58	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:14	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:14	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.222	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:44	EPA 200.7	HRD
Calcium	81.1	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:42	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:42	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-32 (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 14:31	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-33 (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	23.6	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 18:23	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 18:23	EPA 300.0	CRL
Sulfate	81.7	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 18:23	EPA 300.0	CRL
Wet Chemistry										
pH	7.96		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 16:05	SM 4500-H+ B	CRL
Total Dissolved Solids	380	20.0	mg/L		1	BCF0614	6/28/17 9:16	6/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:26	EPA 200.8	CRL
Barium	45.7	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:26	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:26	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:26	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:26	EPA 200.8	CRL
Chromium	1.78	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:26	EPA 200.8	CRL
Molybdenum	0.588	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:26	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:26	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:26	EPA 200.8	CRL
Selenium	11.8	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:26	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:26	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0966	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 14:01	EPA 200.7	HRD
Calcium	85.7	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:58	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 13:58	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-33 (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 14:33	EPA 245.1, 7470A	HRD

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	01/10/2018 13:36

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MCF0235-34 (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	10.4	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 18:44	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 18:44	EPA 300.0	CRL
Sulfate	39.8	1.00	mg/L		1	BCF0625	6/28/17 7:41	6/28/17 18:44	EPA 300.0	CRL
Wet Chemistry										
pH	8.02		pH Units	M_TTT	1	BCF0525	6/22/17 13:32	6/22/17 16:08	SM 4500-H+ B	CRL
Total Dissolved Solids	310	20.0	mg/L		1	BCF0614	6/28/17 9:16	6/28/17 9:16	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.520	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:30	EPA 200.8	CRL
Barium	43.9	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:30	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:30	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:30	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:30	EPA 200.8	CRL
Chromium	1.43	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:30	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:30	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:30	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:30	EPA 200.8	CRL
Selenium	1.68	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:30	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCF0569	6/26/17 8:14	6/27/17 10:30	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 14:06	EPA 200.7	HRD
Calcium	77.6	0.500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 14:04	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCF0568	6/26/17 8:12	6/27/17 14:04	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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MCF0235-34 (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 14:34	EPA 245.1, 7470A	HRD

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	

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							

Anions by Ion Chromatography - Quality Control

Batch BCF0625 - Wet Prep

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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	

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco CCR
Project Manager: Charles A Donkers

Reported:
01/10/2018 13:36

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	

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							

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	

Total Metals by ICPMS - Quality Control

Batch BCF0522 - EPA 200.2, EPA 3005

Blank (BCF0522-BLK1) Prepared: 06/22/2017 Analyzed: 06/23/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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	

Total Metals by ICPMS - Quality Control

Batch BCF0522 - EPA 200.2, EPA 3005

Duplicate (BCF0522-DUP2) **Source: MCF0235-05** Prepared: 06/22/2017 Analyzed: 06/23/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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			

Total Metals by ICPMS - Quality Control

Batch BCF0522 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCF0522-MSD1) **Source: MCF0235-04** Prepared: 06/22/2017 Analyzed: 06/23/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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							

Total Metals by ICPMS - Quality Control

Batch BCF0569 - EPA 200.2, EPA 3005

LCS (BCF0569-BS1) Prepared: 06/26/2017 Analyzed: 06/27/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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	

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	

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	

Amended Report

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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			

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	

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	01/10/2018 13:36

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:36

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

2052847

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, June 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	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				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 M400 B41	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

PHstrpMB0050 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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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

2125436

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 Donfots
Copy To:
Purchase Order No.:
Project Name: Sherco CCR, June 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	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-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			
1. Marked HNO3 bottles filtered and unfiltered	David Anderson / Xcel	6/22/17	1230	XCEL	6/22/17	1240	4.5 MW00834	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 3 of 3

2125438

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, June 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

Requested Analysis Filtered (Y/N)

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	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	Y/N ↓Analysis Test↓	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-014-1						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	/ Xcel	6/22/17	1240	4.5°C M4008411	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): 6/22/17

*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 L Robl

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

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

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

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

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

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

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:

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

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.

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	

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	

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	

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	

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	

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	

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	

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	

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	

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.

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	

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.

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	

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.

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

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.

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.

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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.

Page: 1 of 3

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 Andersen
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:

WO#:30222501

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	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 C	Pace Project No./ Lab I.D.
1	P-150	WT				6/19/17	1220		2			2							✓	✓		001
2	P-152 d						1325		2			2							✓	✓		002
3	P-130						1420		2			2							✓	✓		003
4	P-131						1530		2			2							✓	✓		004
5	P-154 d						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		2			2							✓	✓		011
12	P-138A						1245		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 Andersen / Pace	6/22/17	1335		6/23/17	1000	N/A	N	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

② RA-226EPA903.1
RA-228EPA904.0

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Andersen
SIGNATURE of SAMPLER: David Andersen
DATE Signed (MM/DD/YY): 6/20/17

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.

Page: 2 of 3

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 -
Project Number: Sherco CCR, June 2017

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

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	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-137A	WT				6/20/17	1340		2			2							✓	✓		013
2	P-117						1430		2			2							✓	✓		014
3	P-75-1						1525		2			2							✓	✓		015
4	P-97						1620		2			2							✓	✓		016
5	P-98						1720		2			2							✓	✓		017
6	P-120						1830		2			2							✓	✓		018
7	P-17	WT				6-21-17	0910		2			2							✓	✓		019
8	P-158						1000		2			2							✓	✓		020
9	P-157						1050		2			2							✓	✓		021
10	P-23						1220		2			2							✓	✓		022
11	P-22						1330		2			2							✓	✓		023
12	P-155						1420		2			2							✓	✓		024

3022 2501

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

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): 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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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 3 of 3

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 -
Project Number: Sherco CCR, June 2017

Section C
Invoice Information:

Attention: Ciara Ruikkie
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

Requested Analysis Filtered (Y/N)

30222501

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-226EPA903.1	RA-228EPA904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-01a-1	WT				6/21/17	1500		2			2							✓	✓		025
2	P-156						1550		2			2							✓	✓		026
3	P-151						1700		2			2							✓	✓		027
4	P-153						1810		2			2							✓	✓		028
5	P-165	WT				6/22/17	0825		2			2							✓	✓		029
6	P-162						0910		2			2							✓	✓		030
7	P-163						0950		2			2							✓	✓		031
8	P-164						1040		2			2							✓	✓		032
9																						
10																						
11																						
12																						

DJA 6/22/17

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	6/22/17	1335		6/23/17	1000	N/A	N	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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): 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

Sample Condition Upon Receipt Pittsburgh

30222501 ZH

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: ZH 6/23/17

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:				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. PHL2
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: 6/23/17

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.

J:\QAQC\Master\Document Management\Sample Mgt\Sample Condition Upon Receipt Pittsburgh (C056-4 15Dec2016)

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

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	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)		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	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.	YSI156100067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
231	25.0	230	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) ____ CCV: Pass / Fail (CCV acceptable if ± 10 mV of standard value)

DJA 7/17/17

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: (°C)	25.0	Ambient Temp: (°C)	25.0
Barometric Pressure (in. Hg)	28.92	Barometric Pressure (in. Hg)	28.92
Barometric Pressure (mm Hg)	734.57	Barometric Pressure (mm Hg)	734.57
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 ____ (%) CCV: Pass / Fail (CCV acceptable if ± 2% of Calibration Value)

DJA 7/17/17

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: 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					CCV Time ______ Initials ______ CCV: Pass / Fail

DJA 7/17/17

	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

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)*

pH

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	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)
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) 1005 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 7/18/17

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: 7-18-17

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.	YSI156100067	Lot No.	16L100376
Exp Date	07/2017	Exp. Date	11/2017
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
235	22.0	234	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 1855 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 7/18/17 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	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 1845 Initials DJA Barometric Pressure 737.11 (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 7/18/17 (%) 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: ____ 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: ____________ 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

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	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)

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	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)
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 156100067	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) ______ CCV: Pass / Fail
☐ Calibration Standard
☐ Secondary Source Standard
(CCV acceptable if ± 10 mV of standard value)

DJA 7/19/17

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: (°C)	22.0	Ambient Temp: (°C)	22.0
Barometric Pressure (in. Hg)	29.03	Barometric Pressure (in. Hg)	29.03
Barometric Pressure (mm Hg)	737.36	Barometric Pressure (mm Hg)	737.36
Calibration Value[1] (%)	97	Calibration Value[1] (%)	97
IC Meter Result (%)	97	ICV Meter Result (%)	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 ______ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 7/19/17

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: 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

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	99	998	IC Time 0835 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.8	98	997	ICV Time 0845 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	98	998	CCV Time 1135 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA	7/19/17		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: 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-130 **Labeled** P130

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 46.84 Feet
Static water level measurement before purging 35.07 Feet
Static water level measurement at time of sampling 35.07 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 7-17-17 **Water Column** 11.77 Feet
Time Purged 1310 - 1340 **One Casing Volume** 1.9 Gallons
Pump Rate 0.2 [✓ GPM] / LPM **Volume Purged** 6.0 Gallons

Field Sampling Data

Date Sampled 7-17-17
Time Sampled 1350
Sampling Equip. above pump
Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.1 (units) D.O 7.7 (mg/l)
Spec. Cond. 800 (µmhos/cm) Turbidity 2.5 (NTU)
Temp. 12.5 (°C) Eh 118 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 84°+ sunny, wind S 15
Sample Description: clear + odorless
Observations: DTA 7/17/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1320	7.1	800	12.5	7.7	NA	125	2.0
1330	7.1	800	12.5	7.7	NA	121	4.0
1340	7.1	800	12.5	7.7	NA	118	6.0
				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-131 Labeled P131

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 48.55 Feet
Static water level measurement before purging 32.77 Feet
Static water level measurement at time of sampling 32.77 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 7-17-17 Water Column 15.78 Feet
Time Purged 1455-1534 One Casing Volume 2.6 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 7.8 Gallons

Field Sampling Data

Date Sampled 7-17-17
Time Sampled 1540
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 8.4 (mg/l)
Spec. Cond. 590 (µmhos/cm) Turbidity 2.5 (NTU)
Temp. 11.5 (°C) Eh 101 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 87° + sunny, wind S/5
Sample Description: clear + odorless
Observations: DJA 7-17-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1508	7.6	590	11.5	8.5	NA	110	2.6
1521	7.6	590	11.5	8.4	NA	103	5.2
1534	7.6	590	11.5	8.4	NA	101	7.8
			DJA 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-132 **Labeled** P132

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 36.51 Feet
Static water level measurement before purging 27.96 Feet
Static water level measurement at time of sampling 27.96 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 7-17-17 Water Column 8.55 Feet
Time Purged 1705-1726 One Casing Volume 1.4 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 7-17-17
Time Sampled 1730
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 8.4 (mg/l)
Spec. Cond. 730 (µmhos/cm) Turbidity 3.5 (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: 90° + sunny, wind 5-15
Sample Description: clear + odorless
Observations:

DJA 7-17-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1712	7.4	740	12.0	8.6	NA	123	1.4
1719	7.4	730	12.5	8.4	NA	116	2.8
1726	7.4	730	12.5	8.4	NA	110	4.2

DJA 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-150 **Labeled** 806320

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 36.66 Feet
Static water level measurement before purging 29.51 Feet
Static water level measurement at time of sampling 29.51 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 7-17-17 Water Column 7.15 Feet
Time Purged 1410-1428 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 1435
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 8.6 (mg/l)
Spec. Cond. 450 (µmhos/cm) Turbidity 2.6 (NTU)
Temp. 12.0 (°C) Eh 120 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 86° + sunny, wind S15
Sample Description: clear + odorless
Observations:
DJA 7-17-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1416	7.4	450	12.0	8.8	NA	137	1.2
1422	7.4	450	12.0	8.7	NA	125	2.4
1428	7.4	450	12.0	8.6	NA	120	3.6

DJA 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-151 **Labeled** 806315

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 20.16 Feet

Static water level measurement before purging 9.36 Feet

Static water level measurement at time of sampling 9.36 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method ~~dedicated bladder pump~~ peristaltic pump* see observ.

Date Purged 7-18-17 Water Column 10.80 Feet

Time Purged 0800-0827 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 0835

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 9.8 (mg/l)

Spec. Cond. 480 (μmhos/cm) Turbidity 3.2 (NTU)

Temp. 13.0 (°C) Eh 131 (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° + cloudy, wind W 5-10

Sample Description: clear + odorless

Observations: * dedicated bladder pump not working
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)
0809	8.0	490	13.0	10.0	NA	142	1.8
0818	8.0	480	13.0	9.9	NA	136	3.6
0827	7.9	480	13.0	9.8	NA	131	5.4
		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-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 N/A 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 DJA

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 5-10

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
			DJA 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-153 Labeled 806314

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 23.63 Feet

Static water level measurement before purging 14.39 Feet

Static water level measurement at time of sampling 14.39 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 7-18-17 Water Column 9.24 Feet

Time Purged 0905-0929 One Casing Volume 1.5 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 7-18-17

Time Sampled 0940

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 8.0 (units) D.O 10.1 (mg/l)

Spec. Cond. 200 (µmhos/cm) Turbidity 2.8 (NTU)

Temp. 13.0 (°C) Eh 120 (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 W 5

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)
0913	8.0	210	13.0	10.4	NA	127	1.6
0921	8.0	200	13.0	10.2	NA	123	3.2
0929	8.0	200	13.0	10.1	NA	120	4.8

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-154a **Labeled** 806316

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 49.53 Feet
Static water level measurement before purging 31.26 Feet
Static water level measurement at time of sampling 31.26 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 7-17-17 **Water Column** 18.27 Feet
Time Purged 1555-1640 **One Casing Volume** 3.0 Gallons
Pump Rate 0.2 [✓ GPM] / LPM **Volume Purged** 9.0 Gallons

Field Sampling Data

Date Sampled 7-17-17
Time Sampled 1650
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 4.7 (mg/l)
Spec. Cond. 510 (µmhos/cm) Turbidity 3.5 (NTU)
Temp. 11.5 (°C) Eh 115 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 89° + sunny, wind S 15
Sample Description: clear + odorless
Observations: DJA 7-17-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp. (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1610	7.9	500	11.5	4.0	NA	133	3.0
1625	7.8	510	11.5	4.5	NA	124	6.0
1640	7.8	510	11.5	4.7	NA	115	9.0
		DJA 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-162 **Labeled** 822156

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 166 Feet estimate
Static water level measurement before purging 151 Feet estimate
Static water level measurement at time of sampling 151 Feet estimate
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated ~~bladder pump~~ waterra pump
Date Purged 7/19/17 Water Column 15.00 Feet
Time Purged 0855-0916 One Casing Volume 2.5 Gallons
Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 7/19/17
Time Sampled 0925
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 5.2 (mg/l)
Spec. Cond. 720 (μmhos/cm) Turbidity 6.8 (NTU)
Temp. 12.0 (°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: 70° + sunny, wind ~~NW~~ SE 5-10
Sample Description: clear + odorless
Observations:

DJA 7/19/17

Stabilization Test

Time	pH (units)	Specific Conductance (umhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0902	7.9	720	12.0	5.7	NA	180	2.8
0909	7.9	720	12.0	5.4	NA	173	5.6
0916	7.9	720	12.0	5.2	NA	166	8.4

DJA 7/19/17

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: 7/19/17

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-163 **Labeled** 822157

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 176 Feet estimate

Static water level measurement before purging 161 Feet estimate

Static water level measurement at time of sampling 161 Feet estimate

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 7-19-17 Water Column 15.0 Feet

Time Purged 0945-1006 One Casing Volume 2.5 Gallons

Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 7-19-17

Time Sampled 1020

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 6.6 (mg/l)

Spec. Cond. 660 (µmhos/cm) Turbidity 3.2 (NTU)

Temp. 12.5 (°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: 72° + sunny, wind SE 10

Sample Description: clear + odorless

Observations: DJA 7/19/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0952	8.0	670	12.5	6.8	NA	148	2.8
0959	7.9	660	12.5	6.7	NA	140	5.6
1006	7.9	660	12.5	6.6	NA	133	8.4
		DJA 7/19/17					

Samples chilled immediately after collection. ☒ Yes ☐ Other

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

Lead Technician Signature: David Anderson Date: 7/19/17

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-164 Labeled 822158

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 166 Feet estimate
Static water level measurement before purging 151 Feet estimate
Static water level measurement at time of sampling 151 Feet estimate
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 7-19-17 Water Column 15.00 Feet
Time Purged 1035-1056 One Casing Volume 2.5 Gallons
Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 7-19-17
Time Sampled 1105
Sampling Equip. above pump
Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 6.5 (mg/l)
Spec. Cond. 540 (µmhos/cm) Turbidity 4.3 (NTU)
Temp. 13.0 (°C) Eh 130 (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: DTA 7/19/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1042	7.9	540	12.5	6.8	NA	140	2.8
1049	7.8	540	13.0	6.6	NA	134	5.6
1056	7.8	540	13.0	6.5	NA	130	8.4

DTA 7/19/17

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: 7/19/17

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-165 **Labeled** 822159

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 40.32 Feet
Static water level measurement before purging 30.23 Feet
Static water level measurement at time of sampling 30.23 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 7-17-17 Water Column 10.09 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 7-17-17
Time Sampled 1820
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 9.3 (mg/l)
Spec. Cond. 450 (µmhos/cm) Turbidity 4.0 (NTU)
Temp. 12.5 (°C) Eh 138 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 90° + sunny, wind 5 15
Sample Description: clear + odorless
Observations: DJA 7-17-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1753	7.3	450	12.0	9.5	NA	149	1.6
1801	7.3	450	12.5	9.4	NA	143	3.2
1809	7.3	450	12.5	9.3	NA	138	4.8
		DJA 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

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

10 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 Pond No. 3 CCR Groundwater Monitoring System. HSD 1/10/18

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

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	01/10/2018 13:41

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-130		MCG0199-03	Water	07/17/2017 13:50	07/19/2017 13:00
P-150		MCG0199-04	Water	07/17/2017 14:35	07/19/2017 13:00
P-131		MCG0199-05	Water	07/17/2017 15:40	07/19/2017 13:00
P-154a		MCG0199-06	Water	07/17/2017 16:50	07/19/2017 13:00
P-132		MCG0199-07	Water	07/17/2017 17:30	07/19/2017 13:00
P-165		MCG0199-08	Water	07/17/2017 18:20	07/19/2017 13:00
P-151		MCG0199-09	Water	07/18/2017 8:35	07/19/2017 13:00
P-153		MCG0199-10	Water	07/18/2017 9:40	07/19/2017 13:00
Duplicate		MCG0199-18	Water	07/18/2017 16:15	07/19/2017 13:00
P-162		MCG0199-21	Water	07/19/2017 9:25	07/19/2017 13:00
P-163		MCG0199-22	Water	07/19/2017 10:20	07/19/2017 13:00
P-164		MCG0199-23	Water	07/19/2017 11:05	07/19/2017 13:00

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco CCR
Project Manager: Charles A Donkers

Reported:
01/10/2018 13:41

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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

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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-03 (Water) - Chain of Custody Number: 1698342/2125456

Anions by Ion Chromatography

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Chloride	< 1.00	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 19:35	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 19:35	EPA 300.0	CRL
Sulfate	9.93	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 19:35	EPA 300.0	CRL

Wet Chemistry

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
pH	7.36		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:16	SM 4500-H+ B	CRL
Total Dissolved Solids	450	20.0	mg/L		1	BCG0340	7/20/17 0:00	7/20/17 0:00	SM 2540C	HSD

Total Metals by ICPMS

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Arsenic	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:51	EPA 200.8	CRL
Barium	94.8	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:51	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:51	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:51	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:51	EPA 200.8	CRL
Chromium	0.766	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:51	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:51	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:51	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:51	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:51	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:51	EPA 200.8	CRL

Total Metals by ICP

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Boron	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:26	EPA 200.7	HRD
Calcium	115	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:24	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:24	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

P-130

MCG0199-03 (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 13:04	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-04 (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	30.1	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 19:55	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 19:55	EPA 300.0	CRL
Sulfate	6.12	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 19:55	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:20	SM 4500-H+ B	CRL
Total Dissolved Solids	246	20.0	mg/L		1	BCG0340	7/20/17 0:00	7/20/17 0:00	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.529	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:55	EPA 200.8	CRL
Barium	48.8	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:55	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:55	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:55	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:55	EPA 200.8	CRL
Chromium	0.684	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:55	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:55	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:55	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:55	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:55	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:55	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 14:32	EPA 200.7	HRD
Calcium	49.7	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:29	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:29	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-04 (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 13:06	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-05 (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	21.9	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 20:15	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 20:15	EPA 300.0	CRL
Sulfate	33.6	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 20:15	EPA 300.0	CRL
Wet Chemistry										
pH	7.81		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:23	SM 4500-H+ B	CRL
Total Dissolved Solids	338	20.0	mg/L		1	BCG0340	7/20/17 0:00	7/20/17 0:00	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.607	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:59	EPA 200.8	CRL
Barium	80.2	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:59	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:59	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:59	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:59	EPA 200.8	CRL
Chromium	0.917	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:59	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:59	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:59	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:59	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:59	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 8:59	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 14:37	EPA 200.7	HRD
Calcium	75.1	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:35	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:35	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-05 (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 13:08	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

P-154a

MCG0199-06 (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	16.4	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 20:36	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 20:36	EPA 300.0	CRL
Sulfate	43.6	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 20:36	EPA 300.0	CRL
Wet Chemistry										
pH	7.93		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:27	SM 4500-H+ B	CRL
Total Dissolved Solids	310	20.0	mg/L		1	BCG0340	7/20/17 0:00	7/20/17 0:00	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	1.06	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:02	EPA 200.8	CRL
Barium	52.0	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:02	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:02	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:02	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:02	EPA 200.8	CRL
Chromium	0.667	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:02	EPA 200.8	CRL
Molybdenum	1.08	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:02	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:02	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:02	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:02	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:02	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 14:43	EPA 200.7	HRD
Calcium	69.7	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:41	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:41	EPA 200.7	HRD

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	01/10/2018 13:41

P-154a

MCG0199-06 (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 13:09	EPA 245.1, 7470A	HRD

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MCG0199-07 (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	3.36	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 20:56	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 20:56	EPA 300.0	CRL
Sulfate	87.0	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 20:56	EPA 300.0	CRL
Wet Chemistry										
pH	7.62		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:30	SM 4500-H+ B	CRL
Total Dissolved Solids	468	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 9:06	EPA 200.8	CRL
Barium	48.3	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:06	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:06	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:06	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:06	EPA 200.8	CRL
Chromium	1.61	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:06	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:06	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:06	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:06	EPA 200.8	CRL
Selenium	1.31	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:06	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:06	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0592	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:49	EPA 200.7	HRD
Calcium	107	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:47	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:47	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

P-132

MCG0199-07 (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 13:11	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.

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco CCR
Project Manager: Charles A Donkers

Reported:
01/10/2018 13:41

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MCG0199-08 (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	1.19	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 21:17	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 21:17	EPA 300.0	CRL
Sulfate	15.6	1.00	mg/L		1	BCH0001	8/1/17 7:53	8/1/17 21:17	EPA 300.0	CRL
Wet Chemistry										
pH	7.82		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:34	SM 4500-H+ B	CRL
Total Dissolved Solids	268	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 9:10	EPA 200.8	CRL
Barium	32.8	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:10	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:10	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:10	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:10	EPA 200.8	CRL
Chromium	1.31	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:10	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:10	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:10	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:10	EPA 200.8	CRL
Selenium	0.917	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:10	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:10	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 14:54	EPA 200.7	HRD
Calcium	65.9	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:52	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:52	EPA 200.7	HRD

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	01/10/2018 13:41

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MCG0199-08 (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 13:13	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-09 (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	26.0	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 13:09	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 13:09	EPA 300.0	CRL
Sulfate	23.3	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 13:09	EPA 300.0	CRL
Wet Chemistry										
pH	7.90		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:38	SM 4500-H+ B	CRL
Total Dissolved Solids	292	20.0	mg/L		1	BCG0340	7/20/17 0:00	7/20/17 0:00	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	1.60	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:14	EPA 200.8	CRL
Barium	85.3	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:14	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:14	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:14	EPA 200.8	CRL
Cobalt	9.47	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:14	EPA 200.8	CRL
Chromium	4.33	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:14	EPA 200.8	CRL
Molybdenum	2.44	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:14	EPA 200.8	CRL
Lead	2.86	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:14	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:14	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:14	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:14	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 14:59	EPA 200.7	HRD
Calcium	49.9	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:57	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 14:57	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-09 (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 13:14	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-10 (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	BCH0027	8/1/17 12:48	8/2/17 13:29	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 13:29	EPA 300.0	CRL
Sulfate	2.53	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 13:29	EPA 300.0	CRL
Wet Chemistry										
pH	8.13		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 14:41	SM 4500-H+ B	CRL
Total Dissolved Solids	112	20.0	mg/L		1	BCG0340	7/20/17 0:00	7/20/17 0:00	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.694	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:18	EPA 200.8	CRL
Barium	15.1	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:18	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:18	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:18	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:18	EPA 200.8	CRL
Chromium	0.595	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:18	EPA 200.8	CRL
Molybdenum	0.536	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:18	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:18	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:18	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:18	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0328	7/20/17 6:57	7/21/17 9:18	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 15:05	EPA 200.7	HRD
Calcium	26.5	0.500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:02	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0327	7/20/17 6:56	7/25/17 15:02	EPA 200.7	HRD

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	01/10/2018 13:41

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MCG0199-10 (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 13:16	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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

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MCG0199-21 (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	24.4	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 18:57	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 18:57	EPA 300.0	CRL
Sulfate	80.9	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 18:57	EPA 300.0	CRL
Wet Chemistry										
pH	8.04		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 15:28	SM 4500-H+ B	CRL
Total Dissolved Solids	462	20.0	mg/L		1	BCG0426	7/24/17 9:07	7/24/17 9:07	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.716	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 8:56	EPA 200.8	CRL
Barium	44.6	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 8:56	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 8:56	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 8:56	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 8:56	EPA 200.8	CRL
Chromium	6.03	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 8:56	EPA 200.8	CRL
Molybdenum	8.84	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 8:56	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 8:56	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 8:56	EPA 200.8	CRL
Selenium	2.70	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 8:56	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 8:56	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.226	0.0500	mg/L		1	BCG0427	7/24/17 7:21	7/26/17 11:50	EPA 200.7	HRD
Calcium	73.5	0.500	mg/L		1	BCG0427	7/24/17 7:21	7/26/17 11:49	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0427	7/24/17 7:21	7/26/17 11:49	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

P-162

MCG0199-21 (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	BCH0102	8/3/17 8:38	8/3/17 14:37	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-22 (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	20.4	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 19:18	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 19:18	EPA 300.0	CRL
Sulfate	261	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 19:18	EPA 300.0	CRL
Wet Chemistry										
pH	7.52		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 15:31	SM 4500-H+ B	CRL
Total Dissolved Solids	864	20.0	mg/L		1	BCG0426	7/24/17 9:07	7/24/17 9:07	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.519	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:00	EPA 200.8	CRL
Barium	100	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:00	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:00	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:00	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:00	EPA 200.8	CRL
Chromium	6.14	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:00	EPA 200.8	CRL
Molybdenum	0.696	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:00	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:00	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:00	EPA 200.8	CRL
Selenium	52.8	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:00	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:00	EPA 200.8	CRL
Total Metals by ICP										
Boron	1.07	0.0500	mg/L		1	BCG0427	7/24/17 7:21	7/26/17 11:55	EPA 200.7	HRD
Calcium	164	0.500	mg/L		1	BCG0427	7/24/17 7:21	7/26/17 11:54	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0427	7/24/17 7:21	7/26/17 11:54	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-22 (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	BCH0102	8/3/17 8:38	8/3/17 14:39	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-23 (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	10.2	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 19:38	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 19:38	EPA 300.0	CRL
Sulfate	40.2	1.00	mg/L		1	BCH0027	8/1/17 12:48	8/2/17 19:38	EPA 300.0	CRL
Wet Chemistry										
pH	7.98		pH Units	M_TTT	1	BCG0341	7/19/17 13:50	7/19/17 15:35	SM 4500-H+ B	CRL
Total Dissolved Solids	326	20.0	mg/L		1	BCG0426	7/24/17 9:07	7/24/17 9:07	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:12	EPA 200.8	CRL
Barium	42.7	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:12	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:12	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:12	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:12	EPA 200.8	CRL
Chromium	10.5	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:12	EPA 200.8	CRL
Molybdenum	0.724	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:12	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:12	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:12	EPA 200.8	CRL
Selenium	1.62	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:12	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCG0428	7/24/17 7:28	7/25/17 9:12	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCG0427	7/24/17 7:21	7/26/17 12:01	EPA 200.7	HRD
Calcium	77.3	0.500	mg/L		1	BCG0427	7/24/17 7:21	7/26/17 11:59	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCG0427	7/24/17 7:21	7/26/17 11:59	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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MCG0199-23 (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	BCH0102	8/3/17 8:38	8/3/17 14:41	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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							

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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	

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							

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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						
Chromium	<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							
Barium	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Arsenic	<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							
Lead	<0.500	0.500	ug/L							
LCS (BCG0328-BS1)				Prepared: 07/20/2017 Analyzed: 07/21/2017						
Cobalt	104	0.500	ug/L	100.00		104	85-115			
Arsenic	101	0.500	ug/L	100.00		101	85-115			
Antimony	99.5	0.500	ug/L	100.00		99.5	85-115			
Lead	98.3	0.500	ug/L	100.00		98.3	85-115			
Thallium	99.4	0.500	ug/L	100.00		99.4	85-115			
Chromium	104	0.500	ug/L	100.00		104	85-115			
Molybdenum	101	0.500	ug/L	100.00		101	85-115			
Selenium	99.1	0.500	ug/L	100.00		99.1	85-115			
Barium	103	0.500	ug/L	100.00		103	85-115			
Beryllium	98.8	0.500	ug/L	100.00		98.8	85-115			
Cadmium	102	0.500	ug/L	100.00		102	85-115			
Duplicate (BCG0328-DUP1)		**Source: MCG0199-04**		Prepared: 07/20/2017 Analyzed: 07/21/2017						
Chromium	0.728	0.500	ug/L		0.684			6.22	20	
Molybdenum	0.297	0.500	ug/L		0.161			59.0	20	M_D-RL
Lead	0.100	0.500	ug/L		0.0162			144	20	M_D-RL
Cadmium	0.0411	0.500	ug/L		<0.500				20	
Antimony	0.167	0.500	ug/L		0.0421			119	20	M_D-RL
Thallium	0.162	0.500	ug/L		0.00502			188	20	M_D-RL
Cobalt	0.0511	0.500	ug/L		<0.500				20	
Beryllium	0.255	0.500	ug/L		<0.500				20	
Barium	48.4	0.500	ug/L		48.8			0.936	20	
Arsenic	0.619	0.500	ug/L		0.529			15.6	20	
Selenium	0.306	0.500	ug/L		0.339			10.5	20	

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						
Thallium	0.0153	0.500	ug/L		0.00810			61.8	20	M_D-RL
Antimony	0.0690	0.500	ug/L		0.0639			7.67	20	
Cobalt	0.0314	0.500	ug/L		0.0366			15.5	20	
Beryllium	<0.500	0.500	ug/L		<0.500				20	
Cadmium	<0.500	0.500	ug/L		<0.500				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	
Molybdenum	0.325	0.500	ug/L		0.313			3.85	20	
Lead	<0.500	0.500	ug/L		0.0156				20	
Arsenic	0.546	0.500	ug/L		0.607			10.6	20	
Selenium	0.322	0.500	ug/L		0.347			7.35	20	
Matrix Spike (BCG0328-MS1)		**Source: MCG0199-04**		Prepared: 07/20/2017 Analyzed: 07/21/2017						
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			
Molybdenum	98.9	0.500	ug/L	100.00	0.161	98.8	70-130			
Thallium	93.1	0.500	ug/L	100.00	0.00502	93.1	70-130			
Antimony	99.4	0.500	ug/L	100.00	0.0421	99.4	70-130			
Chromium	105	0.500	ug/L	100.00	0.684	105	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			
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			
Arsenic	103	0.500	ug/L	100.00	0.529	102	70-130			
Matrix Spike (BCG0328-MS2)		**Source: MCG0199-05**		Prepared: 07/20/2017 Analyzed: 07/21/2017						
Barium	187	0.500	ug/L	100.00	80.2	107	70-130			
Arsenic	104	0.500	ug/L	100.00	0.607	103	70-130			
Lead	91.9	0.500	ug/L	100.00	0.0156	91.9	70-130			
Chromium	104	0.500	ug/L	100.00	0.917	103	70-130			
Thallium	94.5	0.500	ug/L	100.00	0.00810	94.5	70-130			
Molybdenum	104	0.500	ug/L	100.00	0.313	104	70-130			
Antimony	102	0.500	ug/L	100.00	0.0639	102	70-130			
Cadmium	98.9	0.500	ug/L	100.00	<0.500	98.9	70-130			
Beryllium	99.6	0.500	ug/L	100.00	<0.500	99.6	70-130			
Selenium	100	0.500	ug/L	100.00	0.347	99.7	70-130			
Cobalt	101	0.500	ug/L	100.00	0.0366	101	70-130			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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						
Cobalt	102	0.500	ug/L	100.00	<0.500	102	70-130	0.563	20	
Arsenic	104	0.500	ug/L	100.00	0.529	103	70-130	1.29	20	
Barium	152	0.500	ug/L	100.00	48.8	103	70-130	0.125	20	
Lead	92.5	0.500	ug/L	100.00	0.0162	92.5	70-130	1.55	20	
Antimony	99.9	0.500	ug/L	100.00	0.0421	99.9	70-130	0.502	20	
Thallium	94.1	0.500	ug/L	100.00	0.00502	94.1	70-130	1.06	20	
Chromium	104	0.500	ug/L	100.00	0.684	104	70-130	0.819	20	
Selenium	99.2	0.500	ug/L	100.00	0.339	98.9	70-130	0.264	20	
Beryllium	99.8	0.500	ug/L	100.00	<0.500	99.8	70-130	0.0405	20	
Cadmium	104	0.500	ug/L	100.00	<0.500	104	70-130	0.305	20	
Molybdenum	101	0.500	ug/L	100.00	0.161	101	70-130	2.13	20	
Matrix Spike Dup (BCG0328-MSD2)		**Source: MCG0199-05**		Prepared: 07/20/2017 Analyzed: 07/21/2017						
Cobalt	102	0.500	ug/L	100.00	0.0366	102	70-130	0.935	20	
Arsenic	106	0.500	ug/L	100.00	0.607	106	70-130	2.10	20	
Lead	91.7	0.500	ug/L	100.00	0.0156	91.7	70-130	0.166	20	
Chromium	104	0.500	ug/L	100.00	0.917	103	70-130	0.103	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	
Beryllium	97.0	0.500	ug/L	100.00	<0.500	97.0	70-130	2.64	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	
Selenium	98.3	0.500	ug/L	100.00	0.347	98.0	70-130	1.76	20	
Barium	184	0.500	ug/L	100.00	80.2	104	70-130	1.67	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							
Barium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							

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						
Cobalt	101	0.500	ug/L	100.00		101	85-115			
Arsenic	99.6	0.500	ug/L	100.00		99.6	85-115			
Lead	99.1	0.500	ug/L	100.00		99.1	85-115			
Barium	99.7	0.500	ug/L	100.00		99.7	85-115			
Molybdenum	101	0.500	ug/L	100.00		101	85-115			
Cadmium	96.7	0.500	ug/L	100.00		96.7	85-115			
Antimony	100	0.500	ug/L	100.00		100	85-115			
Selenium	98.9	0.500	ug/L	100.00		98.9	85-115			
Beryllium	102	0.500	ug/L	100.00		102	85-115			
Chromium	102	0.500	ug/L	100.00		102	85-115			
Thallium	100	0.500	ug/L	100.00		100	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	

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						
Antimony	101	0.500	ug/L	100.00	0.168	101	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			
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			
Beryllium	98.5	0.500	ug/L	100.00	0.203	98.3	70-130			
Cobalt	101	0.500	ug/L	100.00	0.275	100	70-130			
Lead	92.2	0.500	ug/L	100.00	0.137	92.0	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			
Matrix Spike (BCG0428-MS2)		**Source: MCG0199-22**		Prepared: 07/24/2017 Analyzed: 07/25/2017						
Molybdenum	103	0.500	ug/L	100.00	0.696	102	70-130			
Selenium	154	0.500	ug/L	100.00	52.8	101	70-130			
Arsenic	107	0.500	ug/L	100.00	0.519	107	70-130			
Beryllium	97.1	0.500	ug/L	100.00	0.00866	97.1	70-130			
Antimony	104	0.500	ug/L	100.00	<0.500	104	70-130			
Cadmium	95.4	0.500	ug/L	100.00	0.0405	95.4	70-130			
Thallium	96.4	0.500	ug/L	100.00	<0.500	96.4	70-130			
Cobalt	102	0.500	ug/L	100.00	0.241	102	70-130			
Chromium	112	0.500	ug/L	100.00	6.14	106	70-130			
Barium	206	0.500	ug/L	100.00	100	106	70-130			
Lead	92.2	0.500	ug/L	100.00	0.0229	92.2	70-130			
Matrix Spike Dup (BCG0428-MSD1)		**Source: MCG0199-21**		Prepared: 07/24/2017 Analyzed: 07/25/2017						
Cadmium	95.3	0.500	ug/L	100.00	0.0726	95.3	70-130	1.88	20	
Chromium	105	0.500	ug/L	100.00	6.03	99.3	70-130	3.34	20	
Cobalt	99.1	0.500	ug/L	100.00	0.275	98.8	70-130	1.56	20	
Molybdenum	114	0.500	ug/L	100.00	8.84	105	70-130	3.97	20	
Beryllium	98.9	0.500	ug/L	100.00	0.203	98.7	70-130	0.434	20	
Barium	147	0.500	ug/L	100.00	44.6	102	70-130	2.14	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	
Selenium	102	0.500	ug/L	100.00	2.70	99.0	70-130	0.748	20	
Arsenic	103	0.500	ug/L	100.00	0.716	102	70-130	3.25	20	
Thallium	93.6	0.500	ug/L	100.00	0.134	93.5	70-130	2.12	20	

Total Metals by ICPMS - Quality Control

Batch BCG0428 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCG0428-MSD2) **Source: MCG0199-22** Prepared: 07/24/2017 Analyzed: 07/25/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Selenium	152	0.500	ug/L	100.00	52.8	98.8	70-130	1.48	20	
Cadmium	95.9	0.500	ug/L	100.00	0.0405	95.9	70-130	0.465	20	
Cobalt	107	0.500	ug/L	100.00	0.241	107	70-130	4.54	20	
Thallium	97.5	0.500	ug/L	100.00	<0.500	97.5	70-130	1.10	20	
Chromium	117	0.500	ug/L	100.00	6.14	111	70-130	4.15	20	
Antimony	103	0.500	ug/L	100.00	<0.500	103	70-130	0.507	20	
Beryllium	100	0.500	ug/L	100.00	0.00866	100	70-130	3.41	20	
Lead	93.0	0.500	ug/L	100.00	0.0229	93.0	70-130	0.842	20	
Molybdenum	107	0.500	ug/L	100.00	0.696	106	70-130	3.49	20	
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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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						
Lithium	1.00	0.0500	mg/L	1.0000		100	85-115			
Calcium	102	0.500	mg/L	100.00		102	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						
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	48.1	0.500	mg/L		48.6			0.997	20	
Boron	0.0468	0.0500	mg/L		0.0458			2.20	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						
Calcium	221	0.500	mg/L	100.00	115	107	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			

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						
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125	0.643	20	
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	
Matrix Spike Dup (BCG0327-MSD2)		**Source: MCG0199-03**		Prepared: 07/20/2017 Analyzed: 07/25/2017						
Calcium	224	0.500	mg/L	100.00	115	110	70-130	1.29	20	
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125	1.71	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						
Calcium	<0.500	0.500	mg/L							
Boron	<0.0500	0.0500	mg/L							
Lithium	<0.0500	0.0500	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						
Lithium	0.0429	0.0500	mg/L		0.0443			3.01	20	
Calcium	94.8	0.500	mg/L		96.7			1.98	20	
Boron	0.0989	0.0500	mg/L		0.103			4.34	20	
Duplicate (BCG0427-DUP2)		**Source: MCG0186-03**		Prepared: 07/24/2017 Analyzed: 07/26/2017						
Boron	0.0635	0.0500	mg/L		0.0641			1.00	20	
Calcium	21.7	0.500	mg/L		22.0			1.33	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	

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							
Calcium	199	0.500	mg/L	100.00	96.7	102	70-130			
Lithium	1.06	0.0500	mg/L	1.0000	0.0443	102	75-125			
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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:41

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	

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

1698342

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)

				COLLECTED						Preservatives											
				COMPOSITE START		COMPOSITE END/GRAB												Y/N			
ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	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	SAMPLE CONDITIONS			
① marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	7/19/17	1210	/Xcel	7/19/17	1305 ~~1210~~	MW0811 4.9	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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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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: 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

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	Requested Analysis Filtered (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~~ [illegible]

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 7/19/17

ORIGINAL

SAMPLE CONDITIONS			
Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
[illegible]	Y	X	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.

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 L Robl

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

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

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

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

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

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

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:

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:

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.

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	

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	

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	

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	

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	

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	

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	

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	

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.

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	

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.

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	

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.

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	

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.

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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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 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 -
Project Number: Sherco CCR, July 2017

Section C
Invoice Information:

Attention: Clare 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)

WO#: 30224831

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	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				7-10-17	1435		2			2							✓	✓		001
2	P-734-1						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						0945		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			
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
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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.

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

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 2 of 3

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 –
Project Number: Sherco CCR, July 2017

Section C
Invoice Information:

Attention: Clara Ruikkie
Company Name: Pace MN Field Services
Address:
Pace Quote Reference: Tom Halverson
Pace Project Manager: Rabbin 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

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	RA-226 EPA 903.1	RA-228 EPA 904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-152 a	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-154 a						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-01a-1						1120		2			2							✓	✓		022
12	P-155						1215		2			2										023

30224831

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

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

*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 3

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 -
Project Number: Sherco CCR, July 2017

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)

30224831

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	Y/N ⇓ Analysis Test ⇓	RA-226EPA903.1	RA-228EPA904.0	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-22	WT				7/18/17	1330		2			2							✓	✓		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				DJA 7/19/17																		
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	7/19/17	1435		7/21/17	0930	N/A	N	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): 7-19-17

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

*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 DML

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

Tracking #: 718092688132

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

Type of Ice: Wet Blue [✓ None]

Thermometer Used ______

Correction Factor: — °C Final Temp: — °C

Cooler Temperature Observed 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)

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)
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 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 8/21/17

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: 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) DTA

Date 8/21/17 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 156100067		Lot No. YSI 16L100376	
Exp Date 07/2017		Exp. Date 11/2017	
Meter Result (mV)	Temp (°C)	Meter Result (mV)	Temp (°C)
231	25.0	231	25.0

Meter Make YSI 556 MPS ID MPS-5

IC/ICV Time 0920/0922

Initials DTA

ICV: [✓ *Pass*] / *Fail*

ICV acceptable if ± 10 mV of standard value.

CCV Time 1825 Initials DTA 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) ______ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*~~
DTA 8/21/17

~~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: 25.0 (°C)	Ambient Temp: 25.0 (°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 0850 Initials DTA

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 1810 Initials DTA 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 ______ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*~~
DTA 8/21/17

~~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: 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

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)	IC Time 0830 Initials DJA
	0.02	10.0	100	999	IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	ICV Time 0840 Initials DJA
	0.02	9.9	100	999	ICV: [✓ Pass] / Fail

ICV acceptable if ± 5% of standard value.

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	CCV Time 1830 Initials DJA
	0.01	10.0	99	1000	CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	CCV Time Initials
		DJA	8/21/17		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: 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)

Lead Technician Signature: 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) DTA   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 DTA

ICV: [✓ Pass] / Fail

ICV acceptable if ± 10 mV of standard value.

CCV Time 1845   Initials DTA   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) ______   CCV: Pass / Fail
(CCV acceptable if ± 10 mV of standard value)

DTA 8-22-17

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: 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 DTA

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 DTA   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 ______ (%)   CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DTA 8-22-17

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: 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

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	10.0	99	999	IC Time 0745 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	10.0	99	1000	ICV Time 0755 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	99	999	CCV Time 1850 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA	8/22/17		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: 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   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 8/23/17

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: 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) ______ CCV: Pass / Fail
☐ Calibration Standard
☐ Secondary Source Standard
(CCV acceptable if ± 10 mV of standard value)

DJA 8/23/17

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: (°C)	18.0	Ambient Temp: (°C)	18.0
Barometric Pressure (in. Hg)	29.11	Barometric Pressure (in. Hg)	29.11
Barometric Pressure (mm Hg)	739.39	Barometric Pressure (mm Hg)	739.39
Calibration Value[1] (%)	97	Calibration Value[1] (%)	97
IC Meter Result (%)	98	ICV Meter Result (%)	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 ______ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 8/23/17

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: 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

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA	8/23/17		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 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 8/24/17 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 Aaslam 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)	
Calibration Std. Value (mV)	241	Secondary Source Std. Value (mV)	241
Mfg. Zobells ORP Std.		Mfg. Zobells ORP Std.	
Lot No. YSI 15G 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	17.0	242	17.0

Meter Make YSI 556 MPS ID MPS-5

IC/ICV Time 0800/0802

Initials DJA

ICV: [✓ Pass] / Fail

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) ______ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

DJA 8/24/17

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:	14.0 (°C)	Ambient Temp:	14.0 (°C)
Barometric Pressure	29.13 (in. Hg)	Barometric Pressure	29.13 (in. Hg)
Barometric Pressure	739.90 (mm Hg)	Barometric Pressure	739.90 (mm Hg)
Calibration Value[1]	97 (%)	Calibration Value[1]	97 (%)
IC Meter Result (%)	97	ICV Meter Result (%)	98

IC/ICV Time 0735 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 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 ______ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

DJA 8/24/17

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: 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

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	999	IC Time 0720 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.01	9.9	99	1000	ICV Time 0730 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	10.0	100	999	CCV Time 1200 Initials DJA CCV: Pass / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 8/24/17			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: 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-130 Labeled P130

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 46.84 Feet
Static water level measurement before purging 35.84 Feet
Static water level measurement at time of sampling 35.84 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 8-22-17 Water Column 11.00 Feet
Time Purged 0935-1002 One Casing Volume 1.8 Gallons
Pump Rate 0.2 [✓ GPM] LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 8-22-17
Time Sampled 1010
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 6.9 (units) D.O 9.0 (mg/l)
Spec. Cond. 790 (µmhos/cm) Turbidity 2.1 (NTU)
Temp. 12.0 (°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: 67° + 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)
0944	6.8	790	11.5	9.3	NA	108	1.8
0953	6.8	790	12.0	9.1	NA	110	3.6
1002	6.9	790	12.0	9.0	NA	113	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

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-131 Labeled P131

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 48.55 Feet

Static water level measurement before purging 33.55 Feet

Static water level measurement at time of sampling 33.55 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 8-23-17 Water Column 15.00 Feet

Time Purged 1335-1411 One Casing Volume 2.4 Gallons

Pump Rate 0.2 [✓ GPM] LPM Volume Purged 7.2 Gallons

Field Sampling Data

Date Sampled 8-23-17

Time Sampled 1420

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 8.8 (mg/l)

Spec. Cond. 560 (µmhos/cm) Turbidity 2.9 (NTU)

Temp. 11.5 (°C) Eh 249 (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 5

Sample Description: clear + odorless

Observations: DJA 8/23/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1347	7.2	560	11.5	9.3	NA	240	2.4
1359	7.3	560	11.5	9.1	NA	246	4.8
1411	7.3	560	11.5	8.8	NA	249	7.2
		DJA 8/23/17					

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: 8/23/17

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-132 **Labeled** P132

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 36.51 Feet

Static water level measurement before purging 28.89 Feet

Static water level measurement at time of sampling 28.89 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 8-23-17 **Water Column** 7.62 Feet

Time Purged 1835-1853 **One Casing Volume** 1.2 Gallons

Pump Rate 0.2 [✓ GPM] LPM **Volume Purged** 3.6 Gallons

Field Sampling Data

Date Sampled 8-23-17

Time Sampled 1905

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.1 (units) D.O 8.4 (mg/l)

Spec. Cond. 690 (µmhos/cm) Turbidity 4.4 (NTU)

Temp. 12.0 (°C) Eh 234 (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 NW5

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)
1841	7.1	690	12.0	8.7	NA	235	1.2
1847	7.1	690	12.0	8.5	NA	234	2.4
1853	7.1	690	12.0	8.4	NA	234	3.6
				DVA	8/23/17		

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: 8/23/17

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-150 Labeled 806320

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 36.66 Feet

Static water level measurement before purging 30.23 Feet

Static water level measurement at time of sampling 30.23 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 8-23-17 Water Column 6.43 Feet

Time Purged 1255-1310 One Casing Volume 1.0 Gallons

Pump Rate 0.2 [✓ GPM] LPM Volume Purged 3.0 Gallons

Field Sampling Data

Date Sampled 8-23-17

Time Sampled 1320

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 9.8 (mg/l)

Spec. Cond. 460 (µmhos/cm) Turbidity 2.7 (NTU)

Temp. 11.5 (°C) 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: 70° + sunny, wind NW 5-10

Sample Description: clear + odorless

Observations: DJA 8/23/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1300	7.3	460	12.0	10.0	NA	238	1.0
1305	7.3	460	11.5	9.9	NA	249	2.0
1310	7.3	460	11.5	9.8	NA	253	3.0
				DJA 8/23/17			

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: 8/23/17

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-151 **Labeled** 806315

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 20.16 Feet
Static water level measurement before purging 10.12 Feet
Static water level measurement at time of sampling 10.12 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method ~~dedicated bladder pump~~ peristaltic pump

Date Purged 8-23-17 **Water Column** 10.04 Feet

Time Purged 1515-1539 **One Casing Volume** 1.6 Gallons

Pump Rate 0.2 [✓ GPM] LPM **Volume Purged** 4.8 Gallons

Field Sampling Data

Date Sampled 8-23-17
Time Sampled 1550
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 8.0 (mg/l)
Spec. Cond. 460 (µmhos/cm) Turbidity 38.1 (NTU)
Temp. 16.0 (°C) Eh 242 (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 NW 10

Sample Description: clear + odorless

Observations: DJA 8/23/17

Bladder pump not working.

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1523	7.5	460	16.0	8.0	NA	235	1.6
1531	7.5	460	16.0	8.0	NA	238	3.2
1539	7.5	460	16.0	8.0	NA	242	4.8
			DJA 8/23/17				

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:** 8/23/17

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-153 Labeled 806314

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 23.63 Feet

Static water level measurement before purging 15.21 Feet

Static water level measurement at time of sampling 15.21 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 8-23-17 Water Column 8.42 Feet

Time Purged 1620-1641 One Casing Volume 1.4 Gallons

Pump Rate 0.2 [✓ GPM] LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 8-23-17

Time Sampled 1650

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 7.8 (mg/l)

Spec. Cond. 200 (µmhos/cm) Turbidity 4.6 (NTU)

Temp. 15.0 (°C) Eh 251 (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 NW 10

Sample Description: clear + odorless

Observations: DJA 8/23/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1627	7.8	200	15.0	8.0	NA	259	1.4
1634	7.7	200	15.0	7.8	NA	253	2.8
1641	7.7	200	15.0	7.8	NA	251	4.2
		DJA 8/23/17					

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: 8/23/17

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-154 a Labeled 806316

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 49.53 Feet

Static water level measurement before purging 32.33 Feet

Static water level measurement at time of sampling 32.33 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 8-23-17 Water Column 17.20 Feet

Time Purged 1725-1807 One Casing Volume 2.8 Gallons

Pump Rate 0.2 [✓ GPM] LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 8-23-17

Time Sampled 1820

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 5.3 (mg/l)

Spec. Cond. 490 (µmhos/cm) Turbidity 4.0 (NTU)

Temp. 11.5 (°C) Eh 199 (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 NW 10

Sample Description: clear + odorless

Observations:

DTA 8/23/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1739	7.4	490	11.5	5.6	NA	198	2.8
1753	7.5	490	11.5	5.4	NA	199	5.6
1807	7.5	490	11.5	5.3	NA	199	8.4

DTA 8/23/17

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: 8/23/17

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-162 Labeled 822/56

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 166 Feet (estimate)
Static water level measurement before purging 148.78 Feet
Static water level measurement at time of sampling 148.78 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 8-24-17 Water Column 17.22 Feet
Time Purged 0910-0931 One Casing Volume 2.8 Gallons
Pump Rate 0.4 [✓ GPM] LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 8-24-17
Time Sampled 0940
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 3.7 (mg/l)
Spec. Cond. 710 (µmhos/cm) Turbidity 3.8 (NTU)
Temp. 12.0 (°C) Eh 101 (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 NW 10
Sample Description: clear + odorless
Observations:
DJA 8/24/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0917	7.7	710	12.0	3.8	NA	107	2.8
0924	7.7	710	12.0	3.7	NA	103	5.6
0931	7.6	710	12.0	3.7	NA	101	8.4

DJA 8/24/17

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: 8/24/17

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-163 Labeled 822157

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 176 Feet (estimate

Static water level measurement before purging 158.15 Feet

Static water level measurement at time of sampling 158.15 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump

Date Purged 8-24-17 Water Column 17.85 Feet

Time Purged 1000-1024 One Casing Volume 2.9 Gallons

Pump Rate 0.4 [✓ GPM] LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 8-24-17

Time Sampled 1035

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 7.3 (mg/l)

Spec. Cond. 1080 (µmhos/cm) Turbidity 2.6 (NTU)

Temp. 12.5 (°C) Eh 130 (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 E 10

Sample Description: clear + odorless

Observations:

DJA 8/24/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1008	7.5	1090	12.5	7.4	NA	137	3.2
1016	7.4	1080	12.5	7.3	NA	133	6.4
1024	7.4	1080	12.5	7.3	NA	130	9.6

DJA 8/24/17

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: 8/24/17

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-164 Labeled 822158

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 166 Feet
Static water level measurement before purging 151.93 Feet
Static water level measurement at time of sampling 151.93 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 8-24-17 Water Column 14.07 Feet
Time Purged 1100 - 1118 One Casing Volume 2.3 Gallons
Pump Rate 0.4 [✓ GPM] LPM Volume Purged 7.2 Gallons

Field Sampling Data

Date Sampled 8-24-17
Time Sampled 1130
Sampling Equip. above pump
Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 10.8 (mg/l)
Spec. Cond. 550 (µmhos/cm) Turbidity 18.8 (NTU)
Temp. 16.0 (°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: 67° + sunny, wind E10
Sample Description: clear + odorless
Observations: DTA 8/24/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1106	7.6	550	15.5	11.4	NA	155	2.4
1112	7.5	550	16.0	11.0	NA	149	4.8
1118	7.5	550	16.0	10.8	NA	146	7.2
			DTA	8/24/17			

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: 8/24/17

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-165 Labeled 822159

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 40.32 Feet
Static water level measurement before purging 31.08 Feet
Static water level measurement at time of sampling 31.08 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump
Date Purged 8-24-17 Water Column 9.24 Feet
Time Purged 0810-0834 One Casing Volume 1.5 Gallons
Pump Rate 0.2 [✓ GPM] LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 8-24-17
Time Sampled 0845
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.0 (units) D.O 11.5 (mg/l)
Spec. Cond. 430 (µmhos/cm) Turbidity 4.2 (NTU)
Temp. 12.0 (°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: 58° + sunny, wind NW 5
Sample Description: clear + odorless
Observations: DJA 8/24/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0818	6.9	420	12.0	11.7	NA	222	1.6
0826	7.0	430	12.0	11.6	NA	211	3.2
0834	7.0	430	12.0	11.5	NA	202	4.8
		DJA 8/24/17					

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: 8/24/17

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

10 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 Pond No. 3 CCR Groundwater Monitoring System. HSD 1/10/18

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

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: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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-130		MCH0292-10	Water	08/22/2017 10:10	08/24/2017 13:30
P-150		MCH0292-24	Water	08/23/2017 13:20	08/24/2017 13:30
P-131		MCH0292-25	Water	08/23/2017 14:20	08/24/2017 13:30
P-151		MCH0292-26	Water	08/23/2017 15:50	08/24/2017 13:30
P-153		MCH0292-27	Water	08/23/2017 16:50	08/24/2017 13:30
P-154a		MCH0292-28	Water	08/23/2017 18:20	08/24/2017 13:30
P-132		MCH0292-29	Water	08/23/2017 19:05	08/24/2017 13:30
Duplicate		MCH0292-30	Water	08/23/2017 19:05	08/24/2017 13:30
P-165		MCH0292-31	Water	08/24/2017 8:45	08/24/2017 13:30
P-162		MCH0292-32	Water	08/24/2017 9:40	08/24/2017 13:30
P-163		MCH0292-33	Water	08/24/2017 10:35	08/24/2017 13:30
P-164		MCH0292-34	Water	08/24/2017 11:30	08/24/2017 13:30

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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

Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

P-130

MCH0292-10 (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	1.08	1.00	mg/L		1	BCI0039	9/5/17 11:35	9/5/17 23:06	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0039	9/5/17 11:35	9/5/17 23:06	EPA 300.0	CRL
Sulfate	9.56	1.00	mg/L		1	BCI0039	9/5/17 11:35	9/5/17 23:06	EPA 300.0	CRL
Wet Chemistry										
pH	7.35		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 15:08	SM 4500-H+ B	CRL
Total Dissolved Solids	458	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 9:09	EPA 200.8	CRL
Barium	96.8	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:09	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:09	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:09	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:09	EPA 200.8	CRL
Chromium	0.809	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:09	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:09	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:09	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:09	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:09	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0684	8/28/17 9:01	8/29/17 9:09	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 16:18	EPA 200.7	HRD
Calcium	120	0.500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:16	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0683	8/28/17 9:03	9/7/17 16:16	EPA 200.7	HRD

Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

P-130

MCH0292-10 (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 14:02	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

P-150

MCH0292-24 (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	28.8	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 18:57	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 18:57	EPA 300.0	CRL
Sulfate	5.45	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 18:57	EPA 300.0	CRL
Wet Chemistry										
pH	7.88		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 16:06	SM 4500-H+ B	CRL
Total Dissolved Solids	246	20.0	mg/L		1	BCH0709	8/29/17 9:11	8/29/17 9:11	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.552	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:03	EPA 200.8	CRL
Barium	49.1	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:03	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:03	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:03	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:03	EPA 200.8	CRL
Chromium	1.10	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:03	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:03	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:03	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:03	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:03	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:03	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:17	EPA 200.7	HRD
Calcium	51.5	0.500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:16	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:16	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

P-150

MCH0292-24 (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 15:12	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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

P-131

MCH0292-25 (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	18.5	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 19:18	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 19:18	EPA 300.0	CRL
Sulfate	29.8	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 19:18	EPA 300.0	CRL
Wet Chemistry										
pH	7.84		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 16:09	SM 4500-H+ B	CRL
Total Dissolved Solids	358	20.0	mg/L		1	BCH0709	8/29/17 9:11	8/29/17 9:11	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.611	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:07	EPA 200.8	CRL
Barium	74.2	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:07	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:07	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:07	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:07	EPA 200.8	CRL
Chromium	1.47	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:07	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:07	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:07	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:07	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:07	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:07	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:22	EPA 200.7	HRD
Calcium	74.7	0.500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:21	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:21	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

P-131

MCH0292-25 (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 15:14	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

P-151

MCH0292-26 (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	20.8	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 19:38	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 19:38	EPA 300.0	CRL
Sulfate	17.1	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 19:38	EPA 300.0	CRL
Wet Chemistry										
pH	7.95		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 16:13	SM 4500-H+ B	CRL
Total Dissolved Solids	202	20.0	mg/L		1	BCH0709	8/29/17 9:11	8/29/17 9:11	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.979	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:11	EPA 200.8	CRL
Barium	78.4	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:11	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:11	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:11	EPA 200.8	CRL
Cobalt	4.77	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:11	EPA 200.8	CRL
Chromium	2.69	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:11	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:11	EPA 200.8	CRL
Lead	1.73	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:11	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:11	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:11	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:11	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:27	EPA 200.7	HRD
Calcium	67.8	0.500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:26	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:26	EPA 200.7	HRD

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MCH0292-26 (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 13:18	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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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MCH0292-27 (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	BCI0058	9/6/17 9:23	9/6/17 19:58	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 19:58	EPA 300.0	CRL
Sulfate	2.69	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 19:58	EPA 300.0	CRL
Wet Chemistry										
pH	8.14		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 16:17	SM 4500-H+ B	CRL
Total Dissolved Solids	106	20.0	mg/L		1	BCH0709	8/29/17 9:11	8/29/17 9:11	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.813	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:15	EPA 200.8	CRL
Barium	16.0	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:15	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:15	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:15	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:15	EPA 200.8	CRL
Chromium	0.532	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:15	EPA 200.8	CRL
Molybdenum	0.572	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:15	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:15	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:15	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:15	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:15	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:32	EPA 200.7	HRD
Calcium	27.7	0.500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:31	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:31	EPA 200.7	HRD

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco CCR

Project Manager: Charles A Donkers

Reported: 01/10/2018 13:46

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MCH0292-27 (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 13:20	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

P-154a

MCH0292-28 (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	9.24	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 20:19	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 20:19	EPA 300.0	CRL
Sulfate	31.7	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 20:19	EPA 300.0	CRL
Wet Chemistry										
pH	7.97		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 16:20	SM 4500-H+ B	CRL
Total Dissolved Solids	278	20.0	mg/L		1	BCH0709	8/29/17 9:11	8/29/17 9:11	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.910	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:19	EPA 200.8	CRL
Barium	45.8	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:19	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:19	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:19	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:19	EPA 200.8	CRL
Chromium	1.44	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:19	EPA 200.8	CRL
Molybdenum	0.788	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:19	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:19	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:19	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:19	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:19	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:37	EPA 200.7	HRD
Calcium	65.8	0.500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:36	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:36	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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MCH0292-28 (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 13:22	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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MCH0292-29 (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	2.28	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 20:39	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 20:39	EPA 300.0	CRL
Sulfate	80.7	1.00	mg/L		1	BCI0058	9/6/17 9:23	9/6/17 20:39	EPA 300.0	CRL
Wet Chemistry										
pH	7.67		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 16:24	SM 4500-H+ B	CRL
Total Dissolved Solids	444	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 11:22	EPA 200.8	CRL
Barium	45.3	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:22	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:22	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:22	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:22	EPA 200.8	CRL
Chromium	2.41	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:22	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:22	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:22	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:22	EPA 200.8	CRL
Selenium	1.57	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:22	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:22	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0647	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:43	EPA 200.7	HRD
Calcium	100	0.500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:41	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:41	EPA 200.7	HRD

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	01/10/2018 13:46

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MCH0292-29 (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 13:23	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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MCH0292-31 (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	1.67	1.00	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 11:06	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 11:06	EPA 300.0	CRL
Sulfate	10.7	1.00	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 11:06	EPA 300.0	CRL
Wet Chemistry										
pH	7.90		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 16:35	SM 4500-H+ B	CRL
Total Dissolved Solids	214	20.0	mg/L		1	BCH0729	8/30/17 9:05	8/30/17 9:05	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:30	EPA 200.8	CRL
Barium	30.4	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:30	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:30	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:30	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:30	EPA 200.8	CRL
Chromium	2.03	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:30	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:30	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:30	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:30	EPA 200.8	CRL
Selenium	0.833	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:30	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:30	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:53	EPA 200.7	HRD
Calcium	62.4	0.500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:51	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:51	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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MCH0292-31 (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 13:30	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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MCH0292-32 (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	25.0	1.00	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 11:26	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 11:26	EPA 300.0	CRL
Sulfate	73.6	1.00	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 11:26	EPA 300.0	CRL
Wet Chemistry										
pH	7.80		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 16:38	SM 4500-H+ B	CRL
Total Dissolved Solids	508	20.0	mg/L		1	BCH0729	8/30/17 9:05	8/30/17 9:05	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.696	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:34	EPA 200.8	CRL
Barium	58.1	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:34	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:34	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:34	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:34	EPA 200.8	CRL
Chromium	4.91	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:34	EPA 200.8	CRL
Molybdenum	6.43	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:34	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:34	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:34	EPA 200.8	CRL
Selenium	2.87	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:34	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:34	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.210	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:58	EPA 200.7	HRD
Calcium	90.5	0.500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:56	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 16:56	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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MCH0292-32 (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 13:32	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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MCH0292-33 (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	12.3	1.00	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 11:47	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 11:47	EPA 300.0	CRL
Sulfate	147	1.00	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 11:47	EPA 300.0	CRL
Wet Chemistry										
pH	7.45		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 16:42	SM 4500-H+ B	CRL
Total Dissolved Solids	690	20.0	mg/L		1	BCH0729	8/30/17 9:05	8/30/17 9:05	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:46	EPA 200.8	CRL
Barium	105	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:46	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:46	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:46	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:46	EPA 200.8	CRL
Chromium	9.63	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:46	EPA 200.8	CRL
Molybdenum	0.589	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:46	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:46	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:46	EPA 200.8	CRL
Selenium	23.4	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:46	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:46	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.533	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 17:13	EPA 200.7	HRD
Calcium	154	0.500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 17:12	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 17:12	EPA 200.7	HRD

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	01/10/2018 13:46

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MCH0292-33 (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 13:34	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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MCH0292-34 (Water) - Chain of Custody Number: 2125444/2125483/2125484

Anions by Ion Chromatography

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Chloride	9.71	1.00	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 12:07	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 12:07	EPA 300.0	CRL
Sulfate	36.8	1.00	mg/L		1	BCI0061	9/6/17 12:03	9/7/17 12:07	EPA 300.0	CRL

Wet Chemistry

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
pH	8.04		pH Units	M_TTT	1	BCH0651	8/24/17 14:19	8/24/17 16:45	SM 4500-H+ B	CRL
Total Dissolved Solids	304	20.0	mg/L		1	BCH0729	8/30/17 9:05	8/30/17 9:05	SM 2540C	HSD

Total Metals by ICPMS

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Arsenic	0.574	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:50	EPA 200.8	CRL
Barium	45.0	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:50	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:50	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:50	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:50	EPA 200.8	CRL
Chromium	12.3	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:50	EPA 200.8	CRL
Molybdenum	0.750	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:50	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:50	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:50	EPA 200.8	CRL
Selenium	1.72	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:50	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCH0701	8/28/17 12:33	8/29/17 11:50	EPA 200.8	CRL

Total Metals by ICP

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Boron	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 17:19	EPA 200.7	HRD
Calcium	80.7	0.500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 17:17	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCH0700	8/28/17 12:35	9/6/17 17:17	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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MCH0292-34 (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 13:36	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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							

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	

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							

Anions by Ion Chromatography - Quality Control

Batch BCI0061 - Wet Prep

LCS (BCI0061-BS1) Prepared: 09/06/2017 Analyzed: 09/07/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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			

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	

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							

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	

Total Metals by ICPMS - Quality Control

Batch BCH0684 - EPA 200.2, EPA 3005

Blank (BCH0684-BLK1) Prepared: 08/28/2017 Analyzed: 08/29/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							

LCS (BCH0684-BS1) Prepared: 08/28/2017 Analyzed: 08/29/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Cobalt	99.1	0.500	ug/L	100.00		99.1	85-115			
Beryllium	102	0.500	ug/L	100.00		102	85-115			
Cadmium	95.7	0.500	ug/L	100.00		95.7	85-115			
Thallium	97.1	0.500	ug/L	100.00		97.1	85-115			
Barium	101	0.500	ug/L	100.00		101	85-115			
Chromium	99.8	0.500	ug/L	100.00		99.8	85-115			
Arsenic	100	0.500	ug/L	100.00		100	85-115			
Antimony	96.8	0.500	ug/L	100.00		96.8	85-115			
Selenium	93.9	0.500	ug/L	100.00		93.9	85-115			
Molybdenum	99.0	0.500	ug/L	100.00		99.0	85-115			
Lead	96.4	0.500	ug/L	100.00		96.4	85-115			

Duplicate (BCH0684-DUP1) **Source: MCH0292-04** Prepared: 08/28/2017 Analyzed: 08/29/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Selenium	0.234	0.500	ug/L		0.268			13.4	20	
Arsenic	0.553	0.500	ug/L		0.601			8.23	20	
Cadmium	0.0286	0.500	ug/L		<0.500				20	
Chromium	0.761	0.500	ug/L		0.788			3.58	20	
Lead	0.0264	0.500	ug/L		<0.500				20	
Molybdenum	0.151	0.500	ug/L		0.130			14.6	20	
Barium	58.4	0.500	ug/L		57.5			1.61	20	
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	
Thallium	0.0491	0.500	ug/L		0.00460			166	20	M_D-RL
Antimony	0.0446	0.500	ug/L		<0.500				20	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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						
Arsenic	0.638	0.500	ug/L		0.653			2.47	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	
Thallium	0.00969	0.500	ug/L		0.00748			25.7	20	M_D-RL
Lead	<0.500	0.500	ug/L		0.0231				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	
Barium	74.9	0.500	ug/L		73.3			2.28	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Antimony	0.0347	0.500	ug/L		<0.500				20	
Beryllium	<0.500	0.500	ug/L		0.00753				20	
Matrix Spike (BCH0684-MS1)		**Source: MCH0292-04**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Selenium	95.9	0.500	ug/L	100.00	0.268	95.6	70-130			
Arsenic	104	0.500	ug/L	100.00	0.601	103	70-130			
Antimony	98.7	0.500	ug/L	100.00	<0.500	98.7	70-130			
Cobalt	101	0.500	ug/L	100.00	0.0387	101	70-130			
Lead	90.8	0.500	ug/L	100.00	<0.500	90.8	70-130			
Barium	162	0.500	ug/L	100.00	57.5	105	70-130			
Molybdenum	101	0.500	ug/L	100.00	0.130	101	70-130			
Thallium	92.5	0.500	ug/L	100.00	0.00460	92.5	70-130			
Chromium	102	0.500	ug/L	100.00	0.788	101	70-130			
Beryllium	99.9	0.500	ug/L	100.00	<0.500	99.9	70-130			
Cadmium	94.1	0.500	ug/L	100.00	<0.500	94.1	70-130			
Matrix Spike (BCH0684-MS2)		**Source: MCH0292-05**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Cobalt	103	0.500	ug/L	100.00	0.266	103	70-130			
Barium	173	0.500	ug/L	100.00	73.3	99.4	70-130			
Antimony	95.9	0.500	ug/L	100.00	<0.500	95.9	70-130			
Chromium	106	0.500	ug/L	100.00	0.808	105	70-130			
Beryllium	101	0.500	ug/L	100.00	0.00753	101	70-130			
Thallium	90.4	0.500	ug/L	100.00	0.00748	90.4	70-130			
Cadmium	95.0	0.500	ug/L	100.00	<0.500	95.0	70-130			
Selenium	97.1	0.500	ug/L	100.00	0.412	96.6	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			
Molybdenum	98.3	0.500	ug/L	100.00	0.128	98.2	70-130			

Total Metals by ICPMS - Quality Control

Batch BCH0684 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCH0684-MSD1) **Source: MCH0292-04** Prepared: 08/28/2017 Analyzed: 08/29/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Cobalt	102	0.500	ug/L	100.00	0.0387	101	70-130	0.616	20	
Antimony	100	0.500	ug/L	100.00	<0.500	100	70-130	1.38	20	
Selenium	95.9	0.500	ug/L	100.00	0.268	95.6	70-130	0.0332	20	
Lead	92.2	0.500	ug/L	100.00	<0.500	92.2	70-130	1.50	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	
Beryllium	96.9	0.500	ug/L	100.00	<0.500	96.9	70-130	3.09	20	
Cadmium	96.8	0.500	ug/L	100.00	<0.500	96.8	70-130	2.82	20	
Barium	163	0.500	ug/L	100.00	57.5	105	70-130	0.271	20	
Chromium	105	0.500	ug/L	100.00	0.788	104	70-130	2.61	20	
Thallium	95.3	0.500	ug/L	100.00	0.00460	95.3	70-130	2.95	20	

Matrix Spike Dup (BCH0684-MSD2) **Source: MCH0292-05** Prepared: 08/28/2017 Analyzed: 08/29/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Cadmium	95.1	0.500	ug/L	100.00	<0.500	95.1	70-130	0.0768	20	
Lead	93.0	0.500	ug/L	100.00	0.0231	93.0	70-130	6.06	20	
Arsenic	109	0.500	ug/L	100.00	0.653	108	70-130	7.00	20	
Barium	183	0.500	ug/L	100.00	73.3	109	70-130	5.57	20	
Molybdenum	103	0.500	ug/L	100.00	0.128	103	70-130	4.74	20	
Beryllium	101	0.500	ug/L	100.00	0.00753	100	70-130	0.512	20	
Cobalt	101	0.500	ug/L	100.00	0.266	101	70-130	2.21	20	
Thallium	95.0	0.500	ug/L	100.00	0.00748	95.0	70-130	4.95	20	
Chromium	105	0.500	ug/L	100.00	0.808	104	70-130	1.20	20	
Antimony	103	0.500	ug/L	100.00	<0.500	103	70-130	6.67	20	
Selenium	97.3	0.500	ug/L	100.00	0.412	96.8	70-130	0.199	20	

Batch BCH0701 - EPA 200.2, EPA 3005

Blank (BCH0701-BLK1) Prepared: 08/28/2017 Analyzed: 08/29/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Cadmium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Arsenic	<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							
Antimony	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							

Total Metals by ICPMS - Quality Control

Batch BCH0701 - EPA 200.2, EPA 3005

LCS (BCH0701-BS1) Prepared: 08/28/2017 Analyzed: 08/29/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Cadmium	95.5	0.500	ug/L	100.00		95.5	85-115			
Molybdenum	98.0	0.500	ug/L	100.00		98.0	85-115			
Antimony	98.3	0.500	ug/L	100.00		98.3	85-115			
Selenium	95.1	0.500	ug/L	100.00		95.1	85-115			
Beryllium	99.4	0.500	ug/L	100.00		99.4	85-115			
Cobalt	98.6	0.500	ug/L	100.00		98.6	85-115			
Chromium	98.9	0.500	ug/L	100.00		98.9	85-115			
Lead	97.3	0.500	ug/L	100.00		97.3	85-115			
Barium	102	0.500	ug/L	100.00		102	85-115			
Arsenic	101	0.500	ug/L	100.00		101	85-115			
Thallium	95.8	0.500	ug/L	100.00		95.8	85-115			

Duplicate (BCH0701-DUP1) **Source: MCH0292-23** Prepared: 08/28/2017 Analyzed: 08/29/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	0.802	0.500	ug/L		0.680			16.5	20	
Thallium	0.119	0.500	ug/L		0.00923			171	20	M_D-RL
Antimony	0.152	0.500	ug/L		<0.500				20	
Cadmium	0.0248	0.500	ug/L		0.0557			76.6	20	M_D-RL
Selenium	0.739	0.500	ug/L		0.712			3.75	20	
Lead	0.199	0.500	ug/L		0.109			58.1	20	M_D-RL
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	
Barium	83.7	0.500	ug/L		82.2			1.80	20	
Cobalt	0.344	0.500	ug/L		0.294			15.5	20	
Chromium	5.03	0.500	ug/L		4.98			1.03	20	

Duplicate (BCH0701-DUP2) **Source: MCH0292-24** Prepared: 08/28/2017 Analyzed: 08/29/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lead	0.0302	0.500	ug/L		<0.500				20	
Molybdenum	0.234	0.500	ug/L		0.208			11.6	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Beryllium	0.00722	0.500	ug/L		<0.500				20	
Barium	49.2	0.500	ug/L		49.1			0.168	20	
Thallium	0.0113	0.500	ug/L		<0.500				20	
Chromium	1.15	0.500	ug/L		1.10			4.18	20	
Antimony	0.0507	0.500	ug/L		0.0394			25.0	20	M_D-RL
Arsenic	0.524	0.500	ug/L		0.552			5.12	20	
Selenium	0.439	0.500	ug/L		0.465			5.78	20	
Cobalt	<0.500	0.500	ug/L		0.0373				20	

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						
Chromium	103	0.500	ug/L	100.00	4.98	98.5	70-130			
Antimony	99.0	0.500	ug/L	100.00	<0.500	99.0	70-130			
Cadmium	93.2	0.500	ug/L	100.00	0.0557	93.1	70-130			
Selenium	96.4	0.500	ug/L	100.00	0.712	95.7	70-130			
Beryllium	97.3	0.500	ug/L	100.00	0.0120	97.3	70-130			
Cobalt	97.3	0.500	ug/L	100.00	0.294	97.0	70-130			
Molybdenum	98.8	0.500	ug/L	100.00	0.833	97.9	70-130			
Lead	90.5	0.500	ug/L	100.00	0.109	90.4	70-130			
Barium	183	0.500	ug/L	100.00	82.2	101	70-130			
Arsenic	104	0.500	ug/L	100.00	0.680	103	70-130			
Thallium	91.9	0.500	ug/L	100.00	0.00923	91.9	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			
Chromium	98.3	0.500	ug/L	100.00	1.10	97.2	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			
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			
Thallium	92.1	0.500	ug/L	100.00	<0.500	92.1	70-130			
Cadmium	95.5	0.500	ug/L	100.00	<0.500	95.5	70-130			
Beryllium	101	0.500	ug/L	100.00	<0.500	101	70-130			
Antimony	100	0.500	ug/L	100.00	0.0394	100	70-130			
Cobalt	96.9	0.500	ug/L	100.00	0.0373	96.8	70-130			
Matrix Spike Dup (BCH0701-MSD1)		**Source: MCH0292-23**		Prepared: 08/28/2017 Analyzed: 08/29/2017						
Cobalt	101	0.500	ug/L	100.00	0.294	101	70-130	4.07	20	
Cadmium	97.0	0.500	ug/L	100.00	0.0557	96.9	70-130	4.01	20	
Beryllium	96.0	0.500	ug/L	100.00	0.0120	96.0	70-130	1.38	20	
Molybdenum	101	0.500	ug/L	100.00	0.833	100	70-130	2.51	20	
Arsenic	107	0.500	ug/L	100.00	0.680	106	70-130	2.74	20	
Antimony	98.6	0.500	ug/L	100.00	<0.500	98.6	70-130	0.400	20	
Selenium	96.7	0.500	ug/L	100.00	0.712	96.0	70-130	0.358	20	
Barium	188	0.500	ug/L	100.00	82.2	106	70-130	2.80	20	
Chromium	107	0.500	ug/L	100.00	4.98	102	70-130	3.35	20	
Thallium	90.3	0.500	ug/L	100.00	0.00923	90.3	70-130	1.72	20	
Lead	89.5	0.500	ug/L	100.00	0.109	89.4	70-130	1.14	20	

Amended Report

Original Report ID: MCH0292 Xcel General Report FINAL 09 15 2017 0858 09 15 2017 0908

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

Total Metals by ICPMS - Quality Control

Batch BCH0701 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCH0701-MSD2) **Source: MCH0292-24** Prepared: 08/28/2017 Analyzed: 08/29/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	98.5	0.500	ug/L	100.00	0.0394	98.4	70-130	1.95	20	
Cobalt	97.2	0.500	ug/L	100.00	0.0373	97.1	70-130	0.339	20	
Barium	153	0.500	ug/L	100.00	49.1	104	70-130	1.60	20	
Lead	89.3	0.500	ug/L	100.00	<0.500	89.3	70-130	2.16	20	
Thallium	90.7	0.500	ug/L	100.00	<0.500	90.7	70-130	1.60	20	
Beryllium	97.7	0.500	ug/L	100.00	<0.500	97.7	70-130	3.73	20	
Molybdenum	100	0.500	ug/L	100.00	0.208	100	70-130	1.05	20	
Cadmium	94.9	0.500	ug/L	100.00	<0.500	94.9	70-130	0.659	20	
Chromium	98.3	0.500	ug/L	100.00	1.10	97.2	70-130	0.0361	20	
Arsenic	105	0.500	ug/L	100.00	0.552	105	70-130	0.457	20	
Selenium	95.5	0.500	ug/L	100.00	0.465	95.0	70-130	0.695	20	

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						
Calcium	<0.500	0.500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
Boron	<0.0500	0.0500	mg/L							
LCS (BCH0683-BS1)				Prepared: 08/28/2017 Analyzed: 09/07/2017						
Boron	1.01	0.0500	mg/L	1.0000		101	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 (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						
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Boron	0.0557	0.0500	mg/L		0.0613			9.57	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						
Boron	1.16	0.0500	mg/L	1.0000	0.125	104	70-130			
Calcium	193	0.500	mg/L	100.00	84.8	108	70-130			
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125			
Matrix Spike (BCH0683-MS2)		**Source: MCH0292-03**		Prepared: 08/28/2017 Analyzed: 09/07/2017						
Boron	1.10	0.0500	mg/L	1.0000	0.0613	104	70-130			
Calcium	171	0.500	mg/L	100.00	61.4	110	70-130			
Lithium	1.04	0.0500	mg/L	1.0000	<0.0500	104	75-125			

Total Metals by ICP - Quality Control

Batch BCH0683 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCH0683-MSD1) **Source: MCH0292-02** Prepared: 08/28/2017 Analyzed: 09/07/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Boron	1.21	0.0500	mg/L	1.0000	0.125	108	70-130	3.71	20	
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	

Matrix Spike Dup (BCH0683-MSD2) **Source: MCH0292-03** Prepared: 08/28/2017 Analyzed: 09/07/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Boron	1.10	0.0500	mg/L	1.0000	0.0613	104	70-130	0.194	20	
Lithium	1.05	0.0500	mg/L	1.0000	<0.0500	105	75-125	0.726	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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lithium	<0.0500	0.0500	mg/L							
Boron	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							

LCS (BCH0700-BS1) Prepared: 08/28/2017 Analyzed: 09/06/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Calcium	103	0.500	mg/L	100.00		103	85-115			
Boron	0.990	0.0500	mg/L	1.0000		99.0	85-115			
Lithium	1.01	0.0500	mg/L	1.0000		101	85-115			

Duplicate (BCH0700-DUP1) **Source: MCH0292-21** Prepared: 08/28/2017 Analyzed: 09/06/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Boron	0.0549	0.0500	mg/L		0.0511			7.19	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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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								
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125			
Boron	1.05	0.0500	mg/L	1.0000	0.0511	99.8	70-130			
Calcium	190	0.500	mg/L	100.00	84.3	106	70-130			
Matrix Spike (BCH0700-MS2)	**Source: MCH0292-22**	Prepared: 08/28/2017 Analyzed: 09/06/2017								
Lithium	1.03	0.0500	mg/L	1.0000	<0.0500	103	75-125			
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			
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	
Calcium	188	0.500	mg/L	100.00	84.3	104	70-130	1.00	20	
Boron	1.06	0.0500	mg/L	1.0000	0.0511	101	70-130	0.713	20	
Matrix Spike Dup (BCH0700-MSD2)	**Source: MCH0292-22**	Prepared: 08/28/2017 Analyzed: 09/06/2017								
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	
Calcium	174	0.500	mg/L	100.00	71.3	103	70-130	1.62	20	

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							

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:46

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

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	SAMPLE CONDITIONS			
① Marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	8/24/17	1325	Lab: [illegible] / Xcel	8/24/17	1330	MU0841: 4.2	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

pH strips: MB0050G

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.

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 2 of 3

2125483

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	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-157	WT				8/22/17	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-019-1						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	David Anderson/Pace	8/24/17	1325	Lab: W[illegible]/Xcel	8/24/17	1330	MW0B41 4.2			
bottles Filtered										
and unfiltered.										
								Y	Y	X
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

ORIGINAL

pH strps 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.

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

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Page: 3 of 3

2125484

Section A
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MP-7
Email To:
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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

Requested Analysis Filtered (Y/N)

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	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 c Lab
11																					1
12				DTA 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 marked HNO3 bottles filtered and unfiltered.	David Anderson / Pace	8/24/17	1325	[illegible] / Xcel	8/24/17	1330	[illegible] 4.2°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): 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

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 L Robl

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

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

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

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

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

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

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:

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:

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.

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	

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	

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	

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	

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	

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	

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	

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	

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	

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.

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	

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.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 17-0921,Xcel Energy-Sherco CCR
Pace Project No.: 30228379

QC Batch: 269742
QC Batch Method: EPA 904.0
Analysis 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	

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.

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	

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.

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	

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.

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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CHAIN-O WO#:30228379 ient
The Chain-of-Cu ately.

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 Fieldservices
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	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	RA-226EPA903.1	RA-228EPA904.0										Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	P-74-1	WT				8/21/17	1210		2			2							✓	✓										001
2	P-734-1						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	[illegible]	Wt	Y	Y	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): 8/22/17

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

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:
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

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	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-010-1						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			
① client needs to analyze for: Radium 226+228 pCi/L combined	David Anderson / Pace	8/24/17	1450	C Conney	8/28/17	0845		Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

①. 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

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

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 -
Project Number: Sherco CCR, August 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

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	Y/N ↓Analysis Test↓	RA-226EPA903.1	RA-228EPA904.0	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-154 a						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			
① client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson / Pace	8/24/17	1450	C. Chaney	8/[illegible]/17	[illegible]	[illegible]	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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: XTO) energy Project # 30228379

Label CC
LIMS Login BLM

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

Tracking #: 747582273788

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: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 8/28/17 CC

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.
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: CC 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 (%) 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 #: 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 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 9-11

~~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: 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.	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)
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
Result (mV) 230 Temp (°C) 27.0 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 9-11-17

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:	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 (%)	97	ICV Meter Result (%)	97

IC/ICV Time 1030 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 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 ______ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 9-11-17

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: 9-11-17

Xcel - Sherco CCR, 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

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 1100 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	9.9	100	999	ICV Time 1105 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	99	998	CCV Time 1755 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 9-11-17			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: David Anderson
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

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*	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~~
Mfg. Fisher 998
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 1845 Initials DJA Std. Value ~~1000~~ 998 ☑ High Standard ☐ Low Standard
Result (µS/cm) 1000 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 9-12-17

~~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: Kent Anderson 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
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 9/12/17 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: 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-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 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 ____ (%) DJA 9-12-17 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: Dank Anden Date: 9-12-17

Xcel - Sherco 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					CCV Time ____ Initials ____ CCV: Pass / Fail

DJA 9/12/17

	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: 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 ~~1000~~ 998 ☒ 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 Prj. #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)	Temp (°C)	Meter Result (mV)	Temp (°C)
236	22.0	234	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 (%)	ICV Meter Result (%)
97	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 ______ (%) DJA 9-13-17 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 Arnden

Date: 9-13-17

Xcel - Sherco CCR, 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

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	10.0	99	999	IC Time 0745 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	10.0	100	999	ICV Time 0755 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	99	998	CCV Time 1905 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 9-13-17			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: 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

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*	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~~ 998
Mfg. Fisher
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 ~~1000~~ 998 ☑ 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) DJA 9/14/17 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: 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.	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)
233	23.0	233	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) ___ CCV: Pass / Fail
☐ Calibration Standard
☐ Secondary Source Standard
(CCV acceptable if ± 10 mV of standard value)

DJA 9/14/17

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:	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 ___ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 9/14/17

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: 9/14/17

Xcel - Sherco CCR, 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

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	10.0	100	999	IC Time 0830 Initials DJA IC: Pass / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	10.0	100	999	ICV Time 0840 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	99	998	CCV Time 1210 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 9/14/17			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: 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-130 Labeled P130

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 46.84 Feet
Static water level measurement before purging 36.08 Feet
Static water level measurement at time of sampling 36.08 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 10.76 Feet
Time Purged 1335-1402 One Casing Volume 1.8 Gallons
Pump Rate 0.2 [✓ GPM] LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 9-12-17
Time Sampled 1410
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.0 (units) D.O 10.0 (mg/l)
Spec. Cond. 690 (µmhos/cm) Turbidity 0.5 (NTU)
Temp. 12.0 (°C) Eh 87 (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 9-12-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1344	7.1	660	12.0	10.4	NA	93	1.8
1353	7.0	680	12.0	10.1	NA	90	3.6
1402	7.0	690	12.0	10.0	NA	87	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: 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-131 Labeled P131

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 48.55 Feet
Static water level measurement before purging 33.80 Feet
Static water level measurement at time of sampling 33.80 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 14.75 Feet
Time Purged 0855-0931 One Casing Volume 2.4 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 7.2 Gallons

Field Sampling Data

Date Sampled 9-13-17
Time Sampled 0940
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 9.1 (mg/l)
Spec. Cond. 560 (µmhos/cm) Turbidity 4.0 (NTU)
Temp. 11.5 (°C) Eh 50 (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
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)
0907	7.2	560	11.5	9.4	NA	77	2.4
0919	7.2	560	11.5	9.2	NA	52	4.8
0931	7.2	560	11.5	9.1	NA	50	7.2
		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-132 Labeled P132

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 36.51 Feet

Static water level measurement before purging 28.87 Feet

Static water level measurement at time of sampling 28.87 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 7.64 Feet

Time Purged 1330-1348 One Casing Volume 1.2 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 3.6 Gallons

Field Sampling Data

Date Sampled 9-13-17

Time Sampled 1400

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 9.3 (mg/l)

Spec. Cond. 690 (µmhos/cm) Turbidity 7.8 (NTU)

Temp. 12.0 (°C) Eh 85 (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 S10

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)
1336	7.2	690	12.0	9.8	NA	77	1.2
1342	7.2	690	12.0	9.5	NA	82	2.4
1348	7.2	690	12.0	9.3	NA	85	3.6
		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-150 Labeled 806320

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 36.66 Feet
Static water level measurement before purging 30.60 Feet
Static water level measurement at time of sampling 30.60 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 6.06 Feet
Time Purged 0810-0825 One Casing Volume 1.0 Gallons
Pump Rate 0.2 [✓ GPM] LPM Volume Purged 3.0 Gallons

Field Sampling Data

Date Sampled 9-13-17
Time Sampled 0835
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.0 (units) D.O 9.1 (mg/l)
Spec. Cond. 490 (µmhos/cm) Turbidity 4.3 (NTU)
Temp. 11.0 (°C) Eh 82 (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 S 5
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)
0815	6.9	480	11.5	9.1	NA	84	1.0
0820	7.0	490	11.0	9.1	NA	83	2.0
0825	7.0	490	11.0	9.1	NA	82	3.0
		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-151 Labeled 806315

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 20.16 Feet

Static water level measurement before purging 10.43 Feet

Static water level measurement at time of sampling 10.43 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 9.73 Feet

Time Purged 1010-1034 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 1050

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 8.6 (mg/l)

Spec. Cond. 470 (µmhos/cm) Turbidity 3.7 (NTU)

Temp. 15.5 (°C) 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: 70° + sunny, wind 5 10

Sample Description: clear + odorless

Observations: dedicated bladder pump working.

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1018	7.5	470	15.5	8.8	NA	70	1.6
1026	7.6	470	15.5	8.6	NA	56	3.2
1034	7.6	470	15.5	8.6	NA	53	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: 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-1524 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 S 10

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-153 Labeled 806314

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 23.63 Feet

Static water level measurement before purging 15.35 Feet

Static water level measurement at time of sampling 15.35 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 8.28 Feet

Time Purged 1130-1151 One Casing Volume 1.3 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 9-13-17

Time Sampled 1200

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 9.6 (mg/l)

Spec. Cond. 200 (µmhos/cm) Turbidity 2.8 (NTU)

Temp. 15.0 (°C) Eh 82 (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 S10

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)
1137	7.6	200	15.0	10.4	NA	86	1.4
1144	7.5	200	15.0	9.9	NA	83	2.8
1151	7.5	200	15.0	9.6	NA	82	4.2

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-154a Labeled 806316

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 49.53 Feet
Static water level measurement before purging 32.14 Feet
Static water level measurement at time of sampling 32.14 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 17.39 Feet
Time Purged 1220-1302 One Casing Volume 2.8 Gallons
Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 9-13-17
Time Sampled 1310
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 4.0 (mg/l)
Spec. Cond. 460 (µmhos/cm) Turbidity 4.7 (NTU)
Temp. 12.0 (°C) Eh 48 (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 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)
1234	7.6	470	12.0	4.7	NA	54	2.8
1248	7.7	460	12.0	4.0	NA	49	5.6
1302	7.7	460	12.0	4.0	NA	48	8.4

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-162 Labeled 822156

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 166 Feet (estimate)
Static water level measurement before purging 148.78 Feet
Static water level measurement at time of sampling 148.78 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump Pump ID PC-6
Date Purged 9-14-17 Water Column 17.22 Feet
Time Purged 0900-0921 One Casing Volume 2.8 Gallons
Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 9-14-17
Time Sampled 0930
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 3.8 (mg/l)
Spec. Cond. 710 (µmhos/cm) Turbidity 3.9 (NTU)
Temp. 12.5 (°C) Eh 31 (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 SE 5-10
Sample Description: clear + odorless
Observations:

DJA 9/14/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0907	7.6	710	12.5	4.0	NA	28	2.8
0914	7.6	710	12.5	3.9	NA	29	5.6
0921	7.6	710	12.5	3.8	NA	31	8.4

DJA 9/14/17

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: 9/14/17

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-163 Labeled 822157

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 176 Feet (estimate)

Static water level measurement before purging 158.15 Feet

Static water level measurement at time of sampling 158.15 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 9-14-17 Water Column 17.85 Feet

Time Purged 1000-1024 One Casing Volume 2.9 Gallons

Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 9-14-17

Time Sampled 1040

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 6.7 (mg/l)

Spec. Cond. 1040 (μmhos/cm) Turbidity 3.5 (NTU)

Temp. 13.5 (°C) Eh 49 (mV)

Other NA

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

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

Weather Conditions During Sampling: 71°+ sunny, wind SE10

Sample Description: clear + odorless

Observations:

DJA 9/14/17

Stabilization Test

Time	pH (units)	Specific Conductance (μmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1008	7.4	1050	13.5	6.8	NA	45	3.2
1016	7.4	1040	13.5	6.7	NA	47	6.4
1024	7.4	1040	13.5	6.7	NA	49	9.6

DJA 9/14/17

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: 9/14/17

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-164 Labeled 822158

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 166 Feet estimate

Static water level measurement before purging 151.93 Feet

Static water level measurement at time of sampling 151.93 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 9-14-17 Water Column 14.07 Feet

Time Purged 1110-1128 One Casing Volume 2.3 Gallons

Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 7.2 Gallons

Field Sampling Data

Date Sampled 9-14-17

Time Sampled 1140

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 8.8 (mg/l)

Spec. Cond. 560 (µmhos/cm) Turbidity 3.6 (NTU)

Temp. 14.5 (°C) 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: 75° + sunny, wind SE 10

Sample Description: clear + odorless

Observations:

DJA 9/14/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1116	7.4	560	14.5	9.0	NA	57	2.4
1122	7.4	560	14.5	8.9	NA	60	4.8
1128	7.4	560	14.5	8.8	NA	62	7.2

DJA 9/14/17

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: 9/14/17

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-16.5 Labeled 822159

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 40.32 Feet

Static water level measurement before purging 31.00 Feet

Static water level measurement at time of sampling 31.00 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 9.32 Feet

Time Purged 1420-1444 One Casing Volume 1.5 Gallons

Pump Rate 0.2 [✓ GPM] / LPM Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 9-13-17

Time Sampled 1455

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 9.0 (mg/l)

Spec. Cond. 410 (µmhos/cm) Turbidity 8.8 (NTU)

Temp. 12.5 (°C) Eh 78 (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° + partly cloudy, wind S10

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)
1428	7.4	400	12.5	9.2	NA	80	1.6
1436	7.5	410	12.5	9.1	NA	79	3.2
1444	7.5	410	12.5	9.0	NA	78	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

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

10 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 Pond No. 3 CCR Groundwater Monitoring System. HSD 1/10/18

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

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	01/10/2018 13:52

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-130		MCI0163-15	Water	09/12/2017 14:10	09/14/2017 13:20
Duplicate		MCI0163-20	Water	09/12/2017 18:30	09/14/2017 13:20
P-150		MCI0163-21	Water	09/13/2017 8:35	09/14/2017 13:20
P-131		MCI0163-22	Water	09/13/2017 9:40	09/14/2017 13:20
P-151		MCI0163-23	Water	09/13/2017 10:50	09/14/2017 13:20
P-153		MCI0163-24	Water	09/13/2017 12:00	09/14/2017 13:20
P-154a		MCI0163-25	Water	09/13/2017 13:10	09/14/2017 13:20
P-132		MCI0163-26	Water	09/13/2017 14:00	09/14/2017 13:20
P-165		MCI0163-27	Water	09/13/2017 14:55	09/14/2017 13:20
P-162		MCI0163-32	Water	09/14/2017 9:30	09/14/2017 13:20
P-163		MCI0163-33	Water	09/14/2017 10:40	09/14/2017 13:20
P-164		MCI0163-34	Water	09/14/2017 11:40	09/14/2017 13:20

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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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

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	01/10/2018 13:52

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MCI0163-15 (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	1.13	1.00	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 19:23	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 19:23	EPA 300.0	CRL
Sulfate	10.2	1.00	mg/L		1	BCI0297	9/15/17 6:19	9/15/17 19:23	EPA 300.0	CRL
Wet Chemistry										
pH	7.34		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:20	SM 4500-H+ B	CRL
Total Dissolved Solids	450	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 10:19	EPA 200.8	CRL
Barium	96.6	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:19	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:19	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:19	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:19	EPA 200.8	CRL
Chromium	0.898	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:19	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:19	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:19	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:19	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:19	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0325	9/18/17 8:50	9/19/17 10:19	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 13:51	EPA 200.7	HRD
Calcium	124	0.500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 13:50	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0324	9/18/17 8:48	9/19/17 13:50	EPA 200.7	HRD

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	01/10/2018 13:52

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MCI0163-15 (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 13:57	EPA 245.1, 7470A	HRD

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

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
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

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
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

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
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

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
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

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	01/10/2018 13:52

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-21 (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	37.6	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 13:41	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 13:41	EPA 300.0	CRL
Sulfate	5.36	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 13:41	EPA 300.0	CRL
Wet Chemistry										
pH	7.85		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:45	SM 4500-H+ B	CRL
Total Dissolved Solids	258	20.0	mg/L		1	BCI0337	9/19/17 9:20	9/19/17 9:20	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.667	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:16	EPA 200.8	CRL
Barium	50.6	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:16	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:16	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:16	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:16	EPA 200.8	CRL
Chromium	0.804	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:16	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:16	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:16	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:16	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:16	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:16	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:09	EPA 200.7	HRD
Calcium	55.3	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:08	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:08	EPA 200.7	HRD

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco CCR

Project Manager: Charles A Donkers

Reported: 01/10/2018 13:52

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MCI0163-21 (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 13:35	EPA 245.1, 7470A	HRD

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	01/10/2018 13:52

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MCI0163-22 (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	19.3	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 14:02	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 14:02	EPA 300.0	CRL
Sulfate	28.2	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 14:02	EPA 300.0	CRL
Wet Chemistry										
pH	7.83		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:49	SM 4500-H+ B	CRL
Total Dissolved Solids	322	20.0	mg/L		1	BCI0337	9/19/17 9:20	9/19/17 9:20	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.571	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:20	EPA 200.8	CRL
Barium	70.4	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:20	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:20	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:20	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:20	EPA 200.8	CRL
Chromium	0.945	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:20	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:20	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:20	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:20	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:20	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:20	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:14	EPA 200.7	HRD
Calcium	76.6	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:13	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:13	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-22 (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 13:37	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-23 (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	21.9	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 14:22	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 14:22	EPA 300.0	CRL
Sulfate	18.8	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 14:22	EPA 300.0	CRL
Wet Chemistry										
pH	7.90		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:52	SM 4500-H+ B	CRL
Total Dissolved Solids	254	20.0	mg/L		1	BCI0337	9/19/17 9:20	9/19/17 9:20	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:31	EPA 200.8	CRL
Barium	48.8	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:31	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:31	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:31	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:31	EPA 200.8	CRL
Chromium	0.773	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:31	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:31	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:31	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:31	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:31	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:31	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:19	EPA 200.7	HRD
Calcium	59.8	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:18	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:18	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-23 (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 13:38	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-24 (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	BCI0327	9/18/17 8:55	9/18/17 14:42	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 14:42	EPA 300.0	CRL
Sulfate	3.48	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 14:42	EPA 300.0	CRL
Wet Chemistry										
pH	8.14		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:56	SM 4500-H+ B	CRL
Total Dissolved Solids	106	20.0	mg/L		1	BCI0337	9/19/17 9:20	9/19/17 9:20	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.850	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:35	EPA 200.8	CRL
Barium	15.5	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:35	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:35	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:35	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:35	EPA 200.8	CRL
Chromium	0.668	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:35	EPA 200.8	CRL
Molybdenum	0.596	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:35	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:35	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:35	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:35	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:35	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:24	EPA 200.7	HRD
Calcium	27.2	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:23	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:23	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-24 (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 13:40	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-25 (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	5.36	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 15:03	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 15:03	EPA 300.0	CRL
Sulfate	29.4	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 15:03	EPA 300.0	CRL
Wet Chemistry										
pH	7.99		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 15:59	SM 4500-H+ B	CRL
Total Dissolved Solids	256	20.0	mg/L		1	BCI0337	9/19/17 9:20	9/19/17 9:20	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	1.12	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:39	EPA 200.8	CRL
Barium	41.9	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:39	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:39	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:39	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:39	EPA 200.8	CRL
Chromium	0.771	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:39	EPA 200.8	CRL
Molybdenum	0.971	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:39	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:39	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:39	EPA 200.8	CRL
Selenium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:39	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:39	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:40	EPA 200.7	HRD
Calcium	60.1	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:38	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:38	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-25 (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 13:42	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-26 (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	2.44	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 15:23	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 15:23	EPA 300.0	CRL
Sulfate	83.5	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 15:23	EPA 300.0	CRL
Wet Chemistry										
pH	7.69		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 16:03	SM 4500-H+ B	CRL
Total Dissolved Solids	432	20.0	mg/L		1	BCI0337	9/19/17 9:20	9/19/17 9:20	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.583	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:43	EPA 200.8	CRL
Barium	45.6	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:43	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:43	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:43	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:43	EPA 200.8	CRL
Chromium	5.85	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:43	EPA 200.8	CRL
Molybdenum	0.762	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:43	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:43	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:43	EPA 200.8	CRL
Selenium	1.42	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:43	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:43	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0672	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:45	EPA 200.7	HRD
Calcium	102	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:43	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:44	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-26 (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 13:43	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-27 (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	1.58	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 15:44	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 15:44	EPA 300.0	CRL
Sulfate	9.76	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 15:44	EPA 300.0	CRL
Wet Chemistry										
pH	7.87		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 16:07	SM 4500-H+ B	CRL
Total Dissolved Solids	224	20.0	mg/L		1	BCI0337	9/19/17 9:20	9/19/17 9:20	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:47	EPA 200.8	CRL
Barium	28.8	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:47	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:47	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:47	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:47	EPA 200.8	CRL
Chromium	1.41	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:47	EPA 200.8	CRL
Molybdenum	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:47	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:47	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:47	EPA 200.8	CRL
Selenium	0.775	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:47	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 8:47	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.0510	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:50	EPA 200.7	HRD
Calcium	61.4	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:48	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 15:48	EPA 200.7	HRD

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	01/10/2018 13:52

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MCI0163-27 (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 13:45	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-32 (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	25.0	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 19:08	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 19:08	EPA 300.0	CRL
Sulfate	75.5	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 19:08	EPA 300.0	CRL
Wet Chemistry										
pH	7.90		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 16:28	SM 4500-H+ B	CRL
Total Dissolved Solids	470	20.0	mg/L		1	BCI0370	9/20/17 9:14	9/20/17 9:14	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.611	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:07	EPA 200.8	CRL
Barium	42.8	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:07	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:07	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:07	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:07	EPA 200.8	CRL
Chromium	5.05	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:07	EPA 200.8	CRL
Molybdenum	9.10	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:07	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:07	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:07	EPA 200.8	CRL
Selenium	2.70	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:07	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:07	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.210	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:15	EPA 200.7	HRD
Calcium	72.0	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:14	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:14	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-32 (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 13:57	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.

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-33 (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	11.2	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 19:28	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 19:28	EPA 300.0	CRL
Sulfate	138	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 19:28	EPA 300.0	CRL
Wet Chemistry										
pH	7.48		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 16:32	SM 4500-H+ B	CRL
Total Dissolved Solids	666	20.0	mg/L		1	BCI0370	9/20/17 9:14	9/20/17 9:14	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.595	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:18	EPA 200.8	CRL
Barium	91.1	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:18	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:18	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:18	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:18	EPA 200.8	CRL
Chromium	14.0	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:18	EPA 200.8	CRL
Molybdenum	0.934	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:18	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:18	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:18	EPA 200.8	CRL
Selenium	22.5	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:18	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:18	EPA 200.8	CRL
Total Metals by ICP										
Boron	0.393	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:20	EPA 200.7	HRD
Calcium	143	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:19	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:19	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-33 (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 13:59	EPA 245.1, 7470A	HRD

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco CCR

Project Manager: Charles A Donkers

Reported:
01/10/2018 13:52

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MCI0163-34 (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	9.21	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 19:49	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 19:49	EPA 300.0	CRL
Sulfate	37.4	1.00	mg/L		1	BCI0327	9/18/17 8:55	9/18/17 19:49	EPA 300.0	CRL
Wet Chemistry										
pH	7.99		pH Units	M_TTT	1	BCI0284	9/14/17 14:02	9/14/17 16:35	SM 4500-H+ B	CRL
Total Dissolved Solids	300	20.0	mg/L		1	BCI0370	9/20/17 9:14	9/20/17 9:14	SM 2540C	HSD
Total Metals by ICPMS										
Arsenic	0.521	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:22	EPA 200.8	CRL
Barium	38.6	1.00	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:22	EPA 200.8	CRL
Beryllium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:22	EPA 200.8	CRL
Cadmium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:22	EPA 200.8	CRL
Cobalt	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:22	EPA 200.8	CRL
Chromium	11.4	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:22	EPA 200.8	CRL
Molybdenum	0.670	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:22	EPA 200.8	CRL
Lead	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:22	EPA 200.8	CRL
Antimony	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:22	EPA 200.8	CRL
Selenium	1.75	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:22	EPA 200.8	CRL
Thallium	< 0.500	0.500	ug/L		1	BCI0330	9/18/17 11:09	9/20/17 9:22	EPA 200.8	CRL
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:26	EPA 200.7	HRD
Calcium	78.1	0.500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:24	EPA 200.7	HRD
Lithium	< 0.0500	0.0500	mg/L		1	BCI0329	9/18/17 11:08	9/19/17 16:24	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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MCI0163-34 (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 14:00	EPA 245.1, 7470A	HRD

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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	

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	

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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						
Cobalt	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Barium	<0.500	0.500	ug/L							
Antimony	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Thallium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
LCS (BCI0325-BS1)				Prepared: 09/18/2017 Analyzed: 09/19/2017						
Molybdenum	102	0.500	ug/L	100.00		102	85-115			
Lead	97.1	0.500	ug/L	100.00		97.1	85-115			
Cadmium	97.3	0.500	ug/L	100.00		97.3	85-115			
Arsenic	99.9	0.500	ug/L	100.00		99.9	85-115			
Selenium	98.0	0.500	ug/L	100.00		98.0	85-115			
Barium	100	0.500	ug/L	100.00		100	85-115			
Beryllium	102	0.500	ug/L	100.00		102	85-115			
Chromium	98.7	0.500	ug/L	100.00		98.7	85-115			
Thallium	98.5	0.500	ug/L	100.00		98.5	85-115			
Antimony	99.2	0.500	ug/L	100.00		99.2	85-115			
Cobalt	97.8	0.500	ug/L	100.00		97.8	85-115			
Duplicate (BCI0325-DUP1)		**Source: MCI0163-04**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Thallium	0.0324	0.500	ug/L		<0.500				20	
Barium	59.7	0.500	ug/L		58.7			1.75	20	
Cobalt	0.0765	0.500	ug/L		0.0485			44.8	20	M_D-RL
Arsenic	0.671	0.500	ug/L		0.691			2.86	20	
Chromium	0.643	0.500	ug/L		0.691			7.17	20	
Beryllium	0.0243	0.500	ug/L		<0.500				20	
Molybdenum	0.156	0.500	ug/L		0.126			21.2	20	M_D-RL
Lead	0.0205	0.500	ug/L		<0.500				20	
Antimony	0.0440	0.500	ug/L		<0.500				20	
Selenium	0.220	0.500	ug/L		0.351			46.0	20	M_D-RL

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco CCR
Project Manager: Charles A Donkers

Reported:
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Total Metals by ICPMS - Quality Control

Batch BCI0325 - EPA 200.2, EPA 3005

Duplicate (BCI0325-DUP2) **Source: MCI0163-05** Prepared: 09/18/2017 Analyzed: 09/19/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lead	0.0535	0.500	ug/L		0.0512			4.26	20	
Chromium	1.15	0.500	ug/L		1.19			2.91	20	
Barium	72.6	0.500	ug/L		72.5			0.172	20	
Selenium	0.345	0.500	ug/L		0.466			30.0	20	M_D-RL
Cobalt	0.394	0.500	ug/L		0.409			3.61	20	
Thallium	<0.500	0.500	ug/L		<0.500				20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Antimony	<0.500	0.500	ug/L		0.0329				20	
Beryllium	<0.500	0.500	ug/L		<0.500				20	
Arsenic	0.731	0.500	ug/L		0.800			8.96	20	
Molybdenum	0.145	0.500	ug/L		0.143			0.802	20	

Matrix Spike (BCI0325-MS1) **Source: MCI0163-04** Prepared: 09/18/2017 Analyzed: 09/19/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lead	93.3	0.500	ug/L	100.00	<0.500	93.3	70-130			
Cobalt	99.7	0.500	ug/L	100.00	0.0485	99.6	70-130			
Barium	159	0.500	ug/L	100.00	58.7	101	70-130			
Chromium	103	0.500	ug/L	100.00	0.691	102	70-130			
Selenium	101	0.500	ug/L	100.00	0.351	101	70-130			
Beryllium	105	0.500	ug/L	100.00	<0.500	105	70-130			
Arsenic	103	0.500	ug/L	100.00	0.691	103	70-130			
Antimony	101	0.500	ug/L	100.00	<0.500	101	70-130			
Molybdenum	102	0.500	ug/L	100.00	0.126	102	70-130			
Thallium	96.2	0.500	ug/L	100.00	<0.500	96.2	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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Cadmium	98.9	0.500	ug/L	100.00	<0.500	98.9	70-130			
Lead	94.8	0.500	ug/L	100.00	0.0512	94.7	70-130			
Beryllium	97.9	0.500	ug/L	100.00	<0.500	97.9	70-130			
Antimony	102	0.500	ug/L	100.00	0.0329	102	70-130			
Chromium	108	0.500	ug/L	100.00	1.19	106	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			
Cobalt	103	0.500	ug/L	100.00	0.409	102	70-130			
Thallium	97.8	0.500	ug/L	100.00	<0.500	97.8	70-130			
Arsenic	104	0.500	ug/L	100.00	0.800	103	70-130			
Barium	179	0.500	ug/L	100.00	72.5	106	70-130			

Total Metals by ICPMS - Quality Control

Batch BCI0325 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCI0325-MSD1) **Source: MCI0163-04** Prepared: 09/18/2017 Analyzed: 09/19/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Beryllium	96.4	0.500	ug/L	100.00	<0.500	96.4	70-130	8.55	20	
Molybdenum	104	0.500	ug/L	100.00	0.126	104	70-130	1.82	20	
Thallium	98.0	0.500	ug/L	100.00	<0.500	98.0	70-130	1.80	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	
Barium	165	0.500	ug/L	100.00	58.7	106	70-130	3.21	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	
Cobalt	101	0.500	ug/L	100.00	0.0485	100	70-130	0.841	20	
Lead	95.9	0.500	ug/L	100.00	<0.500	95.9	70-130	2.74	20	
Chromium	103	0.500	ug/L	100.00	0.691	103	70-130	0.554	20	

Matrix Spike Dup (BCI0325-MSD2) **Source: MCI0163-05** Prepared: 09/18/2017 Analyzed: 09/19/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Thallium	95.4	0.500	ug/L	100.00	<0.500	95.4	70-130	2.53	20	
Chromium	110	0.500	ug/L	100.00	1.19	108	70-130	1.76	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	
Cadmium	100	0.500	ug/L	100.00	<0.500	100	70-130	1.28	20	
Cobalt	104	0.500	ug/L	100.00	0.409	103	70-130	0.826	20	
Molybdenum	101	0.500	ug/L	100.00	0.143	101	70-130	0.891	20	
Beryllium	101	0.500	ug/L	100.00	<0.500	101	70-130	2.80	20	
Barium	172	0.500	ug/L	100.00	72.5	99.9	70-130	3.57	20	
Selenium	96.0	0.500	ug/L	100.00	0.466	95.6	70-130	4.18	20	
Arsenic	102	0.500	ug/L	100.00	0.800	102	70-130	1.19	20	

Batch BCI0330 - EPA 200.2, EPA 3005

Blank (BCI0330-BLK1) Prepared: 09/18/2017 Analyzed: 09/20/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Thallium	<0.500	0.500	ug/L							
Chromium	<0.500	0.500	ug/L							
Cadmium	<0.500	0.500	ug/L							
Cobalt	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Beryllium	<0.500	0.500	ug/L							
Barium	<1.00	1.00	ug/L							
Antimony	<0.500	0.500	ug/L							
Selenium	<0.500	0.500	ug/L							
Molybdenum	<0.500	0.500	ug/L							
Lead	<0.500	0.500	ug/L							

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						
Barium	96.1	1.00	ug/L	100.00		96.1	85-115			
Antimony	96.2	0.500	ug/L	100.00		96.2	85-115			
Thallium	95.6	0.500	ug/L	100.00		95.6	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			
Lead	94.9	0.500	ug/L	100.00		94.9	85-115			
Arsenic	96.0	0.500	ug/L	100.00		96.0	85-115			
Cadmium	98.1	0.500	ug/L	100.00		98.1	85-115			
Selenium	95.2	0.500	ug/L	100.00		95.2	85-115			
Chromium	99.0	0.500	ug/L	100.00		99.0	85-115			
Beryllium	99.9	0.500	ug/L	100.00		99.9	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
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
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	
Cobalt	0.418	0.500	ug/L		0.425			1.77	20	
Chromium	0.812	0.500	ug/L		0.773			4.94	20	
Thallium	0.0589	0.500	ug/L		0.0164			113	20	M_D-RL
Barium	48.2	1.00	ug/L		48.8			1.10	20	
Lead	0.225	0.500	ug/L		0.211			6.76	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	
Thallium	0.0120	0.500	ug/L		0.00855			33.4	20	M_D-RL
Molybdenum	0.594	0.500	ug/L		0.596			0.254	20	
Antimony	0.0655	0.500	ug/L		0.0613			6.66	20	
Beryllium	0.00673	0.500	ug/L		0.00744			10.1	20	
Barium	15.6	1.00	ug/L		15.5			0.702	20	
Arsenic	0.781	0.500	ug/L		0.850			8.47	20	
Selenium	0.293	0.500	ug/L		0.298			1.84	20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Chromium	0.644	0.500	ug/L		0.668			3.59	20	
Cobalt	0.0321	0.500	ug/L		0.0443			32.0	20	M_D-RL

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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						
Selenium	96.6	0.500	ug/L	100.00	0.373	96.2	70-130			
Cadmium	96.3	0.500	ug/L	100.00	<0.500	96.3	70-130			
Arsenic	101	0.500	ug/L	100.00	0.371	101	70-130			
Barium	145	1.00	ug/L	100.00	48.8	96.2	70-130			
Beryllium	97.9	0.500	ug/L	100.00	0.00901	97.9	70-130			
Chromium	101	0.500	ug/L	100.00	0.773	99.8	70-130			
Antimony	98.6	0.500	ug/L	100.00	0.0687	98.5	70-130			
Molybdenum	103	0.500	ug/L	100.00	0.347	103	70-130			
Thallium	94.5	0.500	ug/L	100.00	0.0164	94.5	70-130			
Lead	92.6	0.500	ug/L	100.00	0.211	92.4	70-130			
Cobalt	101	0.500	ug/L	100.00	0.425	100	70-130			
Matrix Spike (BCI0330-MS2)		**Source: MCI0163-24**		Prepared: 09/18/2017 Analyzed: 09/20/2017						
Lead	91.5	0.500	ug/L	100.00	<0.500	91.5	70-130			
Molybdenum	98.8	0.500	ug/L	100.00	0.596	98.2	70-130			
Beryllium	96.1	0.500	ug/L	100.00	0.00744	96.1	70-130			
Selenium	97.6	0.500	ug/L	100.00	0.298	97.3	70-130			
Barium	110	1.00	ug/L	100.00	15.5	94.2	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			
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			
Arsenic	96.1	0.500	ug/L	100.00	0.850	95.3	70-130			
Cadmium	97.3	0.500	ug/L	100.00	<0.500	97.3	70-130			
Matrix Spike Dup (BCI0330-MSD1)		**Source: MCI0163-23**		Prepared: 09/18/2017 Analyzed: 09/20/2017						
Selenium	98.2	0.500	ug/L	100.00	0.373	97.8	70-130	1.65	20	
Molybdenum	101	0.500	ug/L	100.00	0.347	101	70-130	2.46	20	
Thallium	95.5	0.500	ug/L	100.00	0.0164	95.5	70-130	1.08	20	
Chromium	103	0.500	ug/L	100.00	0.773	102	70-130	2.63	20	
Barium	148	1.00	ug/L	100.00	48.8	98.8	70-130	1.77	20	
Cadmium	98.9	0.500	ug/L	100.00	<0.500	98.9	70-130	2.72	20	
Lead	92.9	0.500	ug/L	100.00	0.211	92.7	70-130	0.357	20	
Beryllium	98.8	0.500	ug/L	100.00	0.00901	98.8	70-130	0.855	20	
Cobalt	102	0.500	ug/L	100.00	0.425	101	70-130	0.801	20	
Arsenic	98.4	0.500	ug/L	100.00	0.371	98.0	70-130	2.96	20	
Antimony	98.9	0.500	ug/L	100.00	0.0687	98.8	70-130	0.366	20	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

Total Metals by ICPMS - Quality Control

Batch BCI0330 - EPA 200.2, EPA 3005

Matrix Spike Dup (BCI0330-MSD2) **Source: MCI0163-24** Prepared: 09/18/2017 Analyzed: 09/20/2017

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Barium	113	1.00	ug/L	100.00	15.5	97.3	70-130	2.77	20	
Beryllium	97.3	0.500	ug/L	100.00	0.00744	97.3	70-130	1.23	20	
Antimony	100	0.500	ug/L	100.00	0.0613	100	70-130	5.36	20	
Lead	94.0	0.500	ug/L	100.00	<0.500	94.0	70-130	2.74	20	
Arsenic	102	0.500	ug/L	100.00	0.850	101	70-130	5.60	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	
Chromium	103	0.500	ug/L	100.00	0.668	102	70-130	4.06	20	
Cadmium	98.8	0.500	ug/L	100.00	<0.500	98.8	70-130	1.53	20	
Thallium	96.0	0.500	ug/L	100.00	0.00855	96.0	70-130	4.11	20	
Selenium	97.9	0.500	ug/L	100.00	0.298	97.6	70-130	0.359	20	

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						
Boron	<0.0500	0.0500	mg/L							
Lithium	<0.0500	0.0500	mg/L							
Calcium	<0.500	0.500	mg/L							
LCS (BCI0324-BS1)				Prepared: 09/18/2017 Analyzed: 09/19/2017						
Calcium	105	0.500	mg/L	100.00		105	85-115			
Lithium	1.04	0.0500	mg/L	1.0000		104	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						
Boron	0.127	0.0500	mg/L		0.124			2.23	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	85.6	0.500	mg/L		86.5			1.11	20	
Duplicate (BCI0324-DUP2)		**Source: MCI0163-03**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Boron	0.0566	0.0500	mg/L		0.0581			2.56	20	
Calcium	65.1	0.500	mg/L		64.8			0.381	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Matrix Spike (BCI0324-MS1)		**Source: MCI0163-02**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Boron	1.15	0.0500	mg/L	1.0000	0.124	103	70-130			
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			
Matrix Spike (BCI0324-MS2)		**Source: MCI0163-03**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Calcium	167	0.500	mg/L	100.00	64.8	102	70-130			
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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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						
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	
Calcium	191	0.500	mg/L	100.00	86.5	104	70-130	0.397	20	
Matrix Spike Dup (BCI0324-MSD2)		**Source: MCI0163-03**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
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	
Lithium	1.08	0.0500	mg/L	1.0000	<0.0500	108	75-125	3.68	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						
Boron	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	54.8	0.500	mg/L		55.3			0.984	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Duplicate (BCI0329-DUP2)		**Source: MCI0163-22**		Prepared: 09/18/2017 Analyzed: 09/19/2017						
Boron	0.0311	0.0500	mg/L		0.0353			12.6	20	
Lithium	<0.0500	0.0500	mg/L		<0.0500				20	
Calcium	77.9	0.500	mg/L		76.6			1.63	20	

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						
Boron	1.02	0.0500	mg/L	1.0000	0.0353	98.2	70-130			
Calcium	179	0.500	mg/L	100.00	76.6	102	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						
Boron	1.03	0.0500	mg/L	1.0000	<0.0500	103	70-130	1.67	20	
Calcium	156	0.500	mg/L	100.00	55.3	101	70-130	0.353	20	
Lithium	1.01	0.0500	mg/L	1.0000	<0.0500	101	75-125	0.858	20	
Matrix Spike Dup (BCI0329-MSD2)	**Source: MCI0163-22**			Prepared: 09/18/2017 Analyzed: 09/19/2017						
Lithium	1.02	0.0500	mg/L	1.0000	<0.0500	102	75-125	0.730	20	
Calcium	179	0.500	mg/L	100.00	76.6	102	70-130	0.0944	20	
Boron	1.05	0.0500	mg/L	1.0000	0.0353	102	70-130	3.19	20	

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 13:52

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	

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:

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, Sept. 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	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-734-1						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	SAMPLE CONDITIONS			
① marked HNO3 bottles filtered and unfiltered.	David Anderson / Xcel	9/14/17	1310	/ Xcel	9/14/17	1320	M400841: 5.3°C	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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

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Page: 2 of 3

2112557

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, Sept, 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

Requested Analysis Filtered (Y/N)

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	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N ↓ Analysis Test ↓	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-152 d						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	/ Xcel	9/14/17	1320	MW00841: 5.8°	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

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.

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Page: 3 of 3

2112559

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, Sept. 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	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-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-014-1						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	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.	Dand Anderson	9/14/17	1310	/ Xcel	1320 9/14/17	1320	MU0084 / 5.8°	Y	Y	Y

ORIGINAL

pH strps : MB00502

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: Dand 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

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

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

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

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

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

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:

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

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

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.

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

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	

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

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	

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	

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	

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	

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

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	

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.

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	

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.

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	

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.

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

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.

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
30230404

AIN-OF-CUSTODY / Analytical Request Document

hain-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

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:	Pace MN Field Services
Address:	
Pace Quote Reference:	Tom Halversen
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 EPA903.1	RA-228 EPA904.0	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

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS

1.) Client needs to analyze for: Radium 226+228 pCi/L combined.

2.) RA-226 EPA 903.1
RA-228 EPA 904.0

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)
David Anderson / Pace	9/14/17	1415		9/19/17	0955	N/A	N	Y ~~N~~ ZH 9/19/17	Y

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.

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	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-152a	WT				9/12/17	1320		2			2							✓	✓		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	0835		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

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS

① client needs to analyze for: Radium 226+228 pCi/L combined.

② RA-226 EPA 903.1
RA-228 EPA 904.0

ORIGINAL

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
David Anderson / Pace	9/14/17	1415		9/19/17	0955	N/A	N	Y ~~N~~ EA 9/19/17	Y

SAMPLE CONDITIONS

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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CHAIN-OF-CUSTODY / Analytical Request Document

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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 - Sherco CCR, Sept. 2017
Project Number:

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

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 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-019-1						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																						

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
① client needs to analyze for: Radium 226+228 pCi/L combined.	David Anderson / Pace	9/14/17	1415		9/19/17	0955	N/A	N	~~[illegible]~~ Y [illegible] 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

*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

30230404

Pace Analytical

Client Name: Xcel Energy Project #: ______

Label	ML
LIMS Login	ZH

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

Tracking #: 747598279352

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

DJA 10/9/17

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: 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) ______ CCV: Pass / Fail
(CCV acceptable if ± 10 mV of standard value)

DJA 10/9/17

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: 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 ______ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 10/9/17

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: 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: ______ 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

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	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. Date

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: (°C)	24.0	Ambient Temp: (°C)	24.0
Barometric Pressure (in. Hg)	29.29	Barometric Pressure (in. Hg)	29.29
Barometric Pressure (mm Hg)	743.97	Barometric Pressure (mm Hg)	743.97
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
(CCV acceptable if ± 2% of Calibration Value)

DJA 10/10/17

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: 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

	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	998	IC Time 0700 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 0710 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 1850 Initials DJA CCV: [✓ Pass] / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 10/10/17			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: ______________ 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) CCV: Pass / Fail
(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)

DJA 10-11-17

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:** 10-11-17

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 1855 Initials DJA Std. Value 248
Result (mV) 245 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 10/11/17

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: (°C)	23.0	Ambient Temp: (°C)	23.0
Barometric Pressure (in. Hg)	29.25	Barometric Pressure (in. Hg)	29.25
Barometric Pressure (mm Hg)	742.95	Barometric Pressure (mm Hg)	742.95
Calibration Value[1] (%)	98	Calibration Value[1] (%)	98
IC Meter Result (%)	98	ICV Meter Result (%)	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 1840 Initials DJA Barometric Pressure 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 ____ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 10/11/17

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:** 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 10/11/17			CCV Time Initials CCV: Pass / Fail
CCV					CCV Time Initials CCV: Pass / Fail

CCV acceptable if ± 5% of standard value.

Comments

Lead Technician Signature:
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 ☑ 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

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 ☑ 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)*

DJA 10/12/17

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: 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) ______ CCV: Pass / Fail
(CCV acceptable if ± 10 mV of standard value)

DJA 10/12/17

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:	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-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 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 ______ (%) CCV: Pass / Fail
(CCV acceptable if ± 2% of Calibration Value)

DJA 10/12/17

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: 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

	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	997	IC Time 0750 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 0800 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	98	998	CCV Time 1810 Initials DJA CCV: [✓ Pass] / Fail

	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
CCV		DJA 10/12/17			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: ______________ 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-130 Labeled P130

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 46.84 Feet

Static water level measurement before purging 35.87 Feet

Static water level measurement at time of sampling 35.87 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 10.97 Feet

Time Purged 1005-1032 One Casing Volume 1.8 Gallons

Pump Rate 0.2 [✓ GPM] LPM Volume Purged 5.4 Gallons

Field Sampling Data

Date Sampled 10-11-17

Time Sampled 1050

Sampling Equip. above pump

Analyzed by DTA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 9.3 (mg/l)

Spec. Cond. 840 (µmhos/cm) Turbidity 2.4 (NTU)

Temp. 11.5 (°C) Eh 139 (mV)

Other NA

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

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

Weather Conditions During Sampling: 40° + sunny, wind ~~A~~ S 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)
1014	7.2	830	11.5	9.6	NA	142	1.8
1023	7.2	830	11.5	9.3	NA	136	3.6
1032	7.2	840	11.5	9.3	NA	139	5.4
		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-131 Labeled P131

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 48.55 Feet

Static water level measurement before purging 33.53 Feet

Static water level measurement at time of sampling 33.53 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 10-12-17 Water Column 15.02 Feet

Time Purged 1005-1041 One Casing Volume 2.4 Gallons

Pump Rate 0.2 [✓ GPM] LPM Volume Purged 7.2 Gallons

Field Sampling Data

Date Sampled 10-12-17

Time Sampled 1050

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.2 (units) D.O 9.0 (mg/l)

Spec. Cond. 560 (µmhos/cm) Turbidity 1.6 (NTU)

Temp. 10.5 (°C) Eh 134 (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° + cloudy, wind S10

Sample Description: clear + odorless

Observations:

DJA 10/12/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1017	7.2	560	10.5	9.2	NA	134	2.4
1029	7.2	560	10.5	9.0	NA	134	4.8
1041	7.2	560	10.5	9.0	NA	134	7.2

DJA 10/12/17

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: 10-12-17

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-132 Labeled P132

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 36.51 Feet

Static water level measurement before purging 28.77 Feet

Static water level measurement at time of sampling 28.77 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump Pump ID PC-6

Date Purged 10-10-17 Water Column 7.74 Feet

Time Purged 1300-1321 One Casing Volume 1.3 Gallons

Pump Rate 0.2 [✓ GPM] LPM Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 10-10-17

Time Sampled 1330

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 9.6 (mg/l)

Spec. Cond. 680 (µmhos/cm) Turbidity 3.2 (NTU)

Temp. 11.0 (°C) Eh 83 (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 N 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)
1307	7.3	680	11.0	10.1	NA	78	1.4
1314	7.3	680	11.0	9.9	NA	81	2.8
1321	7.3	680	11.0	9.6	NA	83	4.2

DJA 10/10/17

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: 10/10/17

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-150 **Labeled** 806320

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 36.66 Feet
Static water level measurement before purging 30.03 Feet
Static water level measurement at time of sampling 30.03 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump **Pump ID** PC-6
Date Purged 10-12-17 **Water Column** 6.63 Feet
Time Purged 0805 - 0829 **One Casing Volume** 1.1 Gallons
Pump Rate 0.15 [✓ GPM] / LPM **Volume Purged** 3.6 Gallons

Field Sampling Data

Date Sampled 10-12-17
Time Sampled 0840
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.1 (units) D.O 9.5 (mg/l)
Spec. Cond. 480 (µmhos/cm) Turbidity 2.0 (NTU)
Temp. 10.5 (°C) Eh 150 (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° + cloudy, wind E10
Sample Description: clear + odorless
Observations:
DJA 10/12/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0813	7.1	480	10.5	9.5	NA	152	1.2
0821	7.1	480	10.5	9.5	NA	151	2.4
0829	7.1	480	10.5	9.5	NA	150	3.6

DJA 10/12/17

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: 10/12/17

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-151 Labeled 806315
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 20.16 Feet
Static water level measurement before purging 10.09 Feet
Static water level measurement at time of sampling 10.09 Feet
Static Water Level Elevation Before Purging NA Feet
Purge Method dedicated bladder pump
Pump ID PC-6
Date Purged 10-12-17
Water Column 10.07 Feet
Time Purged 0905-0929
One Casing Volume 1.6 Gallons
Pump Rate 0.2 [✓ GPM] LPM
Volume Purged 4.8 Gallons

Field Sampling Data

Date Sampled 10-12-17
Time Sampled 0940
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.3 (units) D.O 8.8 (mg/l)
Spec. Cond. 440 (µmhos/cm) Turbidity 1.2 (NTU)
Temp. 15.0 (°C) Eh 138 (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° + cloudy, wind E10
Sample Description: clear + odorless
Observations:
DJA 10/12/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
0913	7.3	450	15.0	8.9	NA	143	1.6
0921	7.3	440	15.0	8.9	NA	140	3.2
0929	7.3	440	15.0	8.8	NA	138	4.8

DJA 10/12/17

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: 10-12-17

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-152 a 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 S
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-153 Labeled 806314

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 23.63 Feet
Static water level measurement before purging 15.12 Feet
Static water level measurement at time of sampling 15.12 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method dedicated bladder pump Pump ID PC-6
Date Purged 10-12-17 Water Column 8.51 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 10-12-17
Time Sampled 1140
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 9.7 (mg/l)
Spec. Cond. 190 (µmhos/cm) Turbidity 2.4 (NTU)
Temp. 14.5 (°C) Eh 134 (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 510
Sample Description: clear + odorless
Observations: DJA 10/12/17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1112	7.6	190	14.5	9.7	NA	136	1.4
1119	7.6	190	14.5	9.7	NA	135	2.8
1126	7.6	190	14.5	9.7	NA	134	4.2
		DJA 10/12/17					

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: 10-12-17

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-154A Labeled: 806316

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: 49.53 Feet
Static water level measurement before purging: 31.80 Feet
Static water level measurement at time of sampling: 31.80 Feet
Static Water Level Elevation Before Purging: NA Feet

Purge Method: dedicated bladder pump
Pump ID: PC-6
Date Purged: 10-12-17
Water Column: 17.73 Feet
Time Purged: 1200-1245
One Casing Volume: 2.9 Gallons
Pump Rate: 0.2 [✓ GPM] LPM
Volume Purged: 9.0 Gallons

Field Sampling Data

Date Sampled: 10-12-17
Time Sampled: 1255
Sampling Equip.: above pump
Analyzed by: DJA

Field Parameter Measurements of Sample

pH: 7.4 (units)
D.O: 3.8 (mg/l)
Spec. Cond.: 450 (µmhos/cm)
Turbidity: 4.0 (NTU)
Temp.: 10.5 (°C)
Eh: 116 (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 5-15
Sample Description: clear + odorless
Observations: ~~DJA 10-12-17~~

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp. (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1215	7.3	450	10.5	3.7	NA	118	3.0
1230	7.4	450	10.5	3.7	NA	117	6.0
1245	7.4	450	10.5	3.8	NA	116	9.0
		DJA 10-12-17					

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: 10-12-17

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-162 Labeled 822156

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 166 Feet

Static water level measurement before purging 148.78 Feet

Static water level measurement at time of sampling 148.78 Feet

Static Water Level Elevation Before Purging NA Feet

Purge Method ~~dedicated bladder pump~~ DJA 10-12-17 dedicated waterra pump

Pump ID ~~PC-6~~ NA

Date Purged 10-12-17

Water Column 17.22 Feet

Time Purged 1315-1336

One Casing Volume 2.8 Gallons

Pump Rate 0.4 [✓ GPM] LPM

Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 10-12-17

Time Sampled 1350

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.7 (units) D.O 6.0 (mg/l)

Spec. Cond. 740 (µmhos/cm) Turbidity 4.2 (NTU)

Temp. 12.5 (°C) Eh 111 (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 S 15

Sample Description: clear + odorless

Observations: DJA 10-12-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O. (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1322	7.8	740	12.5	6.5	NA	115	2.8
1329	7.8	740	12.5	6.2	NA	112	5.6
1336	7.7	740	12.5	6.0	NA	111	8.4

DJA 10-12-17

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: 10-12-17

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-163 Labeled 822157

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 176 Feet
Static water level measurement before purging 158.15 Feet
Static water level measurement at time of sampling 158.15 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method ~~dedicated Bladder pump~~ DJA 10-12-17 dedicated waterra pump
Pump ID ~~PC-6~~ NA
Date Purged 10-12-17
Water Column 17.85 Feet
Time Purged 1415-1439
One Casing Volume 2.9 Gallons
Pump Rate 0.4 [✓ GPM] LPM
Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 10-12-17
Time Sampled 1450
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 6.1 (mg/l)
Spec. Cond. 1040 (µmhos/cm) Turbidity 4.8 (NTU)
Temp. 13.0 (°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: 57° + partly cloudy, wind S15
Sample Description: clear + odorless
Observations: ~~DJA 10-12-17~~

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1423	7.5	1040	13.0	6.3	NA	114	3.2
1431	7.4	1040	13.0	6.1	NA	114	6.4
1439	7.4	1040	13.0	6.1	NA	113	9.6
			DJA 10-12-17				

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: 10-12-17

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-164 **Labeled** 822158

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 166 Feet
Static water level measurement before purging 151.93 Feet
Static water level measurement at time of sampling 151.93 Feet
Static Water Level Elevation Before Purging NA Feet

Purge Method ~~dedicated bladder pump~~ DJA 10-12-17 dedicated waterra pump
Pump ID ~~PC-6~~ NA
Date Purged 10-12-17
Water Column 14.07 Feet
Time Purged 1515-1533
One Casing Volume 2.3 Gallons
Pump Rate 0.4 [✓ GPM] / LPM
Volume Purged 7.2 Gallons

Field Sampling Data

Date Sampled 10-12-17
Time Sampled 1545
Sampling Equip. above pump
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.4 (units) D.O 7.8 (mg/l)
Spec. Cond. 560 (µmhos/cm) Turbidity 4.5 (NTU)
Temp. 13.5 (°C) Eh 123 (mV)
Other NA

Field Measurements Temp. Corrected: ☒ Yes ☐ No ☐ NA
Sample for Soluble Metals Filtered in Field: ☒ Yes ☐ No ☐ NA
Weather Conditions During Sampling: 59° + sunny, wind 5 15
Sample Description: clear + odorless
Observations:

DJA 10-12-17

Stabilization Test

Time	pH (units)	Specific Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1521	7.5	560	13.5	7.9	NA	122	2.4
1527	7.4	560	13.5	7.8	NA	123	4.8
1533	7.4	560	13.5	7.8	NA	123	7.2

DJA 10-12-17

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: 10-12-17

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-165 Labeled 822159

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 40.32 Feet

Static water level measurement before purging 30.80 Feet

Static water level measurement at time of sampling 30.80 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 9.52 Feet

Time Purged 1525-1549 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 1600

Sampling Equip. above pump

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.5 (units) D.O 10.3 (mg/l)

Spec. Cond. 440 (µmhos/cm) Turbidity 5.9 (NTU)

Temp. 11.5 (°C) Eh 131 (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 SE10

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)
1533	7.5	440	11.0	10.4	NA	135	1.6
1541	7.5	440	11.5	10.3	NA	133	3.2
1549	7.5	440	11.5	10.3	NA	131	4.8

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

10 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 Pond No. 3 CCR Groundwater Monitoring System. HSD 1/10/18

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

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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-132		MCJ0145-16	Water	10/10/2017 13:30	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-130		MCJ0178-06	Water	10/11/2017 10:50	10/13/2017 9:50
P-165		MCJ0178-11	Water	10/11/2017 16:00	10/13/2017 9:50
P-150		MCJ0178-15	Water	10/12/2017 8:40	10/13/2017 9:50
P-151		MCJ0178-16	Water	10/12/2017 9:40	10/13/2017 9:50
P-131		MCJ0178-17	Water	10/12/2017 10:50	10/13/2017 9:50
P-153		MCJ0178-18	Water	10/12/2017 11:40	10/13/2017 9:50
P-154a		MCJ0178-19	Water	10/12/2017 12:55	10/13/2017 9:50
P-162		MCJ0178-20	Water	10/12/2017 13:50	10/13/2017 9:50
P-163		MCJ0178-21	Water	10/12/2017 14:50	10/13/2017 9:50
P-164		MCJ0178-22	Water	10/12/2017 15:45	10/13/2017 9:50

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

P-132

MCJ0145-16 (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	3.09	1.00	mg/L		1	BCJ0264	10/11/17 8:48	10/11/17 21:36	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0264	10/11/17 8:48	10/11/17 21:36	EPA 300.0	CRL
Sulfate	64.2	1.00	mg/L		1	BCJ0264	10/11/17 8:48	10/11/17 21:36	EPA 300.0	CRL
Wet Chemistry										
pH	7.77		pH Units	M_TTT	1	BCJ0255	10/11/17 6:49	10/11/17 11:16	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	0.0801	0.0500	mg/L		1	BCJ0266	10/11/17 10:31	10/13/17 10:53	EPA 200.7	HRD
Calcium	97.6	0.500	mg/L		1	BCJ0266	10/11/17 10:31	10/13/17 10:51	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

P-130

MCJ0178-06 (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	1.11	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 14:52	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 14:52	EPA 300.0	CRL
Sulfate	12.1	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 14:52	EPA 300.0	CRL
Wet Chemistry										
pH	7.40		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 13:02	SM 4500-H+ B	CRL
Total Dissolved Solids	476	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 13:02	EPA 200.7	HRD
Calcium	130	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:01	EPA 200.7	HRD

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

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco NPDES GW-B

Project Manager: Charles A Donkers

Reported:
01/10/2018 14:07

P-165

MCJ0178-11 (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	2.78	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 18:16	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 18:16	EPA 300.0	CRL
Sulfate	16.9	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 18:16	EPA 300.0	CRL
Wet Chemistry										
pH	7.87		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 13:34	SM 4500-H+ B	CRL
Total Dissolved Solids	324	20.0	mg/L		1	BCJ0372	10/17/17 9:30	10/17/17 9:30	SM 2540C	HSD
Total Metals by ICP										
Boron	0.0612	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:28	EPA 200.7	HRD
Calcium	67.4	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:27	EPA 200.7	HRD

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

P-150

MCJ0178-15 (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	36.9	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 19:38	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 19:38	EPA 300.0	CRL
Sulfate	5.07	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 19:38	EPA 300.0	CRL
Wet Chemistry										
pH	7.87		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 13:51	SM 4500-H+ B	CRL
Total Dissolved Solids	270	20.0	mg/L		1	BCJ0372	10/17/17 9:30	10/17/17 9:30	SM 2540C	HSD
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:49	EPA 200.7	HRD
Calcium	55.1	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 13:47	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

P-151

MCJ0178-16 (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	20.2	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 19:58	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 19:58	EPA 300.0	CRL
Sulfate	18.0	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 19:58	EPA 300.0	CRL
Wet Chemistry										
pH	7.93		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 13:55	SM 4500-H+ B	CRL
Total Dissolved Solids	250	20.0	mg/L		1	BCJ0372	10/17/17 9:30	10/17/17 9:30	SM 2540C	HSD
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:04	EPA 200.7	HRD
Calcium	59.1	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:03	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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MCJ0178-17 (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	18.4	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 20:18	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 20:18	EPA 300.0	CRL
Sulfate	29.0	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 20:18	EPA 300.0	CRL
Wet Chemistry										
pH	7.87		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 14:01	SM 4500-H+ B	CRL
Total Dissolved Solids	318	20.0	mg/L		1	BCJ0372	10/17/17 9:30	10/17/17 9:30	SM 2540C	HSD
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:09	EPA 200.7	HRD
Calcium	74.2	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:08	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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MCJ0178-18 (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 20:39	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 20:39	EPA 300.0	CRL
Sulfate	3.64	1.00	mg/L		1	BCJ0351	10/16/17 6:19	10/16/17 20:39	EPA 300.0	CRL
Wet Chemistry										
pH	8.12		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 14:04	SM 4500-H+ B	CRL
Total Dissolved Solids	116	20.0	mg/L		1	BCJ0372	10/17/17 9:30	10/17/17 9:30	SM 2540C	HSD
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:14	EPA 200.7	HRD
Calcium	27.8	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:13	EPA 200.7	HRD

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MCJ0178-19 (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	6.77	1.00	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 12:08	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 12:08	EPA 300.0	CRL
Sulfate	26.3	1.00	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 12:08	EPA 300.0	CRL
Wet Chemistry										
pH	8.00		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 14:08	SM 4500-H+ B	CRL
Total Dissolved Solids	252	20.0	mg/L		1	BCJ0372	10/17/17 9:30	10/17/17 9:30	SM 2540C	HSD
Total Metals by ICP										
Boron	< 0.0500	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:19	EPA 200.7	HRD
Calcium	61.8	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:18	EPA 200.7	HRD

Amended Report

Original Report ID: MCJ0145,MCJ0178 Xcel General Report FINAL
10 31 2017 1252 10 31 2017 1012

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco NPDES GW-B

Project Manager: Charles A Donkers

Reported: 01/10/2018 14:07

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MCJ0178-20 (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	27.9	1.00	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 12:29	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 12:29	EPA 300.0	CRL
Sulfate	81.6	1.00	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 12:29	EPA 300.0	CRL
Wet Chemistry										
pH	7.90		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 14:12	SM 4500-H+ B	CRL
Total Dissolved Solids	474	20.0	mg/L		1	BCJ0372	10/17/17 9:30	10/17/17 9:30	SM 2540C	HSD
Total Metals by ICP										
Boron	0.219	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:24	EPA 200.7	HRD
Calcium	80.2	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:23	EPA 200.7	HRD

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	01/10/2018 14:07

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MCJ0178-21 (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	11.7	1.00	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 12:49	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 12:49	EPA 300.0	CRL
Sulfate	154	1.00	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 12:49	EPA 300.0	CRL
Wet Chemistry										
pH	7.60		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 14:27	SM 4500-H+ B	CRL
Total Dissolved Solids	670	20.0	mg/L		1	BCJ0422	10/18/17 9:48	10/18/17 9:48	SM 2540C	HSD
Total Metals by ICP										
Boron	0.409	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:29	EPA 200.7	HRD
Calcium	154	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:28	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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MCJ0178-22 (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	8.97	1.00	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 13:10	EPA 300.0	CRL
Fluoride	< 0.750	0.750	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 13:10	EPA 300.0	CRL
Sulfate	39.8	1.00	mg/L		1	BCJ0385	10/17/17 7:51	10/17/17 13:10	EPA 300.0	CRL
Wet Chemistry										
pH	8.00		pH Units	M_TTT	1	BCJ0337	10/13/17 11:27	10/13/17 14:31	SM 4500-H+ B	CRL
Total Dissolved Solids	308	20.0	mg/L		1	BCJ0422	10/18/17 9:48	10/18/17 9:48	SM 2540C	HSD
Total Metals by ICP										
Boron	0.0533	0.0500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:35	EPA 200.7	HRD
Calcium	83.8	0.500	mg/L		1	BCJ0353	10/16/17 8:30	10/17/17 14:33	EPA 200.7	HRD

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	01/10/2018 14:07

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	

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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							

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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			

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			

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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	

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			

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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			

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	

Environmental Services-Water Minneapolis	Project Name/Location: Sherco NPDES GW-B	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:07

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

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 4

2112512

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

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	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives Unpreserved	H$_2$SO$_4$	HNO$_3$	HCl	NaOH	Na$_2$S$_2$O$_3$	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		34	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											✓				

Requested Analysis Filtered (Y/N)

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	MH0041 0.6 °C			
								Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

pHstrips: MB00508

ORIGINAL

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.

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 3 of 4

2112510

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:

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	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 ①						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	W	10/13/17	0950	M400811: 3.8°			
								Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

pH strips: MB00503

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 10-11-17

*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.

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

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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
Project Number: + CCR Wells

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	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	Y/N ↓ Analysis Test ↓	GW-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																																

DJA 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	M4009: 0.0°C	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

pH strips: MB00508

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 10/10/17

*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.

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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: ______

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

				COLLECTED						Preservatives									Requested Analysis Filtered (Y/N)				
				COMPOSITE START		COMPOSITE END/GRAB												Y/N					
ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	↓Analysis Test↓	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	SAMPLE CONDITIONS			
① marked HNO3 bottles filtered and unfiltered	David Anderson / Pace	10/13/17	0940	W / Xcel	10/13/17	0950	MW00841 3.5°C	Y	Y	X
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Ptlatrps : 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.

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

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

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	3.99	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
Exp.

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) DJA 11-15-17 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: 11-15-17

Xcel - Sherco CCR, Resample, NOV. 2017
Field Proj #17-1294

Pace Analytical®
Field Services Division

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)**
Calibration Std. Value (mV) 240	Secondary Source Std. Value (mV) 240
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)
238	18.0	238	18.0

Meter Make YSI 556 ID MPS-5

IC/ICV Time 0935/0937

Initials DJA

ICV: [✓ Pass] / Fail

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) ______ CCV: Pass / Fail *(CCV acceptable if ± 10 mV of standard value)*

DJA 11-15-17

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: 18.0 (°C)	Ambient Temp: 18.0 (°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 0905 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 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 ______ (%) CCV: Pass / Fail *(CCV acceptable if ± 2% of Calibration Value)*

DJA 11-15-17

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

rm 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

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	99	999	IC Time 0940 Initials DJA IC: [✓ Pass] / Fail

ICV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
	0.02	9.9	99	998	ICV Time 0950 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)	
	0.03	9.8	100	999	CCV Time 1640 Initials DJA CCV: [✓ Pass] / Fail

CCV	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	Meter Value (NTU)	
		DJA 11-15-17			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: 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

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	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. CC-16243
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) CCV: Pass / Fail *(CCV acceptable if ± 5% of standard value or 10 µS/cm, which ever is greater)*

DJA 11-16-17

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: 11-16-17

Xcel - Sherco CCR, Resample, NOV. 2017
Field Proj #17-1294

Pace Analytical®
Field Services Division

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)	
Calibration Std. Value (mV)	236	Secondary Source Std. Value (mV)	236
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)
237	~~23.0~~ 21.0	236	~~23.0~~ 21.0

Meter Make YSI 556 ID MPS-5
IC/ICV Time 0725/0728
Initials DJA

ICV: [✓ Pass] / Fail
ICV acceptable if ± 10 mV of standard value.

CCV Time	0950	Initials	DJA	Std. Value	258
Result (mV)	256	Temp (°C)	4.0	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 11-16-17	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:	23.0 (°C)	Ambient Temp:	23.0 (°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 (%)	97	ICV Meter Result (%)	96

IC/ICV Time 0700 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	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)

fm 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-132 Labeled P132

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 36.51 Feet
Static water level measurement before purging 28.10 Feet
Static water level measurement at time of sampling 28.10 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 8.41 Feet
Time Purged 1340- 1401
One Casing Volume 1.4 Gallons
Pump Rate 0.2 [✓ GPM] LPM
Volume Purged 4.2 Gallons

Field Sampling Data

Date Sampled 11-15-17
Time Sampled 1405
Sampling Equip. above pump
Meter ID MPS-5
Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.6 (units) D.O 7.5 (mg/l)
Spec. Cond. 690 (µmhos/cm) Turbidity 7.0 (NTU)
Temp. 10.0 (°C) Eh 49 (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°F cloudy, wind NW 20
Sample Description: clear + odorless
Observations: DJA 11-15-17

Stabilization Test

Time	pH (units)	Specifc Conductance (µmhos/cm)	Temp (°C)	D.O (mg/l)	Turbidity (NTU)	Eh (mV)	Volume Purged (cumulative gal)
1347	7.6	690	10.0	7.5	NA	48	1.4
1354	7.6	690	10.0	7.5	NA	48	2.8
1401	7.6	690	10.0	7.5	NA	49	4.2

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: 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-162 Labeled 822156

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 166 Feet (estimate)

Static water level measurement before purging 148.78 Feet

Static water level measurement at time of sampling 148.78 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 17.22 Feet

Time Purged 1155 - 1216 One Casing Volume 2.8 Gallons

Pump Rate 0.4 [✓ GPM] LPM Volume Purged 8.4 Gallons

Field Sampling Data

Date Sampled 11-15-17

Time Sampled 1220

Sampling Equip. above pump

Meter ID MPS-5

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.9 (units) D.O 3.8 (mg/l)

Spec. Cond. 800 (μmhos/cm) Turbidity 4.2 (NTU)

Temp. 10.0 (°C) 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: 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)
1202	7.8	800	9.5	3.9	NA	45	2.8
1209	7.9	800	10.0	3.9	NA	46	5.6
1216	7.9	800	10.0	3.8	NA	46	8.4

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: 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-163 Labeled 822157

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 176 Feet (estimate)

Static water level measurement before purging 158.15 Feet

Static water level measurement at time of sampling 158.15 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 17.85 Feet

Time Purged 1240 - 1304 One Casing Volume 2.9 Gallons

Pump Rate 0.4 [✓ GPM] / LPM Volume Purged 9.6 Gallons

Field Sampling Data

Date Sampled 11-15-17

Time Sampled 1310

Sampling Equip. above pump

Meter ID MPS-5

Analyzed by DJA

Field Parameter Measurements of Sample

pH 7.8 (units) D.O 4.1 (mg/l)

Spec. Cond. 610 (µmhos/cm) Turbidity 6.7 (NTU)

Temp. 10.0 (°C) Eh 48 (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)
1248	7.8	620	10.0	4.3	NA	46	3.2
1256	7.8	610	10.0	4.2	NA	47	6.4
1304	7.8	610	10.0	4.1	NA	48	9.6
			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: 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

10 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 Pond No. 3 CCR Groundwater Monitoring System. HSD 1/10/18

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

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
P-162		MCK0151-01	Water	11/15/2017 12:20	11/16/2017 10:47
P-163		MCK0151-02	Water	11/15/2017 13:10	11/16/2017 10:47
P-132		MCK0151-03	Water	11/15/2017 14:05	11/16/2017 10:47

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:01

P-162

MCK0151-01 (Water) - Chain of Custody Number:

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Sulfate	81.6	1.00	mg/L		1	BCK0397	11/16/17 11:38	11/17/17 9:13	EPA 300.0	CRL
Total Metals by ICP										
Boron	0.207	0.0500	mg/L		1	BCK0434	11/20/17 9:01	11/21/17 11:38	EPA 200.7	HRD

Environmental Services-Water Minneapolis	Project Name/Location: Sherco CCR	
250 Marquette Plaza		**Reported:**
Minneapolis MN, 55401	Project Manager: Charles A Donkers	01/10/2018 14:01

P-163

MCK0151-02 (Water) - Chain of Custody Number:

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Sulfate	66.5	1.00	mg/L		1	BCK0397	11/16/17 11:38	11/17/17 9:34	EPA 300.0	CRL
Wet Chemistry										
Total Dissolved Solids	344	20.0	mg/L		1	BCK0401	11/17/17 9:03	11/17/17 9:03	SM 2540C	HSD
Total Metals by ICP										
Boron	0.0814	0.0500	mg/L		1	BCK0434	11/20/17 9:01	11/21/17 11:43	EPA 200.7	HRD

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	01/10/2018 14:01

P-132

MCK0151-03 (Water) - Chain of Custody Number:

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Sulfate	64.5	1.00	mg/L		1	BCK0397	11/16/17 11:38	11/17/17 9:54	EPA 300.0	CRL
Total Metals by ICP										
Boron	0.0608	0.0500	mg/L		1	BCK0434	11/20/17 9:01	11/21/17 11:49	EPA 200.7	HRD

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCK0397 - Wet Prep										
Blank (BCK0397-BLK1)				Prepared: 11/16/2017 Analyzed: 11/17/2017						
Sulfate	<1.00	1.00	mg/L							
LCS (BCK0397-BS1)				Prepared: 11/16/2017 Analyzed: 11/17/2017						
Sulfate	93.1	1.00	mg/L	100.00		93.1	90-110			
LCS (BCK0397-BS2)				Prepared: 11/16/2017 Analyzed: 11/17/2017						
Sulfate	95.5	1.00	mg/L	100.00		95.5	90-110			
Duplicate (BCK0397-DUP1)	**Source: MCK0151-07**			Prepared: 11/16/2017 Analyzed: 11/17/2017						
Sulfate	29.6	1.00	mg/L		29.6			0.267	20	
Matrix Spike (BCK0397-MS1)	**Source: MCK0151-07**			Prepared: 11/16/2017 Analyzed: 11/17/2017						
Sulfate	77.6	1.00	mg/L	50.000	29.6	95.8	80-120			
Matrix Spike Dup (BCK0397-MSD1)	**Source: MCK0151-07**			Prepared: 11/16/2017 Analyzed: 11/17/2017						
Sulfate	77.8	1.00	mg/L	50.000	29.6	96.3	80-120	0.308	20	

Environmental Services-Water Minneapolis
250 Marquette Plaza
Minneapolis MN, 55401

Project Name/Location: Sherco CCR

Project Manager: Charles A Donkers

Reported:
01/10/2018 14:01

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BCK0401 - Wet Prep										
Blank (BCK0401-BLK1)				Prepared & Analyzed: 11/17/2017						
Total Dissolved Solids	<20.0	20.0	mg/L							
Duplicate (BCK0401-DUP1)		**Source: MCK0140-11**		Prepared & Analyzed: 11/17/2017						
Total Dissolved Solids	746	20.0	mg/L		732			1.89	20	
Duplicate (BCK0401-DUP2)		**Source: MCK0140-12**		Prepared & Analyzed: 11/17/2017						
Total Dissolved Solids	730	20.0	mg/L		726			0.549	20	

Amended Report

Original Report ID: MCK0151 Xcel General Report FINAL 11 21 2017 1328 11 21 2017 1113

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	01/10/2018 14:01

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							
Calcium	<1.25	1.25	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			
Calcium	104	1.25	mg/L	100.00		104	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	
Calcium	89.1	1.25	mg/L		89.3			0.281	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			
Calcium	204	1.25	mg/L	100.00	89.3	115	70-130			
Matrix Spike Dup (BCK0434-MSD1)	**Source: MCK0151-01**			Prepared: 11/20/2017 Analyzed: 11/21/2017						
Calcium	204	1.25	mg/L	100.00	89.3	114	70-130	0.300	20	
Boron	1.26	0.0500	mg/L	1.0000	0.207	105	70-130	0.200	20	

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

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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

2125349

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, Re-sample
Project Number: Nov, 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:

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	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	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
pH strips: MB00508	David Anderson / Pace	11-16-17	1045	W / Xcel	11/16/17	1045	MW0841 : 3.5	Y	Y	Y

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: David Anderson
SIGNATURE of SAMPLER: David Anderson
DATE Signed (MM/DD/YY): 11-16-17

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