GOLDER
MEMBER OF WSP

REPORT

2021 Annual Groundwater Monitoring and Corrective Action Report

SCL4A - Utility Waste Landfill Cell 4A, Sioux Energy Center, St. Charles County, Missouri, USA

Submitted to:

Ameren Missouri

1901 Chouteau Avenue, St. Louis, Missouri 63103

Submitted by:

Golder Associates USA Inc.

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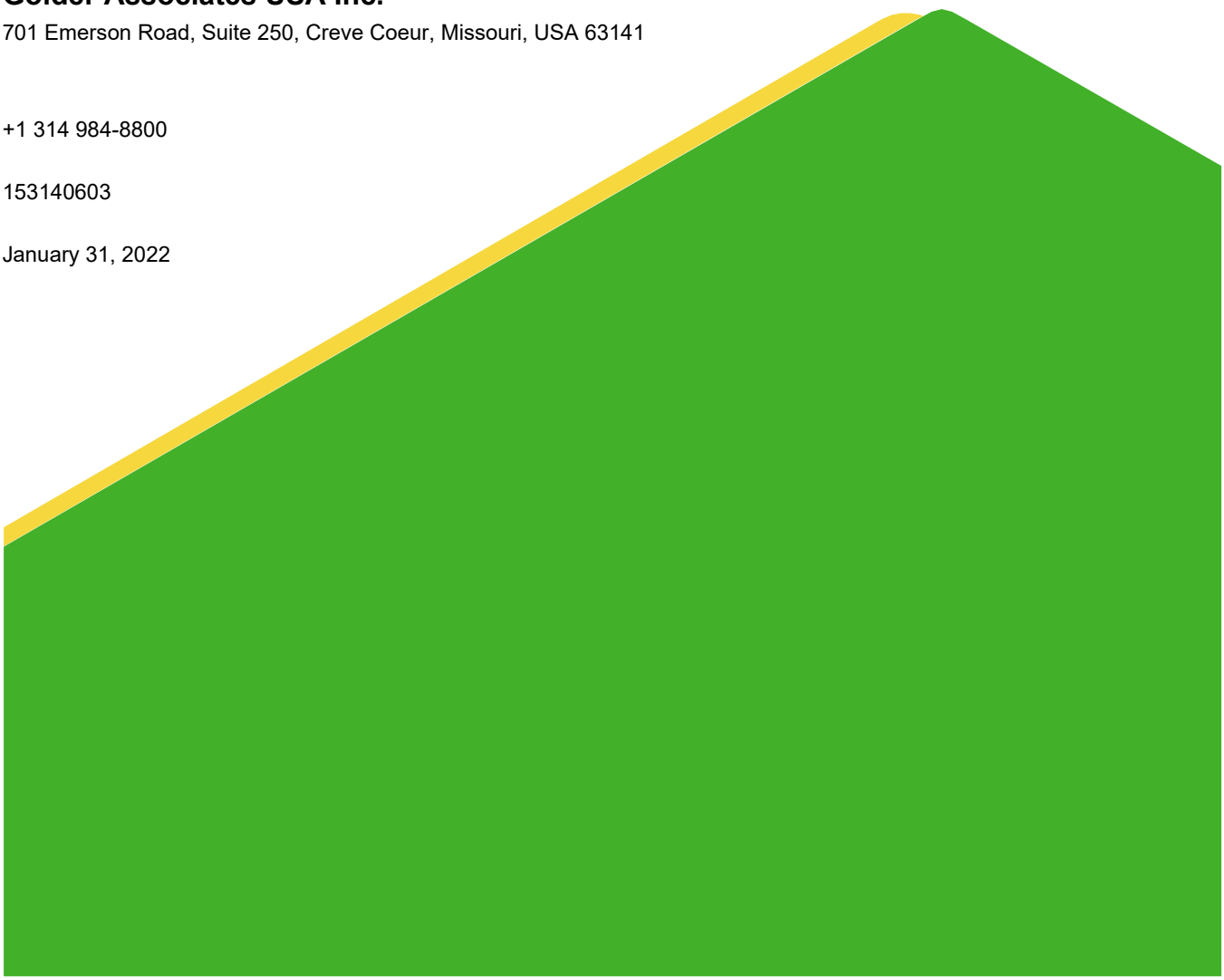
153140603

January 31, 2022



1.0 EXECUTIVE SUMMARY AND STATUS OF THE SCL4A GROUNDWATER MONITORING PROGRAM

This annual report was developed to meet the requirements of United States Environmental Protection Agency (USEPA) 40 CFR Part 257 “Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule” (the CCR Rule). The CCR Rule requires owners or operators of existing CCR units to produce an Annual Groundwater Monitoring and Corrective Action Report (Annual Report) each year (§ 257.90(e)). Ameren Missouri (Ameren) has determined that the Utility Waste Landfill (UWL) Cell 4A (SCL4A) at the Sioux Energy Center (SEC) is subject to the requirements of the CCR Rule. This Annual Report for the SCL4A describes CCR Rule groundwater monitoring activities from January 1, 2021, through December 31, 2021, including verification results related to late 2020 sampling.

Throughout 2021, the SCL4A CCR unit has been operating under the Detection Monitoring Program (§257.94) which began October 17, 2017. As a part of Detection Monitoring, statistical evaluations are completed after each sampling event to determine if there are any values that represent a Statistically Significant Increase (SSI) over background concentrations. In 2021, an SSI was determined for the April 2021 sampling event and a summary of the SSIs for the past year is provided in **Table 1**.

Table 1 - Summary of 2021 SCL4A Sampling Events, Previous Year Verification, and Statistical Evaluations

Event Name	Type of Event and Sampling Dates	Laboratory Analytical Data Receipt Date	Parameters Collected	Verified SSI	SSI Determination Date	ASD Completion Date
November 2020 Sampling Event	Detection Monitoring, November 16-17, 2020	December 28, 2020	Appendix III, Major Cations and Anions	None	NA	NA
	Verification Sampling, January 11, 2021	January 20, 2021	Detected Appendix III parameters (See Note 1)			
April 2021 Sampling Event	Detection Monitoring, April 13, 2021	May 25, 2021	Appendix III, Major Cations and Anions	**Sulfate:** TMW-2	August 23, 2021	November 19, 2021
	Verification Sampling, June 2, 2021	June 18, 2021	Detected Appendix III parameters (See Note 1)			
November 2021 Sampling Event	Detection Monitoring, November 8-9, 2021	December 28, 2021	Appendix III, Major Cations and Anions	To be determined after statistical analysis and Verification Sampling are completed in 2022.		

Notes:
1) Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
2) SSI – Statistically Significant Increase.
3) ASD – Alternative Source Demonstration.
4) TDS – Total Dissolved Solids.
5) NA – Not Applicable.

As outlined in section 257.94(e)(2) of the CCR Rule, the owner or operator may demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or

resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. An Alternative Source Demonstration was prepared for the April 2021 Detection Monitoring sampling event and is discussed further in this Annual Report.

There were no changes made to the monitoring system in 2021 with no new wells being installed or decommissioned.

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2.0 INSTALLATION OR DECOMMISSIONING OF MONITORING WELLS

In accordance with the CCR Rule, a groundwater monitoring system has been installed to monitor the SCL4A. The groundwater monitoring system consists of six (6) groundwater monitoring wells screened in the uppermost aquifer and is displayed in **Figure 1**. No new monitoring wells were installed or decommissioned in 2021 as a part of the CCR Rule monitoring program for the SCL4A. For more information on the groundwater monitoring network, details are provided in the previous Annual Groundwater Monitoring Reports for the SCL4A.

3.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION

The following sections discuss the sampling events completed for the SCL4A CCR Unit in 2021. **Table 2** provides a summary of the groundwater samples collected in 2021 including the number of samples, the date of sample collection, and the monitoring program.

Table 2 – Summary of Groundwater Sampling Dates

Sampling Event	Groundwater Monitoring Wells						Monitoring Program
	BMW-1S	BMW-3S	UG-3	TMW-1	TMW-2	TMW-3	
	Date of Sample Collection						
January 2021 Verification Sampling	-	-	-	1/11/2021	1/11/2021	1/11/2021	Detection
April 2021 Detection Monitoring	4/13/2021	4/13/2021	4/13/2021	4/13/2021	4/13/2021	4/13/2021	Detection
June 2021 Verification Sampling	-	-	6/2/2021	-	6/2/2021	-	Detection
November 2021 Detection Monitoring	11/8/2021	11/8/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021	Detection
Total Number of Samples Collected	2	2	3	3	4	3	NA

Notes:
1.) Detection Monitoring Events tested for Appendix III Parameters.
2.) Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
3.) "-" No sample collected.
4.) NA - Not applicable.

3.1 Detection Monitoring Program

A Detection Monitoring sampling event was completed November 16-17, 2020. Verification sampling and the statistical analysis to evaluate for SSIs for the November 2020 event were not completed until 2021 and are, therefore, included in this report. Detections of Appendix III analytes triggered a verification sampling event, which was completed on January 11, 2021, and did not verify any SSIs. **Table 3** summarizes the results of the statistical analysis of the November 2020 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

Detection Monitoring samples were collected April 13, 2021, and testing was completed for all Appendix III analytes as well as major cation and anions. Statistical analysis of the data determined SSIs. Detections of Appendix III analytes triggered Verification Sampling, which was completed June 2, 2021, and the testing results verified an SSI. **Table 4** summarizes the results of the statistical analysis of the April 2021 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

As outlined in section 257.94(e)(2) of the CCR Rule, the owner or operator may demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. An ASD was completed for the SSI and is provided in **Appendix B**. This ASD demonstrates that SSI at the TMW-2 was not caused by the SCL4A CCR Unit and the SCL4A CCR Unit remains in Detection Monitoring.

As outlined in the Statistical Analysis Plan for this site, updates to the statistical limits are completed once four (4) to eight (8) new sample results are available. After statistical analysis of the April 2021 sampling event, the statistical limits used to determine an SSI were updated according to the Statistical Analysis Plan. These updated limits will be used for November 2021 and subsequent statistical analyses.

A Detection Monitoring sampling event was completed November 8-9, 2021, and testing was performed for all Appendix III analytes, as well as major cations and anions. Statistical analyses to evaluate for SSIs in the November 2021 data were not completed in 2021 and the results will be provided in the 2022 Annual Report. **Table 5** summarizes the results of the November 2021 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

3.2 Groundwater Elevation, Flow Rate and Direction

To meet the requirements of §257.93(c), water level measurements were taken at all monitoring wells prior to the start of groundwater purging and sampling. Static water levels were measured within a 24-hour period in each monitoring well using an electronic water level indicator.

Groundwater elevations were used to generate potentiometric surface maps included in **Appendix C**. As shown on the potentiometric surface maps, groundwater flow direction within the uppermost aquifer is dynamic and influenced by seasonal changes in the water level in the adjacent Mississippi and Missouri Rivers, since the alluvial aquifer is hydraulically connected to these water bodies. Groundwater in the alluvial aquifer will generally flow from the higher of the two rivers toward the lower elevation river. Water flows into and out of the alluvial aquifer as a result of fluctuating river water levels that produce “bank recharge” and “bank discharge” conditions. At this facility, groundwater can flow north and south toward the Mississippi and Missouri Rivers, depending on river levels.

Groundwater flow direction and hydraulic gradient were estimated for the alluvial aquifer wells at the SEC using commercially available software. Results from this assessment indicate that groundwater flow direction is variable due to fluctuating river levels, but has typically flowed from north to south. The overall net groundwater flow in the alluvial aquifer at the SEC was slightly to the east due to reversals in flow as a result of variable river levels in the Missouri and Mississippi Rivers. Horizontal gradients calculated by the program range from 0.00006 to 0.0009 feet/foot with an estimated net annual groundwater movement of approximately three (3) feet in the prevailing downgradient direction.

3.3 Sampling Issues

No notable sampling issues were encountered at the SCL4A in 2021.

4.0 ACTIVITIES PLANNED FOR 2022

Detection Monitoring is scheduled to continue on a semi-annual basis in the second and fourth quarters of 2022. Statistical analysis of the November 2021 Detection Monitoring data will be completed in 2022 and included in the 2022 Annual Report.

Tables

Table 3
November 2020 Detection Monitoring Results
SCL4A - Landfill Cell 4A
Sioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-3S	Prediction Limit UG-3	UG-3	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
November 2020 Detection Monitoring Event											
DATE	NA	11/16/2020	11/16/2020	NA	11/17/2020	NA	11/17/2020	NA	11/17/2020	NA	11/17/2020
pH	SU	6.96	7.07	6.243-7.648	7.25	6.216-7.528	7.25	6.441-7.519	7.16	6.337-7.638	7.13
BORON, TOTAL	µg/L	75.1 J	66.3 J	1,027	188	DQR	65.7 J	DQR	87.9 J	114.8	88.5 J
CALCIUM, TOTAL	µg/L	141,000	125,000	160,085	119,000	115,800	119,000	134,272	128,000 J	150,887	130,000 J
CHLORIDE, TOTAL	mg/L	7.0	11.4	102.2	16.5	4.463	1.8	3.954	3.3	3.1	2.1
FLUORIDE, TOTAL	mg/L	0.34	0.40	0.3772	0.34	0.4264	0.43	0.4061	0.34	0.3573	0.37
SULFATE, TOTAL	mg/L	24.8	30.6	165.7	69.5	50.29	37.1	52.1	46.3	60.9	37.6
TOTAL DISSOLVED SOLIDS	mg/L	505	455	698.7	473	485.1	398	495.8	673	505.9	433
January 2021 Verification Sampling Event											
DATE	NA						1/11/2021		1/11/2021		1/11/2021
pH	SU										
BORON, TOTAL	µg/L										
CALCIUM, TOTAL	µg/L						114,000				
CHLORIDE, TOTAL	mg/L										
FLUORIDE, TOTAL	mg/L						0.38				0.32
SULFATE, TOTAL	mg/L										
TOTAL DISSOLVED SOLIDS	mg/L								435		

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. Prediction Limits calculated using Sanitas Software.
5. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).
6. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
7. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantification Rule (DQR) is used.

Prepared By: JSI
Checked By: EMS
Reviewed By: SCP

Table 4
April 2021 Detection Monitoring Results
SCL4A - Landfill Cell 4A
Sioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-3S	Prediction Limit UG-3	UG-3	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
April 2021 Detection Monitoring Event											
DATE	NA	4/13/2021	4/13/2021	NA	4/13/2021	NA	4/13/2021	NA	4/13/2021	NA	4/13/2021
pH	SU	6.85	6.98	6.243-7.648	7.08	6.216-7.528	7.07	6.441-7.519	6.99	6.337-7.638	6.99
BORON, TOTAL	µg/L	70.8 J	74.2J	1,027	225	DQR	57.2 J	DQR	76.0 J	114.8	75.8 J
CALCIUM, TOTAL	µg/L	149,000	134,000	160,085	139,000	115,800	93,200	134,272	105,000	150,887	114,000
CHLORIDE, TOTAL	mg/L	8.2	12.8	102.2	41.4	4.463	2.1	3.954	3.4	3.1	2.2 J
FLUORIDE, TOTAL	mg/L	0.36	0.39	0.3772	0.38	0.4264	0.41	0.4061	0.43	0.3573	0.32
SULFATE, TOTAL	mg/L	29.4	34.8	165.7	58.2	50.29	47.7	52.1	64.8	60.9	33.1
TOTAL DISSOLVED SOLIDS	mg/L	579	509	698.7	578	485.1	386	495.8	439	505.9	445
June 2021 Verification Sampling Event											
DATE	NA				6/2/2021				6/2/2021		
pH	SU										
BORON, TOTAL	µg/L										
CALCIUM, TOTAL	µg/L										
CHLORIDE, TOTAL	mg/L										
FLUORIDE, TOTAL	mg/L				0.33				0.38		
SULFATE, TOTAL	mg/L								64.0		
TOTAL DISSOLVED SOLIDS	mg/L										

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. Prediction Limits calculated using Sanitas Software.
5. Values highlighted in yellow indicate a Statistically Significant Increase (SSI).
6. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).
7. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
8. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantification Rule (DQR) is used.

Prepared By: EMS
Checked By: LMS
Reviewed By: SCP

Table 5
November 2021 Detection Monitoring Results
SCL4A - Landfill Cell 4A
Sioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS			
ANALYTE	UNITS	BMW-1S	BMW-3S	UG-3	TMW-1	TMW-2	TMW-3
November 2021 Detection Monitoring Event							
DATE	NA	11/8/2021	11/8/2021	11/9/2021	11/9/2021	11/9/2021	11/9/2021
pH	SU	6.86	6.99	6.71	6.94	6.97	6.96
BORON, TOTAL	µg/L	66.9 J	67.8 J	210	69.8 J	86.9 J	96.5 J
CALCIUM, TOTAL	µg/L	160,000	137,000	126,000	111,000	115,000	126,000
CHLORIDE, TOTAL	mg/L	7.4	12.0	24.5	1.9 J	1.8 J	2.6 J
FLUORIDE, TOTAL	mg/L	ND	0.46	0.38	0.46 J	0.36	0.32
SULFATE, TOTAL	mg/L	31.8	31.2	66.0	41.5	46.0	34.6
TOTAL DISSOLVED SOLIDS	mg/L	534	461	519	390	423	449

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. ND - Constituent was analyzed but was not detected above the Method Detection Limit (MDL) or the adjusted Practical Quantitation Limit (PQL) based on data validation and is considered a non-detect. Values displayed as ND.

Prepared By: LMS
Checked By: GTM
Reviewed By: MNH

Figures

KEY MAP

LEGEND

- Sioux Energy Center Property Boundary
- SCL4A - Landfill Cell 4A
- Water Recycle Pond

Groundwater Monitoring Wells used for SCL4A CCR Rule Monitoring

- SCL4A Monitoring Well
- Background Monitoring Well

0 1,000 2,000 3,000
Feet

NOTE(S)
1.) ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE.

REFERENCE(S)
1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
GROUNDWATER MONITORING PROGRAM

TITLE
SITE LOCATION AERIAL MAP AND MONITORING WELL LOCATIONS

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-21
DESIGNED	JSI
PREPARED	RJF
REVIEWED	GTM
APPROVED	MNH

PROJECT NO. 153140603
CONTROL 1240
FIGURE 1

PATH: G:\Projects\153 Projects\1531406 - Ameren GW Monitoring Program - MO\Phase 0003 - Sioux Energy\800 - FIGURES-DRAWINGS\PRODUCTION\2019 Annual Report\Figure 1 - SCL4A.mxd PRINTED ON: 2022-01-21 AT: 8:57:29 AM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

APPENDIX A

Laboratory Analytical Data

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

January 20, 2021

Jeffrey Ingram
Golder Associates
13515 Barrett Parkway Drive
Suite 260
Ballwin, MO 63021

RE: Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on January 13, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

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

Sincerely,

Jamie Church
jamie.church@pacelabs.com
314-838-7223
Project Manager

Enclosures

cc: Ryan Feldmann, Golder
Mark Haddock, Golder Associates
Eric Schneider, Golder Associates

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60358899001	**S-TMW-1**	Water	01/11/21 09:27	01/13/21 04:00
60358899002	**S-TMW-2**	Water	01/11/21 10:15	01/13/21 04:00
60358899003	**S-TMW-3**	Water	01/11/21 11:07	01/13/21 04:00
60358899004	**S-SCL4A-DUP-1**	Water	01/11/21 00:00	01/13/21 04:00
60358899005	**S-SCL4A-FB-1**	Water	01/11/21 09:40	01/13/21 04:00

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SAMPLE ANALYTE COUNT

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60358899001	**S-TMW-1**	EPA 200.7	HKC	1	PASI-K
		SM 2540C	VRP	1	PASI-K
		EPA 300.0	CRN2	1	PASI-K
60358899002	**S-TMW-2**	EPA 200.7	HKC	1	PASI-K
		SM 2540C	VRP	1	PASI-K
		EPA 300.0	CRN2	1	PASI-K
60358899003	**S-TMW-3**	EPA 300.0	CRN2	1	PASI-K
60358899004	**S-SCL4A-DUP-1**	EPA 200.7	HKC	1	PASI-K
		SM 2540C	VRP	1	PASI-K
		EPA 300.0	CRN2	1	PASI-K
60358899005	**S-SCL4A-FB-1**	EPA 200.7	HKC	1	PASI-K
		SM 2540C	VRP	1	PASI-K
		EPA 300.0	CRN2	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

Sample: S-TMW-1 **Lab ID: 60358899001** Collected: 01/11/21 09:27 Received: 01/13/21 04:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Calcium	**114000**	ug/L	200	32.4	1	01/18/21 11:25	01/18/21 16:36	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**399**	mg/L	10.0	10.0	1		01/15/21 10:25		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.38**	mg/L	0.20	0.085	1		01/14/21 20:39	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

Sample: S-TMW-2 **Lab ID: 60358899002** Collected: 01/11/21 10:15 Received: 01/13/21 04:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Calcium	**122000**	ug/L	200	32.4	1	01/18/21 11:25	01/18/21 16:38	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**435**	mg/L	5.0	5.0	1		01/18/21 10:12		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.35**	mg/L	0.20	0.085	1		01/14/21 20:53	16984-48-8	

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

Sample: S-TMW-3 **Lab ID: 60358899003** Collected: 01/11/21 11:07 Received: 01/13/21 04:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.32**	mg/L	0.20	0.085	1		01/14/21 21:37	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

Sample: S-SCL4A-DUP-1 **Lab ID: 60358899004** Collected: 01/11/21 00:00 Received: 01/13/21 04:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Calcium	**115000**	ug/L	200	32.4	1	01/18/21 11:25	01/18/21 16:46	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**398**	mg/L	5.0	5.0	1		01/18/21 10:12		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.37**	mg/L	0.20	0.085	1		01/14/21 21:51	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

Sample: S-SCL4A-FB-1 **Lab ID: 60358899005** Collected: 01/11/21 09:40 Received: 01/13/21 04:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Calcium	**1100**	ug/L	200	32.4	1	01/18/21 11:25	01/18/21 16:48	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**10.0**	mg/L	5.0	5.0	1		01/18/21 10:12		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**<0.085**	mg/L	0.20	0.085	1		01/14/21 22:06	16984-48-8	

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QUALITY CONTROL DATA

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

QC Batch: 699504
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60358899001, 60358899002, 60358899004, 60358899005

METHOD BLANK: 2821639 Matrix: Water
Associated Lab Samples: 60358899001, 60358899002, 60358899004, 60358899005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Calcium	ug/L	34.2J	200	32.4	01/18/21 16:31	

LABORATORY CONTROL SAMPLE: 2821640

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	10800	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2821641 2821642

Parameter	Units	60358899002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	122000	10000	10000	133000	134000	104	119	70-130	1	20	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

QC Batch: 699437
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60358899001

METHOD BLANK: 2821376 Matrix: Water
Associated Lab Samples: 60358899001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	01/15/21 10:21	

LABORATORY CONTROL SAMPLE: 2821377

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1040	104	80-120	

SAMPLE DUPLICATE: 2821378

Parameter	Units	60358825003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1830	1830	0	10	

SAMPLE DUPLICATE: 2821379

Parameter	Units	60358897001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	655	657	0	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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

QC Batch: 699474
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60358899002, 60358899004, 60358899005

METHOD BLANK: 2821502 Matrix: Water
Associated Lab Samples: 60358899002, 60358899004, 60358899005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	01/18/21 10:11	

LABORATORY CONTROL SAMPLE: 2821503

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

SAMPLE DUPLICATE: 2821504

Parameter	Units	60358899002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	435	442	1	10	

SAMPLE DUPLICATE: 2821505

Parameter	Units	60359028001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1070	1080	0	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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

QC Batch: 699312 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60358899001, 60358899002, 60358899003, 60358899004, 60358899005

METHOD BLANK: 2820878 — Matrix: Water
Associated Lab Samples: 60358899001, 60358899002, 60358899003, 60358899004, 60358899005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.085	0.20	0.085	01/14/21 20:10	

METHOD BLANK: 2822620 — Matrix: Water
Associated Lab Samples: 60358899001, 60358899002, 60358899003, 60358899004, 60358899005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.085	0.20	0.085	01/15/21 09:15	

METHOD BLANK: 2823077 — Matrix: Water
Associated Lab Samples: 60358899001, 60358899002, 60358899003, 60358899004, 60358899005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.085	0.20	0.085	01/18/21 09:32	

LABORATORY CONTROL SAMPLE: 2820879

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	102	90-110	

LABORATORY CONTROL SAMPLE: 2822621

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	101	90-110	

LABORATORY CONTROL SAMPLE: 2823078

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.3	91	90-110	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2820880 2820881

Parameter	Units	60358899002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.35	2.5	2.5	2.9	2.7	103	94	80-120	8	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2820961 2820962

Parameter	Units	60358897001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.31	2.5	2.5	2.8	2.5	101	87	80-120	13	15	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SCL4A - VS
Pace Project No.: 60358899

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60358899001	**S-TMW-1**	EPA 200.7	699504	EPA 200.7	699532
60358899002	**S-TMW-2**	EPA 200.7	699504	EPA 200.7	699532
60358899004	**S-SCL4A-DUP-1**	EPA 200.7	699504	EPA 200.7	699532
60358899005	**S-SCL4A-FB-1**	EPA 200.7	699504	EPA 200.7	699532
60358899001	**S-TMW-1**	SM 2540C	699437		
60358899002	**S-TMW-2**	SM 2540C	699474		
60358899004	**S-SCL4A-DUP-1**	SM 2540C	699474		
60358899005	**S-SCL4A-FB-1**	SM 2540C	699474		
60358899001	**S-TMW-1**	EPA 300.0	699312		
60358899002	**S-TMW-2**	EPA 300.0	699312		
60358899003	**S-TMW-3**	EPA 300.0	699312		
60358899004	**S-SCL4A-DUP-1**	EPA 300.0	699312		
60358899005	**S-SCL4A-FB-1**	EPA 300.0	699312		

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Sample Condition Upon Receipt

WO# : 60358899

60358899

Client Name: Golder Associates

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

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

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

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑ ZBLC

Thermometer Used: T-298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): As-read 1.0 / 2.1 **Corr. Factor** -0.2 **Corrected** 0.8 / 1.9-c

Temperature should be above freezing to 6°C

Date and initials of person examining contents: 1-13-21 KD

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT# 603173	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

REVIEWED
By jchurch at 10:09 pm, 1/13/21

Project Manager Review: _____ Date: _____

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company:	Golder Associates
Address:	13515 Barrett Parkway Dr., Ste 260
	Ballwin, MO 63021
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Ryan Feldmann/Eric Schneider
Purchase Order No.:	
Project Name:	Ameren - SCL4A - VS
Project Number:	153140002.0003D

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	9285

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
	WP
	AR
	OT
	TS

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	200.7 Boron	200.7 Calcium	Chloride	Fluoride	Sulfate	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
				DATE	TIME	DATE	TIME												N	N	N	N	N	N		60035 8899
1	S-TMW-1	WT	G			1/11/21	0927		2	1		1							/			/		/		
2	S-TMW-2	WT	G				1015		2	1		1							/			/		/		
3	S-TMW-3	WT	G				1107		1	1												/				
4	S-SCL4A-DUP-1	WT	G				—		2	1		1							/			/		/		
5	S-SCL4A-FB-1	WT	G				0940		2	1		1							/			/		/		
6	S-SCL4A-MS-1	WT	G				1015		2	1		1							/			/		/		
7	S-SCL4A-MSD-1	WT	G				1015		2	1		1							/			/		/		
8		WT	G																							
9		WT	G																							
10		WT	G																							
11		WT	G																							
12		WT	G																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Eric Schneider/Golder	1/12/21	1245	Angela McMan	1/12	1250				
	Angela McMan	1/12	1250	Dawson/Pace	1/13/21	0400	0.8	Y	Y	Y
							1.9	Y	Y	Y

SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER:	Eric Schneider		
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY):	01/12/21

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.

MEMORANDUM

DATE January 28, 2021 **Project No.** 153140602

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Annie Muehlfarth **EMAIL AMuehlfarth@golder.com**

DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCL4A – VERIFICATION SAMPLING - DATA PACKAGE 60358899

The following is a summary of instances where quality control criteria in the functional guidelines were not met and data qualification was required:

- None.

Golder Associates Inc.
13515 Barrett Parkway Drive, Suite 260, Ballwin, Missouri, USA 63021 T: +1 314 984-8800 F: +1 314 984-8770

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Manager: J. Ingram
Project Name: Ameren- Sioux - SCL4A
Project Number: 153140602
Reviewer: A. Muehlfarth
Validation Date: 01/28/2021

Laboratory: Pace Analytical Services - Kansas City
SDG #: 60358899
Analytical Method (type and no.): EPA 200.7 (Total Metals); SM2540C (TDS); EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐ _____
Sample Names S-TMW-1, S-TMW-2, S-TMW-3, S-SCL4A-DUP-1, S-SCL4A-FB-1

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			01/11/2021
b) Sampling team indicated?	x			EMS
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See Notes
g) Field parameters collected (note types)?	x			pH, S.Cond., Turb, Temp, DO, ORP
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies: _____

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	x			
b) Was the COC signed by both field and laboratory personnel?	x			
c) Were samples received in good condition?	x			

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	x			
b) Were hold times met for sample analysis?	x			
c) Were the correct preservatives used?	x			
d) Was the correct method used?	x			
e) Were appropriate reporting limits achieved?	x			
f) Were any sample dilutions noted?		x		
g) Were any matrix problems noted?		x		

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	x			See notes
b) Were analytes detected in the field blank(s)?	x			See notes
c) Were analytes detected in the equipment blank(s)?			x	
d) Were analytes detected in the trip blank(s)?			x	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	x			
b) Were the proper analytes included in the LCS?	x			
c) Was the LCS accuracy criteria met?	x			

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			S-SCL4A-DUP-1 @ S-TMW-1
b) Were field dup. precision criteria met (note RPD)?	x			Max RPD: 2.7% (<20%)
c) Were lab duplicates analyzed (note original and duplicate samples)?	x			
d) Were lab dup. precision criteria met (note RPD)?	x			Max RPD: 1% (<10%)

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?		x		
b) Was the %D within control limits?			x	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	x			
Recovery could not be calculated since sample contained high concentration of analyte?			x	
b) Was MSD accuracy criteria met?	x			
Recovery could not be calculated since sample contained high concentration of analyte?			x	
c) Were MS/MSD precision criteria met?	x			

Comments/Notes:

Method Blank:

2821639: Calcium (34.2J). Associated with samples -9001, -9002, -9004, -9005. Sample results > RL, no qualification necessary.

Field Blank:

S-SCL4A-FB-1 @ S-TMW-1: Calcium (1100), TDS (10.0). Sample results > 10x the blank result, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason

Signature: _____ Ann Muehlfarth _____ Date: 01/28/2021

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

July 06, 2021

Jeffrey Ingram
Golder Associates
13515 Barrett Parkway Drive
Suite 260
Ballwin, MO 63021

RE: Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on April 14, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

REV-1, 7/6/21: S-BMW-1S and S-BMW-3S added per client request.

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

Sincerely,

Jamie Church
jamie.church@pacelabs.com
314-838-7223
Project Manager

Enclosures

cc: Ryan Feldmann, Golder
Mark Haddock, Golder Associates
Eric Schneider, Golder Associates
Brendan Talbert, Golder Associates

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60366588001	**S-TMW-1**	Water	04/13/21 10:24	04/14/21 03:50
60366588002	**S-TMW-2**	Water	04/13/21 11:25	04/14/21 03:50
60366588003	**S-TMW-3**	Water	04/13/21 12:08	04/14/21 03:50
60366588004	**S-SCL4A-DUP-1**	Water	04/13/21 00:00	04/14/21 03:50
60366588005	**S-SCL4A-FB-1**	Water	04/13/21 11:32	04/14/21 03:50
60366138013	**S-UG-3**	Water	04/13/21 13:25	04/14/21 03:50
60366138009	**S-BMW-1S**	Water	04/13/21 13:35	04/14/21 03:50
60366138010	**S-BMW-3S**	Water	04/13/21 12:17	04/14/21 03:50

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SAMPLE ANALYTE COUNT

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60366588001	**S-TMW-1**	EPA 200.7	JLH, TDS	7	PASI-K
		SM 2320B	MAP	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60366588002	**S-TMW-2**	EPA 200.7	JLH, TDS	7	PASI-K
		SM 2320B	MAP	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60366588003	**S-TMW-3**	EPA 200.7	JLH, TDS	7	PASI-K
		SM 2320B	MAP	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60366588004	**S-SCL4A-DUP-1**	EPA 200.7	JLH, TDS	7	PASI-K
		SM 2320B	MAP	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60366588005	**S-SCL4A-FB-1**	EPA 200.7	JLH, TDS	7	PASI-K
		SM 2320B	MAP	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60366138013	**S-UG-3**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	MAP	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60366138009	**S-BMW-1S**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	MAP	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60366138010	**S-BMW-3S**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	MAP	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Sample: S-TMW-1 **Lab ID: 60366588001** Collected: 04/13/21 10:24 Received: 04/14/21 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**57.2J**	ug/L	100	8.6	1	04/20/21 10:23	04/26/21 19:44	7440-42-8	
Calcium	**93200**	ug/L	200	75.4	1	04/20/21 10:23	04/26/21 19:44	7440-70-2	
Iron	**<21.4**	ug/L	50.0	21.4	1	04/20/21 10:23	04/26/21 19:44	7439-89-6	
Magnesium	**16100**	ug/L	50.0	31.4	1	04/20/21 10:23	04/26/21 19:44	7439-95-4	
Manganese	**47.7**	ug/L	5.0	0.74	1	04/20/21 10:23	04/26/21 19:44	7439-96-5	
Potassium	**4540**	ug/L	500	146	1	04/20/21 10:23	04/26/21 19:44	7440-09-7	
Sodium	**2880**	ug/L	500	254	1	04/20/21 10:23	04/27/21 11:24	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**298**	mg/L	20.0	7.5	1		04/23/21 16:48		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**386**	mg/L	5.0	5.0	1		04/20/21 12:50		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.1**	mg/L	1.0	0.39	1		04/22/21 02:00	16887-00-6	
Fluoride	**0.41**	mg/L	0.20	0.086	1		04/22/21 02:00	16984-48-8	
Sulfate	**47.7**	mg/L	5.0	2.1	5		04/22/21 02:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Sample: S-TMW-2 **Lab ID: 60366588002** Collected: 04/13/21 11:25 Received: 04/14/21 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**76.0J**	ug/L	100	8.6	1	04/20/21 10:23	04/26/21 19:47	7440-42-8	
Calcium	**105000**	ug/L	200	75.4	1	04/20/21 10:23	04/26/21 19:47	7440-70-2	
Iron	**125**	ug/L	50.0	21.4	1	04/20/21 10:23	04/26/21 19:47	7439-89-6	
Magnesium	**18900**	ug/L	50.0	31.4	1	04/20/21 10:23	04/26/21 19:47	7439-95-4	
Manganese	**54.2**	ug/L	5.0	0.74	1	04/20/21 10:23	04/26/21 19:47	7439-96-5	
Potassium	**5010**	ug/L	500	146	1	04/20/21 10:23	04/26/21 19:47	7440-09-7	
Sodium	**3490**	ug/L	500	254	1	04/20/21 10:23	04/27/21 11:27	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**321**	mg/L	20.0	7.5	1		04/23/21 16:54		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**439**	mg/L	10.0	10.0	1		04/20/21 12:50		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.4**	mg/L	1.0	0.39	1		04/22/21 02:32	16887-00-6	
Fluoride	**0.43**	mg/L	0.20	0.086	1		04/22/21 02:32	16984-48-8	
Sulfate	**64.8**	mg/L	5.0	2.1	5		04/22/21 02:48	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Sample: S-TMW-3 **Lab ID: 60366588003** Collected: 04/13/21 12:08 Received: 04/14/21 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**75.8J**	ug/L	100	8.6	1	04/20/21 10:23	04/26/21 19:49	7440-42-8	
Calcium	**114000**	ug/L	200	75.4	1	04/20/21 10:23	04/26/21 19:49	7440-70-2	M1
Iron	**142**	ug/L	50.0	21.4	1	04/20/21 10:23	04/26/21 19:49	7439-89-6	
Magnesium	**20700**	ug/L	50.0	31.4	1	04/20/21 10:23	04/26/21 19:49	7439-95-4	
Manganese	**112**	ug/L	5.0	0.74	1	04/20/21 10:23	04/26/21 19:49	7439-96-5	
Potassium	**5230**	ug/L	500	146	1	04/20/21 10:23	04/26/21 19:49	7440-09-7	
Sodium	**4110**	ug/L	500	254	1	04/20/21 10:23	04/27/21 11:29	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**397**	mg/L	20.0	7.5	1		04/23/21 16:59		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**445**	mg/L	10.0	10.0	1		04/20/21 12:51		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.2**	mg/L	1.0	0.39	1		04/22/21 16:50	16887-00-6	B
Fluoride	**0.32**	mg/L	0.20	0.086	1		04/22/21 16:50	16984-48-8	
Sulfate	**33.1**	mg/L	5.0	2.1	5		04/22/21 18:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Sample: S-SCL4A-DUP-1 **Lab ID: 60366588004** Collected: 04/13/21 00:00 Received: 04/14/21 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**57.3J**	ug/L	100	8.6	1	04/20/21 10:23	04/26/21 20:04	7440-42-8	
Calcium	**92600**	ug/L	200	75.4	1	04/20/21 10:23	04/26/21 20:04	7440-70-2	
Iron	**<21.4**	ug/L	50.0	21.4	1	04/20/21 10:23	04/26/21 20:04	7439-89-6	
Magnesium	**16000**	ug/L	50.0	31.4	1	04/20/21 10:23	04/26/21 20:04	7439-95-4	
Manganese	**48.6**	ug/L	5.0	0.74	1	04/20/21 10:23	04/26/21 20:04	7439-96-5	
Potassium	**4510**	ug/L	500	146	1	04/20/21 10:23	04/26/21 20:04	7440-09-7	
Sodium	**2930**	ug/L	500	254	1	04/20/21 10:23	04/27/21 11:32	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**294**	mg/L	20.0	7.5	1		04/23/21 17:10		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**394**	mg/L	5.0	5.0	1		04/20/21 12:51		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.1**	mg/L	1.0	0.39	1		04/22/21 03:20	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	0.086	1		04/22/21 03:20	16984-48-8	
Sulfate	**46.2**	mg/L	5.0	2.1	5		04/22/21 03:35	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Sample: S-SCL4A-FB-1 **Lab ID: 60366588005** Collected: 04/13/21 11:32 Received: 04/14/21 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
	Pace Analytical Services - Kansas City								
Boron	**<8.6**	ug/L	100	8.6	1	04/20/21 10:23	04/26/21 20:07	7440-42-8	
Calcium	**<75.4**	ug/L	200	75.4	1	04/20/21 10:23	04/26/21 20:07	7440-70-2	
Iron	**<21.4**	ug/L	50.0	21.4	1	04/20/21 10:23	04/26/21 20:07	7439-89-6	
Magnesium	**<31.4**	ug/L	50.0	31.4	1	04/20/21 10:23	04/26/21 20:07	7439-95-4	
Manganese	**<0.74**	ug/L	5.0	0.74	1	04/20/21 10:23	04/26/21 20:07	7439-96-5	
Potassium	**<146**	ug/L	500	146	1	04/20/21 10:23	04/26/21 20:07	7440-09-7	
Sodium	**<254**	ug/L	500	254	1	04/20/21 10:23	04/27/21 11:35	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
	Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**<7.5**	mg/L	20.0	7.5	1		04/23/21 17:15		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
	Pace Analytical Services - Kansas City								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		04/20/21 12:51		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
	Pace Analytical Services - Kansas City								
Chloride	**<0.39**	mg/L	1.0	0.39	1		04/22/21 03:51	16887-00-6	
Fluoride	**<0.086**	mg/L	0.20	0.086	1		04/22/21 03:51	16984-48-8	
Sulfate	**<0.42**	mg/L	1.0	0.42	1		04/22/21 03:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Sample: S-UG-3 **Lab ID: 60366138013** Collected: 04/13/21 13:25 Received: 04/14/21 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**225**	ug/L	100	8.6	1	04/22/21 11:30	05/07/21 07:19	7440-42-8	
Calcium	**139000**	ug/L	200	75.4	1	04/22/21 11:30	05/07/21 07:19	7440-70-2	
Iron	**46.8J**	ug/L	50.0	21.4	1	04/22/21 11:30	05/07/21 07:19	7439-89-6	
Magnesium	**27700**	ug/L	50.0	31.4	1	04/22/21 11:30	05/07/21 07:19	7439-95-4	
Manganese	**285**	ug/L	5.0	0.74	1	04/22/21 11:30	05/07/21 07:19	7439-96-5	
Potassium	**5960**	ug/L	500	146	1	04/22/21 11:30	05/07/21 07:19	7440-09-7	
Sodium	**25600**	ug/L	500	254	1	04/22/21 11:30	05/07/21 07:19	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**356**	mg/L	20.0	7.5	1		04/22/21 19:25		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**578**	mg/L	10.0	10.0	1		04/20/21 12:47		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**41.4**	mg/L	5.0	1.9	5		04/23/21 20:00	16887-00-6	
Fluoride	**0.38**	mg/L	0.20	0.086	1		04/23/21 19:44	16984-48-8	
Sulfate	**58.2**	mg/L	5.0	2.1	5		04/23/21 20:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Sample: S-BMW-1S **Lab ID: 60366138009** Collected: 04/13/21 13:35 Received: 04/14/21 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**70.8J**	ug/L	100	8.6	1	04/22/21 11:30	04/30/21 23:41	7440-42-8	
Calcium	**149000**	ug/L	200	75.4	1	04/22/21 11:30	04/30/21 23:41	7440-70-2	
Iron	**<21.4**	ug/L	50.0	21.4	1	04/22/21 11:30	04/30/21 23:41	7439-89-6	
Magnesium	**28500**	ug/L	50.0	31.4	1	04/22/21 11:30	04/30/21 23:41	7439-95-4	
Manganese	**393**	ug/L	5.0	0.74	1	04/22/21 11:30	04/30/21 23:41	7439-96-5	
Potassium	**397J**	ug/L	500	146	1	04/22/21 11:30	04/30/21 23:41	7440-09-7	
Sodium	**4750**	ug/L	500	254	1	04/22/21 11:30	04/30/21 23:41	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**450**	mg/L	20.0	7.5	1		04/22/21 19:06		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**579**	mg/L	10.0	10.0	1		04/20/21 12:47		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**8.2**	mg/L	1.0	0.39	1		04/24/21 02:37	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	0.086	1		04/24/21 02:37	16984-48-8	
Sulfate	**29.4**	mg/L	5.0	2.1	5		04/24/21 02:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Sample: S-BMW-3S **Lab ID: 60366138010** Collected: 04/13/21 12:17 Received: 04/14/21 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**74.2J**	ug/L	100	8.6	1	04/22/21 11:30	04/30/21 23:43	7440-42-8	
Calcium	**134000**	ug/L	200	75.4	1	04/22/21 11:30	04/30/21 23:43	7440-70-2	
Iron	**<21.4**	ug/L	50.0	21.4	1	04/22/21 11:30	04/30/21 23:43	7439-89-6	
Magnesium	**23800**	ug/L	50.0	31.4	1	04/22/21 11:30	04/30/21 23:43	7439-95-4	
Manganese	**161**	ug/L	5.0	0.74	1	04/22/21 11:30	04/30/21 23:43	7439-96-5	
Potassium	**520**	ug/L	500	146	1	04/22/21 11:30	04/30/21 23:43	7440-09-7	
Sodium	**5470**	ug/L	500	254	1	04/22/21 11:30	04/30/21 23:43	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**399**	mg/L	20.0	7.5	1		04/22/21 19:12		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**509**	mg/L	10.0	10.0	1		04/20/21 12:47		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**12.8**	mg/L	1.0	0.39	1		04/24/21 03:09	16887-00-6	
Fluoride	**0.39**	mg/L	0.20	0.086	1		04/24/21 03:09	16984-48-8	
Sulfate	**34.8**	mg/L	2.0	0.84	2		04/24/21 03:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

QC Batch: 715667
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366588001, 60366588002, 60366588003, 60366588004, 60366588005

METHOD BLANK: 2879100 Matrix: Water
Associated Lab Samples: 60366588001, 60366588002, 60366588003, 60366588004, 60366588005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<8.6	100	8.6	04/26/21 19:16	
Calcium	ug/L	<75.4	200	75.4	04/26/21 19:16	
Iron	ug/L	<21.4	50.0	21.4	04/26/21 19:16	
Magnesium	ug/L	<31.4	50.0	31.4	04/26/21 19:16	
Manganese	ug/L	<0.74	5.0	0.74	04/26/21 19:16	
Potassium	ug/L	180J	500	146	04/26/21 19:16	
Sodium	ug/L	<254	500	254	04/27/21 11:19	

LABORATORY CONTROL SAMPLE: 2879101

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	920	92	85-115	
Calcium	ug/L	10000	9740	97	85-115	
Iron	ug/L	10000	9950	99	85-115	
Magnesium	ug/L	10000	9480	95	85-115	
Manganese	ug/L	1000	920	92	85-115	
Potassium	ug/L	10000	9400	94	85-115	
Sodium	ug/L	10000	11100	111	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2879102 2879103

Parameter	Units	60366586001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	120	1000	1000	1050	1050	93	93	70-130	0	20	
Calcium	ug/L	80500	10000	10000	93800	92700	132	122	70-130	1	20	M1
Iron	ug/L	104	10000	10000	9490	9480	94	94	70-130	0	20	
Magnesium	ug/L	17800	10000	10000	27800	27400	100	96	70-130	1	20	
Manganese	ug/L	38.9	1000	1000	922	923	88	88	70-130	0	20	
Potassium	ug/L	3310	10000	10000	12500	12400	92	91	70-130	1	20	
Sodium	ug/L	5420	10000	10000	15400	15200	100	98	70-130	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2879104 2879127

Parameter	Units	60366588003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	75.8J	1000	1000	1010	987	94	91	70-130	3	20	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2879104 2879127

Parameter	Units	60366588003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	114000	10000	10000	125000	121000	106	66	70-130	3	20	M1
Iron	ug/L	142	10000	10000	9660	9400	95	93	70-130	3	20	
Magnesium	ug/L	20700	10000	10000	29700	28900	91	82	70-130	3	20	
Manganese	ug/L	112	1000	1000	990	964	88	85	70-130	3	20	
Potassium	ug/L	5230	10000	10000	14400	14200	91	89	70-130	1	20	
Sodium	ug/L	4110	10000	10000	14000	13600	98	95	70-130	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

QC Batch: 716201
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366138009, 60366138010, 60366138013

METHOD BLANK: 2881020 Matrix: Water
Associated Lab Samples: 60366138009, 60366138010, 60366138013

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<8.6	100	8.6	04/30/21 23:10	
Calcium	ug/L	<75.4	200	75.4	04/30/21 23:10	
Iron	ug/L	<21.4	50.0	21.4	04/30/21 23:10	
Magnesium	ug/L	<31.4	50.0	31.4	04/30/21 23:10	
Manganese	ug/L	<0.74	5.0	0.74	04/30/21 23:10	
Potassium	ug/L	<146	500	146	04/30/21 23:10	
Sodium	ug/L	<254	500	254	05/07/21 07:17	

LABORATORY CONTROL SAMPLE: 2881021

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	988	99	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Iron	ug/L	10000	10100	101	85-115	
Magnesium	ug/L	10000	9920	99	85-115	
Manganese	ug/L	1000	984	98	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Sodium	ug/L	10000	10400	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2881022 2881023

Parameter	Units	60366138006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	10400	1000	1000	11200	11000	78	50	70-130	3	20	M1
Calcium	ug/L	199000	10000	10000	215000	209000	166	105	70-130	3	20	M1
Iron	ug/L	45.0J	10000	10000	10000	9750	100	97	70-130	3	20	
Magnesium	ug/L	29400	10000	10000	40400	39200	110	98	70-130	3	20	
Manganese	ug/L	407	1000	1000	1390	1360	98	95	70-130	2	20	
Potassium	ug/L	9890	10000	10000	20700	20200	108	104	70-130	2	20	
Sodium	ug/L	70800	10000	10000	81200	78600	103	78	70-130	3	20	

MATRIX SPIKE SAMPLE: 2881024

Parameter	Units	60366138014 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	6000	1000	7050	105	70-130	
Calcium	ug/L	144000	10000	153000	81	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

MATRIX SPIKE SAMPLE: 2881024

Parameter	Units	60366138014 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	9430	10000	18900	95	70-130	
Magnesium	ug/L	35300	10000	45500	102	70-130	
Manganese	ug/L	1130	1000	2140	102	70-130	
Potassium	ug/L	5020	10000	15700	107	70-130	
Sodium	ug/L	22600	10000	32700	101	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

QC Batch: 716345 | Analysis Method: SM 2320B
QC Batch Method: SM 2320B | Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366138009, 60366138010, 60366138013

METHOD BLANK: 2881690 Matrix: Water
Associated Lab Samples: 60366138009, 60366138010, 60366138013

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.5	20.0	7.5	04/22/21 17:58	

LABORATORY CONTROL SAMPLE: 2881691

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	511	102	90-110	

SAMPLE DUPLICATE: 2881692

Parameter	Units	60366511001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	133	129	3	10	

SAMPLE DUPLICATE: 2881693

Parameter	Units	60366586001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	257	263	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

QC Batch: 716534 | Analysis Method: SM 2320B
QC Batch Method: SM 2320B | Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366588001, 60366588002, 60366588003, 60366588004, 60366588005

METHOD BLANK: 2882533 Matrix: Water
Associated Lab Samples: 60366588001, 60366588002, 60366588003, 60366588004, 60366588005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.5	20.0	7.5	04/23/21 16:31	

LABORATORY CONTROL SAMPLE: 2882534

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 2882535

Parameter	Units	60366588003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	397	384	3	10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

QC Batch: 715646 — Analysis Method: SM 2540C
QC Batch Method: SM 2540C — Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366138009, 60366138010, 60366138013, 60366588001, 60366588002, 60366588003, 60366588004, 60366588005

METHOD BLANK: 2879035 — Matrix: Water
Associated Lab Samples: 60366138009, 60366138010, 60366138013, 60366588001, 60366588002, 60366588003, 60366588004, 60366588005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	04/20/21 12:46	

LABORATORY CONTROL SAMPLE: 2879036

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

SAMPLE DUPLICATE: 2879037

Parameter	Units	60366586001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	373	376	1	10	

SAMPLE DUPLICATE: 2879038

Parameter	Units	60366588003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	445	437	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

QC Batch: 715726
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366588001, 60366588002, 60366588004, 60366588005

METHOD BLANK: 2879432 Matrix: Water
Associated Lab Samples: 60366588001, 60366588002, 60366588004, 60366588005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/21/21 15:58	
Fluoride	mg/L	<0.086	0.20	0.086	04/21/21 15:58	
Sulfate	mg/L	<0.42	1.0	0.42	04/21/21 15:58	

METHOD BLANK: 2882319 Matrix: Water
Associated Lab Samples: 60366588001, 60366588002, 60366588004, 60366588005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/22/21 09:08	
Fluoride	mg/L	<0.086	0.20	0.086	04/22/21 09:08	
Sulfate	mg/L	<0.42	1.0	0.42	04/22/21 09:08	

LABORATORY CONTROL SAMPLE: 2879433

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

LABORATORY CONTROL SAMPLE: 2882320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	
Sulfate	mg/L	5	4.6	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2879434 2879435

Parameter	Units	60366957002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.7	5	5	6.3	6.5	92	96	80-120	3	15	
Fluoride	mg/L	0.91			3.2	3.4				5	15	
Sulfate	mg/L	2.0	5	5	7.0	7.2	100	104	80-120	3	15	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2879434 2881092

Parameter	Units	60366957002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.7	5	5	6.3	6.9	92	94	80-120	10	15	
Fluoride	mg/L	0.91		2.5	3.2	2.9		103		12	15	
Sulfate	mg/L	2.0	5	25	7.0	97.5	100	108	80-120	173	15	R1

MATRIX SPIKE SAMPLE: 2879436

Parameter	Units	60366227002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	41.5	50	87.8	93	80-120	
Fluoride	mg/L	0.32	2.5	2.9	102	80-120	
Sulfate	mg/L	33.2	50	81.4	96	80-120	

MATRIX SPIKE SAMPLE: 2881093

Parameter	Units	60366586001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	2.3	5	7.0	96	80-120	
Fluoride	mg/L	0.28	2.5	2.9	106	80-120	
Sulfate	mg/L	70.6	25	95.4	99	80-120	

SAMPLE DUPLICATE: 2880018

Parameter	Units	60366586001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	2.3	2.3	0	15	
Fluoride	mg/L	0.28	0.22	26	15	D6
Sulfate	mg/L	70.6	68.4	3	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

QC Batch: 716230
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366588003

METHOD BLANK: 2881187 Matrix: Water
Associated Lab Samples: 60366588003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/22/21 13:41	
Fluoride	mg/L	<0.086	0.20	0.086	04/22/21 13:41	
Sulfate	mg/L	<0.42	1.0	0.42	04/22/21 13:41	

METHOD BLANK: 2882315 Matrix: Water
Associated Lab Samples: 60366588003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.55J	1.0	0.39	04/23/21 08:34	
Fluoride	mg/L	<0.086	0.20	0.086	04/23/21 08:34	
Sulfate	mg/L	<0.42	1.0	0.42	04/23/21 08:34	

LABORATORY CONTROL SAMPLE: 2881188

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

LABORATORY CONTROL SAMPLE: 2882316

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2881189 2881190

Parameter	Units	60366588003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.2	5	5	6.7	6.7	90	91	80-120	1	15	
Fluoride	mg/L	0.32	2.5	2.5	3.0	3.0	106	108	80-120	2	15	
Sulfate	mg/L	33.1	25	25	58.2	58.1	100	100	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

MATRIX SPIKE SAMPLE: 2881192

Parameter	Units	60365796004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	45.7	25	71.2	102	80-120	
Fluoride	mg/L	0.32	2.5	3.0	109	80-120	
Sulfate	mg/L	211	250	449	95	80-120	

SAMPLE DUPLICATE: 2881191

Parameter	Units	60366588003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	2.2	2.1	4	15	
Fluoride	mg/L	0.32	0.36	10	15	
Sulfate	mg/L	33.1	32.6	2	15	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

QC Batch: 716443
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60366138009, 60366138010

METHOD BLANK: 2882108 Matrix: Water
Associated Lab Samples: 60366138009, 60366138010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/23/21 16:46	
Fluoride	mg/L	<0.086	0.20	0.086	04/23/21 16:46	
Sulfate	mg/L	<0.42	1.0	0.42	04/23/21 16:46	

METHOD BLANK: 2883765 Matrix: Water
Associated Lab Samples: 60366138009, 60366138010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/25/21 10:02	
Fluoride	mg/L	<0.086	0.20	0.086	04/25/21 10:02	
Sulfate	mg/L	<0.42	1.0	0.42	04/25/21 10:02	

LABORATORY CONTROL SAMPLE: 2882109

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

LABORATORY CONTROL SAMPLE: 2883766

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Fluoride	mg/L	2.5	2.3	91	90-110	
Sulfate	mg/L	5	4.7	94	90-110	

MATRIX SPIKE SAMPLE: 2882112

Parameter	Units	60366138002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	15.6	25	39.4	95	80-120	
Fluoride	mg/L	0.33	2.5	2.9	102	80-120	
Sulfate	mg/L	65.8	25	94.2	113	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2882113 2882114

Parameter	Units	60367128001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	10000	10000	15200	11400	152	114	80-120	28	15	M1,R1
Fluoride	mg/L	ND	5000	5000	7840	5920	157	118	80-120	28	15	M1,R1
Sulfate	mg/L	69000	50000	50000	114000	114000	90	91	80-120	0	15	

SAMPLE DUPLICATE: 2882115

Parameter	Units	60367128001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	ND	<778		15	
Fluoride	mg/L	ND	<173		15	
Sulfate	mg/L	69000	65200	6	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

QC Batch: 716447
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60366138013

METHOD BLANK: 2882121 Matrix: Water
Associated Lab Samples: 60366138013

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.51J	1.0	0.39	04/23/21 16:19	
Fluoride	mg/L	<0.086	0.20	0.086	04/23/21 16:19	
Sulfate	mg/L	<0.42	1.0	0.42	04/23/21 16:19	

METHOD BLANK: 2883759 Matrix: Water
Associated Lab Samples: 60366138013

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/25/21 10:02	
Fluoride	mg/L	<0.086	0.20	0.086	04/25/21 10:02	
Sulfate	mg/L	<0.42	1.0	0.42	04/25/21 10:02	

LABORATORY CONTROL SAMPLE: 2882122

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.4	98	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 2883760

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Fluoride	mg/L	2.5	2.3	91	90-110	
Sulfate	mg/L	5	4.7	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2882124 2882125

Parameter	Units	60367402001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1140	1000	1000	2360	2220	122	108	80-120	6	15	M1
Fluoride	mg/L	5.9	2.5	2.5	8.2	8.4	90	98	80-120	2	15	
Sulfate	mg/L	1830	1000	1000	3270	2990	145	116	80-120	9	15	M1

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

MATRIX SPIKE SAMPLE: 2882126

Parameter	Units	60366138022 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	17.3	250	260	97	80-120	
Fluoride	mg/L	0.35	2.5	3.0	106	80-120	
Sulfate	mg/L	442	250	686	98	80-120	

SAMPLE DUPLICATE: 2882123

Parameter	Units	60367402001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	1140	1190	4	15	
Fluoride	mg/L	5.9	6.0	1	15	
Sulfate	mg/L	1830	1950	7	15	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SEC SCL4A
Pace Project No.: 60366588

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60366138009	**S-BMW-1S**	EPA 200.7	716201	EPA 200.7	716306
60366138010	**S-BMW-3S**	EPA 200.7	716201	EPA 200.7	716306
60366138013	**S-UG-3**	EPA 200.7	716201	EPA 200.7	716306
60366588001	**S-TMW-1**	EPA 200.7	715667	EPA 200.7	715766
60366588002	**S-TMW-2**	EPA 200.7	715667	EPA 200.7	715766
60366588003	**S-TMW-3**	EPA 200.7	715667	EPA 200.7	715766
60366588004	**S-SCL4A-DUP-1**	EPA 200.7	715667	EPA 200.7	715766
60366588005	**S-SCL4A-FB-1**	EPA 200.7	715667	EPA 200.7	715766
60366138009	**S-BMW-1S**	SM 2320B	716345		
60366138010	**S-BMW-3S**	SM 2320B	716345		
60366138013	**S-UG-3**	SM 2320B	716345		
60366588001	**S-TMW-1**	SM 2320B	716534		
60366588002	**S-TMW-2**	SM 2320B	716534		
60366588003	**S-TMW-3**	SM 2320B	716534		
60366588004	**S-SCL4A-DUP-1**	SM 2320B	716534		
60366588005	**S-SCL4A-FB-1**	SM 2320B	716534		
60366138009	**S-BMW-1S**	SM 2540C	715646		
60366138010	**S-BMW-3S**	SM 2540C	715646		
60366138013	**S-UG-3**	SM 2540C	715646		
60366588001	**S-TMW-1**	SM 2540C	715646		
60366588002	**S-TMW-2**	SM 2540C	715646		
60366588003	**S-TMW-3**	SM 2540C	715646		
60366588004	**S-SCL4A-DUP-1**	SM 2540C	715646		
60366588005	**S-SCL4A-FB-1**	SM 2540C	715646		
60366138009	**S-BMW-1S**	EPA 300.0	716443		
60366138010	**S-BMW-3S**	EPA 300.0	716443		
60366138013	**S-UG-3**	EPA 300.0	716447		
60366588001	**S-TMW-1**	EPA 300.0	715726		
60366588002	**S-TMW-2**	EPA 300.0	715726		
60366588003	**S-TMW-3**	EPA 300.0	716230		
60366588004	**S-SCL4A-DUP-1**	EPA 300.0	715726		
60366588005	**S-SCL4A-FB-1**	EPA 300.0	715726		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60366588

60366588

Client Name: Golder Associates

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

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

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

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑ Ice

Thermometer Used: T298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 3.8 / 17.8 **Corr. Factor** 0.0 / 0.0 **Corrected** 3.8 / 17.8

Temperature should be above freezing to 6°C

Date and initials of person examining contents: 4/14/21 SK

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☐No ☑N/A	
Rush Turn Around Time requested:	☐Yes ☐No ☑N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	Didnt rcv samples for S-UG3
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	Didnt rcv samples for S-Bmw-35
Containers requiring pH preservation in compliance? (HNO3, H2SO4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT# 605173	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution:

REVIEWED
By jchurch at 8:41 am, 4/15/21

Project Manager Review: _____ Date: _____

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.

Section A Required Client Information:

Company:	Golder Associates
Address:	13515 Barrett Parkway Dr., Ste 260
	Ballwin, MO 63021
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder, Ryan Feldman
Purchase Order No.:	COC #11
Project Name:	Ameren Sioux Energy Center SCL4A
Project Number:	153140602.0003D

Section C Invoice Information:

Attention:	
Company Name:	Golder Associates Inc
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	9285, line 3

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
	WP
	AR
	OT
	TS

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: Chloride/Fluoride/Sulfate	App III and Cat/An Metals	Alkalinity	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		N	N	N	N		
1	S-UG-3	WT	G			4/13/21	1325		2	1		1						X	X	X	X		60366588
2	S-TMW-1	WT	G			"	1024																
3	S-TMW-2	WT	G				1125																
4	S-TMW-3	WT	G				1208																
5	S-SCL4A-DUP-1	WT	G				—																
6	S-SCL4A-FB-1	WT	G				1132																
7	S-SCL4A-MS-1	WT	G				1208																
8	S-SCL4A-MSD-1	WT	G				1208																
9	S-BMW-1S	WT	G				1335																
10	S-BMW-3S	WT	G			"	1217		"	"		"						"	"	"	"		
11		WT	G																				
12		WT	G																				

ADDITIONAL COMMENTS

"App III and Cat/An Metals" - EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	4/13/21	1645	[signature]	4/13	1700
[signature]	4/13	1700	[signature]	4/14/21	0850

SAMPLE CONDITIONS			
Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
3.5	Y	Y	Y
1.8	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schnieder

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 04/13/21

*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.

MEMORANDUM

DATE July 28, 2021 **Project No.** 153140603

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Annie Muehlfarth **EMAIL AMuehlfarth@golder.com**

DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCL4A – DETECTION MONITORING - DATA PACKAGE 60366588

The following is a summary of instances where quality control criteria in the functional guidelines were not met and data qualification was required:

- When a compound was detected in a blank (i.e. method, field), and the blank comparison criterion was not met, associated sample results were qualified as estimates (J).

Golder Associates Inc.
13515 Barrett Parkway Drive, Suite 260,
Ballwin, Missouri, USA 63021

T: +1 314 984-8800 F: +1 314 984-8770

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Manager: J. Ingram
Project Name: Ameren - SEC - SCL4A
Project Number: 153140603
Reviewer: A. Muehlfarth
Validation Date: 7/28/2021

Laboratory: Pace Analytical
SDG #: 60366588rev1
Analytical Method (type and no.): EPA 200.7 (Total Metals); SM2320B (Alkalinity); SM2540C (TDS); EPA 300.0 (Anions);
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names S-TMW-1, S-TMW-2, S-TMW-3, S-SCL4A-DUP-1, S-SCL4A-FB-1, S-UG-3, S-BMW-1S, S-BMW-3S

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			4/13/2021
b) Sampling team indicated?	x			EMS/SMK
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See Notes
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies:

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	x			
b) Was the COC signed by both field and laboratory personnel?	x			
c) Were samples received in good condition?	x			

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	x			
b) Were hold times met for sample analysis?	x			
c) Were the correct preservatives used?	x			
d) Was the correct method used?	x			
e) Were appropriate reporting limits achieved?	x			
f) Were any sample dilutions noted?	x			See Notes
g) Were any matrix problems noted?	x			See Notes

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	x			See Notes
b) Were analytes detected in the field blank(s)?		x		S-SCL4A-FB-1 @ S-TMW-2
c) Were analytes detected in the equipment blank(s)?			x	
d) Were analytes detected in the trip blank(s)?			x	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	x			
b) Were the proper analytes included in the LCS?	x			
c) Was the LCS accuracy criteria met?	x			

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			S-SCL4A-DUP-1 @ S-TMW-1
b) Were field dup. precision criteria met (note RPD)?	x			Max RPD: 3.2% [<20%]
c) Were lab duplicates analyzed (note original and duplicate samples)?	x			
d) Were lab dup. precision criteria met (note RPD)?		x		See Notes

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?			x	
b) Was the %D within control limits?			x	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?		x		See Notes
Recovery could not be calculated since sample contained high concentration of analyte?			x	
b) Was MSD accuracy criteria met?		x		See Notes
Recovery could not be calculated since sample contained high concentration of analyte?			x	
c) Were MS/MSD precision criteria met?		x		See Notes

Comments/Notes:

Sulfate and chloride were diluted in several samples, no qualification necessary.

Method Blanks:

2879100: Potassium (180J). Associated with samples 60366588001 through 60366588005. Sample results >RL and 10x blank or non-detect, no qualification necessary.

2882315: Chloride (0.55J). Associated with sample 60366588003. Sample result >RL but <10x blank, qualified as estimate.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

2882121: Chloride (0.51J). Associated with sample 60366138013. Sample result >RL and 10x blank, no qualification necessary.

Laboratory Duplicates:

2880018: DUP RPD exceeds limit (15%) for Fluoride (26%). Associated with unrelated sample, no qualification necessary.

MS/MSD:

2879104/2879127: MSD % recovery low for Calcium. Associated with sample 60366588003. Only 1 QC indicator outside control limits, no qualification necessary.

2881022/2881023: MSD % recovery low for Boron; MS % recovery high for Calcium. MS/MSD performed on unrelated sample, no qualification necessary.

2879434/2881092: RPD exceeds limit for Sulfate. MS/MSD performed on unrelated sample, no qualification necessary.

2882113/2882114: MS % recovery and RPD high for Chloride and Fluoride. MS/MSD performed on unrelated sample, no qualification necessary.

2882124/2882125: MS % recovery high for Chloride and Sulfate. MS/MSD performed on unrelated sample, no qualification necessary.

2879102/2879103: MS % recovery high for Calcium. MS/MSD performed on unrelated sample, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-TMW-3	Chloride	2.2	J	Detected in blank, 10x blank > Sample > RL

Signature: Ann Muehlfarth Date: 7/28/2021

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

June 18, 2021

Jeffrey Ingram
Golder Associates
13515 Barrett Parkway Drive
Suite 260
Ballwin, MO 63021

RE: Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on June 04, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

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

Sincerely,

Jamie Church
jamie.church@pacelabs.com
314-838-7223
Project Manager

Enclosures

cc: Ryan Feldmann, Golder
Mark Haddock, Golder Associates
Eric Schneider, Golder Associates
Brendan Talbert, Golder Associates

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60371261001	**S-UG-3**	Water	06/02/21 10:14	06/04/21 04:25
60371261002	**S-TMW-2**	Water	06/02/21 09:55	06/04/21 04:25
60371261003	**S-SCL4A-FB-1**	Water	06/02/21 10:25	06/04/21 04:25
60371261004	**S-SCL4A-DUP-1**	Water	06/02/21 08:00	06/04/21 04:25

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SAMPLE ANALYTE COUNT

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60371261001	**S-UG-3**	EPA 300.0	CRN2	2	PASI-K
60371261002	**S-TMW-2**	EPA 300.0	CRN2	2	PASI-K
60371261003	**S-SCL4A-FB-1**	EPA 300.0	CRN2	2	PASI-K
60371261004	**S-SCL4A-DUP-1**	EPA 300.0	CRN2	2	PASI-K

PASI-K = Pace Analytical Services - Kansas City

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

Sample: S-UG-3 **Lab ID: 60371261001** Collected: 06/02/21 10:14 Received: 06/04/21 04:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.33**	mg/L	0.20	0.086	1		06/16/21 11:24	16984-48-8	
Sulfate	**62.3**	mg/L	10.0	4.2	10		06/17/21 17:48	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

Sample: S-TMW-2 **Lab ID: 60371261002** Collected: 06/02/21 09:55 Received: 06/04/21 04:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.38**	mg/L	0.20	0.086	1		06/16/21 16:33	16984-48-8	
Sulfate	**64.0**	mg/L	5.0	2.1	5		06/16/21 17:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

Sample: S-SCL4A-FB-1 **Lab ID: 60371261003** Collected: 06/02/21 10:25 Received: 06/04/21 04:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**<0.086**	mg/L	0.20	0.086	1		06/16/21 17:22	16984-48-8	
Sulfate	**<0.42**	mg/L	1.0	0.42	1		06/16/21 17:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

Sample: S-SCL4A-DUP-1 **Lab ID: 60371261004** Collected: 06/02/21 08:00 Received: 06/04/21 04:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.38**	mg/L	0.20	0.086	1		06/16/21 17:34	16984-48-8	
Sulfate	**64.2**	mg/L	5.0	2.1	5		06/16/21 17:46	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

QC Batch: 726410
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60371261002, 60371261003, 60371261004

METHOD BLANK: 2918610 Matrix: Water
Associated Lab Samples: 60371261002, 60371261003, 60371261004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.086	0.20	0.086	06/16/21 12:20	
Sulfate	mg/L	<0.42	1.0	0.42	06/16/21 12:20	

METHOD BLANK: 2921617 Matrix: Water
Associated Lab Samples: 60371261002, 60371261003, 60371261004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.086	0.20	0.086	06/17/21 08:37	
Sulfate	mg/L	<0.42	1.0	0.42	06/17/21 08:37	

LABORATORY CONTROL SAMPLE: 2918611

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	98	90-110	
Sulfate	mg/L	5	4.7	95	90-110	

LABORATORY CONTROL SAMPLE: 2921618

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2918613 2918614

Parameter	Units	60371252002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	<0.086	2.5	2.5	2.5	2.6	101	102	80-120	2	15	
Sulfate	mg/L	717	5	5	721	721	80	82	80-120	0	15	E

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

MATRIX SPIKE SAMPLE: 2918615

Parameter	Units	60371258001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.39	2.5	2.9	100	80-120	
Sulfate	mg/L	52.6	25	76.9	97	80-120	

SAMPLE DUPLICATE: 2918612

Parameter	Units	60371252002 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	<0.086	<0.086		15	
Sulfate	mg/L	717	718	0	15	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

QC Batch: 726411
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60371261001

METHOD BLANK: 2918617 Matrix: Water
Associated Lab Samples: 60371261001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.086	0.20	0.086	06/16/21 10:51	
Sulfate	mg/L	<0.42	1.0	0.42	06/16/21 10:51	

METHOD BLANK: 2921626 Matrix: Water
Associated Lab Samples: 60371261001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.086	0.20	0.086	06/17/21 08:37	
Sulfate	mg/L	<0.42	1.0	0.42	06/17/21 08:37	

METHOD BLANK: 2922025 Matrix: Water
Associated Lab Samples: 60371261001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.086	0.20	0.086	06/18/21 09:15	
Sulfate	mg/L	<0.42	1.0	0.42	06/18/21 09:15	

LABORATORY CONTROL SAMPLE: 2918618

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

LABORATORY CONTROL SAMPLE: 2921627

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

LABORATORY CONTROL SAMPLE: 2922026

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	109	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2918620 2918621

Parameter	Units	60371261001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.33	2.5	2.5	2.9	2.9	101	101	80-120	0	15	
Sulfate	mg/L	62.3	50	50	104	111	84	98	80-120	7	15	

MATRIX SPIKE SAMPLE: 2918622

Parameter	Units	60371916004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	<0.086	2.5	2.6	101	80-120	
Sulfate	mg/L	19.8	1000	1000	98	80-120	

SAMPLE DUPLICATE: 2918619

Parameter	Units	60371261001 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	0.33	0.33	2	15	
Sulfate	mg/L	62.3	62.2	0	15	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

E Analyte concentration exceeded the calibration range. The reported result is estimated.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN-VS-SCL4A
Pace Project No.: 60371261

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60371261001	**S-UG-3**	EPA 300.0	726411		
60371261002	**S-TMW-2**	EPA 300.0	726410		
60371261003	**S-SCL4A-FB-1**	EPA 300.0	726410		
60371261004	**S-SCL4A-DUP-1**	EPA 300.0	726410		

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Sample Condition Upon Receipt

WO# : 60371261

60371261

Client Name: Golder Associates

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

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☒

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

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ Zplc

Thermometer Used: T298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.4 **Corr. Factor** 0.0 **Corrected** 1.4

Temperature should be above freezing to 6°C 2.0 0.0 2.0

Date and initials of person examining contents: 6/4/21 sre

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT# L103173	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

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

Person Contacted: Date/Time: _____

Comments/ Resolution:

REVIEWED
By jchurch at 3:08 pm, 6/4/21

Project Manager Review: _____ Date: _____

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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

Section A Required Client Information:

Company:	Golder Associates
Address:	13515 Barrett Parkway Dr., Ste 260
	Ballwin, MO 63021
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder, Ryan Feldman, Brendan Talbert
Purchase Order No.:	COC #1
Project Name:	Ameren - Verification Sampling - SCL4A
Project Number:	153140603 . 0003D

Section C Invoice Information:

Attention:	
Company Name:	Golder Associates Inc
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	9285, line 1

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
	WP
	AR
	OT
	TS

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	Chloride	Fluoride	Sulfate	TDS	Calcium	Boron				Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
	Requested Analysis Filtered (Y/N)																		N	N	N	N	N	N	N	N	N			
1	S-UG-3	WT	G			6-2-21	1014		1	1										/						1-BP2U				
2	S-TMW-2	WT	G				0955		1	1										/	/									
3	S-SCL4A-FB-1	WT	G				1025		1	1										/	/									
4	S-SCL4A-DUP-1	WT	G				—		1	1										/	/									
5	S-SCL4A-MS-1	WT	G				1014		1	1										/	/									
6	S-SCL4A-MSD-1	WT	G				1014		1	1										/	/									
7		WT	G																											
8		WT	G																											
9		WT	G																											
10		WT	G																											
11		WT	G																											
12		WT	G																											

60571261
Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Brendan Talbert / Golder	6-3-21	1345	Angela M	6/3	1400				
		6/3	1400	SGS Accutest Pace	6/4/21	0425	1.4	Y	Y	Y
							2.0	Y	Y	Y

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Brendan Talbert					
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY): 06/03/21				

*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.

MEMORANDUM

DATE July 20, 2021 **Project No.** 153140603

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Katie Bartels **EMAIL Kbartels@golder.com**

DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCL4A – VERIFICATION SAMPLING - DATA PACKAGE 60371261

The following is a summary of instances where quality control criteria in the functional guidelines were not met and data qualification was required:

- None.

Golder Associates Inc.
13515 Barrett Parkway Drive, Suite 260,
Ballwin, Missouri, USA 63021

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QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Manager: J. Ingram
Project Name: Ameren- Sioux - SCL4A
Project Number: 153140603
Reviewer: K. Bartels
Validation Date: 07/20/2021

Laboratory: Pace Analytical Services - Kansas City
SDG #: 60371261
Analytical Method (type and no.): EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐ _____
Sample Names S-UG-3, S-TMW-2, S-SCL4A-FB-1, S-SCL4A-DUP-1

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			6/2/2021
b) Sampling team indicated?	x			BTT/SSS
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See Notes
g) Field parameters collected (note types)?	x			pH, S.Cond., Turb, Temp, DO, ORP
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies: _____

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	x			
b) Was the COC signed by both field and laboratory personnel?	x			
c) Were samples received in good condition?	x			

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	x			
b) Were hold times met for sample analysis?	x			
c) Were the correct preservatives used?	x			
d) Was the correct method used?	x			
e) Were appropriate reporting limits achieved?	x			
f) Were any sample dilutions noted?	x			See Notes
g) Were any matrix problems noted?		x		

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☐	☒	☐	
b) Were analytes detected in the field blank(s)?	☐	☒	☐	S-SCL4A-FB-1 @ S-UG-3
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	☒	☐	☐	
b) Were the proper analytes included in the LCS?	☒	☐	☐	
c) Was the LCS accuracy criteria met?	☒	☐	☐	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☒	☐	☐	S-SCL4A-DUP-1 @ S-TMW-2
b) Were field dup. precision criteria met (note RPD)?	☒	☐	☐	Max RPD: 0.3% [<20%]
c) Were lab duplicates analyzed (note original and duplicate samples)?	☒	☐	☐	
d) Were lab dup. precision criteria met (note RPD)?	☒	☐	☐	Max RPD: 2% [<15%]

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	☐	☒	☐	
b) Was the %D within control limits?	☐	☐	☒	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☒	☐	☐	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☒	
b) Was MSD accuracy criteria met?	☒	☐	☐	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☒	
c) Were MS/MSD precision criteria met?	☒	☐	☐	

Comments/Notes:

Sulfate diluted in samples -001, -002, and -004, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason

Signature: _____ _____ Date: 07/20/2021

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

December 28, 2021

Jeffrey Ingram
Golder Associates
701 Emerson Road, Suite 250
Saint Louis, MO 63141

RE: Project: AMEREN SCL4A
Pace Project No.: 60385861

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on November 10, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Indianapolis
- Pace Analytical Services - Kansas City
- Pace Analytical Services - Greensburg

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

Sincerely,

Jamie Church
jamie.church@pacelabs.com
314-838-7223
Project Manager

Enclosures

cc: Ryan Feldmann, Golder
Mark Haddock, Golder Associates
Eric Schneider, Golder Associates
Brendan Talbert, Golder Associates

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: AMEREN SCL4A
Pace Project No.: 60385861

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services Indianapolis
7726 Moller Road, Indianapolis, IN 46268
Illinois Accreditation #: 200074
Indiana Drinking Water Laboratory #: C-49-06
Kansas/TNI Certification #: E-10177
Kentucky UST Agency Interest #: 80226
Kentucky WW Laboratory ID #: 98019
Michigan Drinking Water Laboratory #9050
Ohio VAP Certified Laboratory #: CL0065
Oklahoma Laboratory #: 9204
Texas Certification #: T104704355
Wisconsin Laboratory #: 999788130
USDA Soil Permit #: P330-19-00257

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 2000302021-3
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: AMEREN SCL4A
Pace Project No.: 60385861

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60385861001	**S-TMW-1**	Water	11/09/21 10:30	11/10/21 05:17
60385861002	**S-TMW-2**	Water	11/09/21 12:00	11/10/21 05:17
60385861003	**S-TMW-3**	Water	11/09/21 13:35	11/10/21 05:17
60385861004	**S-SCL4A-DUP-1**	Water	11/09/21 00:00	11/10/21 05:17
60385861005	**S-SCL4A-FB-1**	Water	11/09/21 13:50	11/10/21 05:17
60385860001	**S-BMW-1S**	Water	11/08/21 14:41	11/10/21 05:17
60385860002	**S-BMW-3S**	Water	11/08/21 15:15	11/10/21 05:17
60385860009	**S-UG-3**	Water	11/09/21 10:20	11/10/21 05:17

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SAMPLE ANALYTE COUNT

Project: AMEREN SCL4A
Pace Project No.: 60385861

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60385861001	**S-TMW-1**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SWJ	1	PASI-I
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60385861002	**S-TMW-2**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SWJ	1	PASI-I
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60385861003	**S-TMW-3**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SWJ	1	PASI-I
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60385861004	**S-SCL4A-DUP-1**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SWJ	1	PASI-I
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60385861005	**S-SCL4A-FB-1**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SWJ	1	PASI-I
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60385860001	**S-BMW-1S**	EPA 200.7	MA1	7	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2320B	SWJ	1	PASI-I
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	MAW	3	PASI-K
60385860002	**S-BMW-3S**	EPA 200.7	MA1	7	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2320B	SWJ	1	PASI-I
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	MAW	3	PASI-K
60385860009	**S-UG-3**	EPA 200.7	MA1	7	PASI-K
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2320B	SWJ	1	PASI-I
		SM 2540C	BLA	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN SCL4A
Pace Project No.: 60385861

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 300.0	MAW	3	PASI-K

PASI-I = Pace Analytical Services - Indianapolis
PASI-K = Pace Analytical Services - Kansas City
PASI-PA = Pace Analytical Services - Greensburg

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ANALYTICAL RESULTS

Project: AMEREN SCL4A
Pace Project No.: 60385861

Sample: S-TMW-1 **Lab ID: 60385861001** Collected: 11/09/21 10:30 Received: 11/10/21 05:17 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**69.8J**	ug/L	100	8.6	1	11/19/21 15:00	11/23/21 16:36	7440-42-8	
Calcium	**111000**	ug/L	1000	377	5	11/19/21 15:00	11/24/21 13:35	7440-70-2	
Iron	**33.5J**	ug/L	50.0	21.4	1	11/19/21 15:00	11/23/21 16:36	7439-89-6	
Magnesium	**19100**	ug/L	50.0	31.4	1	11/19/21 15:00	11/23/21 16:36	7439-95-4	
Manganese	**260**	ug/L	5.0	0.74	1	11/19/21 15:00	11/23/21 16:36	7439-96-5	
Potassium	**5490**	ug/L	500	146	1	11/19/21 15:00	11/23/21 16:36	7440-09-7	
Sodium	**3050**	ug/L	500	254	1	11/19/21 15:00	11/23/21 16:36	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Indianapolis								
Alkalinity, Total as CaCO3	**286**	mg/L	2.0	2.0	1		11/16/21 11:33		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**390**	mg/L	5.0	5.0	1		11/16/21 09:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**1.9**	mg/L	1.0	0.39	1		11/18/21 20:03	16887-00-6	B
Fluoride	**0.46**	mg/L	0.20	0.086	1		11/18/21 20:03	16984-48-8	D6
Sulfate	**41.5**	mg/L	5.0	2.1	5		11/20/21 17:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCL4A
Pace Project No.: 60385861

Sample: S-TMW-2 **Lab ID: 60385861002** Collected: 11/09/21 12:00 Received: 11/10/21 05:17 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**86.9J**	ug/L	100	8.6	1	11/19/21 15:00	11/23/21 16:46	7440-42-8	
Calcium	**115000**	ug/L	1000	377	5	11/19/21 15:00	11/24/21 13:41	7440-70-2	
Iron	**1270**	ug/L	50.0	21.4	1	11/19/21 15:00	11/23/21 16:46	7439-89-6	
Magnesium	**20300**	ug/L	50.0	31.4	1	11/19/21 15:00	11/23/21 16:46	7439-95-4	
Manganese	**503**	ug/L	5.0	0.74	1	11/19/21 15:00	11/23/21 16:46	7439-96-5	
Potassium	**5070**	ug/L	500	146	1	11/19/21 15:00	11/23/21 16:46	7440-09-7	
Sodium	**3630**	ug/L	500	254	1	11/19/21 15:00	11/23/21 16:46	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Indianapolis								
Alkalinity, Total as CaCO3	**309**	mg/L	2.0	2.0	1		11/16/21 11:33		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**423**	mg/L	5.0	5.0	1		11/16/21 09:55		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**1.8**	mg/L	1.0	0.39	1		11/17/21 20:55	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	0.086	1		11/17/21 20:55	16984-48-8	
Sulfate	**46.0**	mg/L	5.0	2.1	5		11/17/21 21:50	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCL4A
Pace Project No.: 60385861

Sample: S-TMW-3 **Lab ID: 60385861003** Collected: 11/09/21 13:35 Received: 11/10/21 05:17 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**96.5J**	ug/L	100	8.6	1	11/19/21 15:00	11/23/21 16:48	7440-42-8	
Calcium	**126000**	ug/L	1000	377	5	11/19/21 15:00	11/24/21 13:43	7440-70-2	
Iron	**1710**	ug/L	50.0	21.4	1	11/19/21 15:00	11/23/21 16:48	7439-89-6	
Magnesium	**22600**	ug/L	50.0	31.4	1	11/19/21 15:00	11/23/21 16:48	7439-95-4	
Manganese	**780**	ug/L	5.0	0.74	1	11/19/21 15:00	11/23/21 16:48	7439-96-5	
Potassium	**6360**	ug/L	500	146	1	11/19/21 15:00	11/23/21 16:48	7440-09-7	
Sodium	**4610**	ug/L	500	254	1	11/19/21 15:00	11/23/21 16:48	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Indianapolis								
Alkalinity, Total as CaCO3	**369**	mg/L	2.0	2.0	1		11/16/21 11:33		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**449**	mg/L	10.0	10.0	1		11/16/21 09:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.6**	mg/L	1.0	0.39	1		11/17/21 22:45	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	0.086	1		11/17/21 22:45	16984-48-8	
Sulfate	**34.6**	mg/L	5.0	2.1	5		11/17/21 23:04	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCL4A
Pace Project No.: 60385861

Sample: S-SCL4A-DUP-1 **Lab ID: 60385861004** Collected: 11/09/21 00:00 Received: 11/10/21 05:17 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**85.8J**	ug/L	100	8.6	1	11/19/21 15:00	11/23/21 16:50	7440-42-8	
Calcium	**115000**	ug/L	1000	377	5	11/19/21 15:00	11/24/21 13:45	7440-70-2	
Iron	**1180**	ug/L	50.0	21.4	1	11/19/21 15:00	11/23/21 16:50	7439-89-6	
Magnesium	**20700**	ug/L	50.0	31.4	1	11/19/21 15:00	11/23/21 16:50	7439-95-4	
Manganese	**509**	ug/L	5.0	0.74	1	11/19/21 15:00	11/23/21 16:50	7439-96-5	
Potassium	**5160**	ug/L	500	146	1	11/19/21 15:00	11/23/21 16:50	7440-09-7	
Sodium	**3640**	ug/L	500	254	1	11/19/21 15:00	11/23/21 16:50	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Indianapolis								
Alkalinity, Total as CaCO3	**322**	mg/L	2.0	2.0	1		11/16/21 11:33		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**422**	mg/L	5.0	5.0	1		11/16/21 09:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**4.1**	mg/L	1.0	0.39	1		11/29/21 10:31	16887-00-6	B
Fluoride	**0.36**	mg/L	0.20	0.086	1		11/29/21 10:31	16984-48-8	
Sulfate	**49.1**	mg/L	5.0	2.1	5		11/27/21 12:35	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCL4A
Pace Project No.: 60385861

Sample: S-SCL4A-FB-1 **Lab ID: 60385861005** Collected: 11/09/21 13:50 Received: 11/10/21 05:17 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**<8.6**	ug/L	100	8.6	1	11/19/21 15:00	11/23/21 16:52	7440-42-8	
Calcium	**<75.4**	ug/L	200	75.4	1	11/19/21 15:00	11/23/21 16:52	7440-70-2	
Iron	**<21.4**	ug/L	50.0	21.4	1	11/19/21 15:00	11/23/21 16:52	7439-89-6	
Magnesium	**<31.4**	ug/L	50.0	31.4	1	11/19/21 15:00	11/23/21 16:52	7439-95-4	
Manganese	**<0.74**	ug/L	5.0	0.74	1	11/19/21 15:00	11/23/21 16:52	7439-96-5	
Potassium	**<146**	ug/L	500	146	1	11/19/21 15:00	11/23/21 16:52	7440-09-7	
Sodium	**<254**	ug/L	500	254	1	11/19/21 15:00	11/23/21 16:52	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Indianapolis								
Alkalinity, Total as CaCO3	**2.2**	mg/L	2.0	2.0	1		11/16/21 11:33		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		11/16/21 09:57		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**0.55J**	mg/L	1.0	0.39	1		11/20/21 16:22	16887-00-6	
Fluoride	**<0.086**	mg/L	0.20	0.086	1		11/20/21 16:22	16984-48-8	
Sulfate	**<0.42**	mg/L	1.0	0.42	1		11/20/21 16:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCL4A
Pace Project No.: 60385861

Sample: S-BMW-1S **Lab ID: 60385860001** Collected: 11/08/21 14:41 Received: 11/10/21 05:17 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**66.9J**	ug/L	100	8.6	1	12/03/21 10:02	12/07/21 18:12	7440-42-8	
Calcium	**160000**	ug/L	2000	754	10	12/03/21 10:02	12/08/21 12:34	7440-70-2	
Iron	**<21.4**	ug/L	50.0	21.4	1	12/03/21 10:02	12/07/21 18:12	7439-89-6	
Magnesium	**29800**	ug/L	50.0	31.4	1	12/03/21 10:02	12/07/21 18:12	7439-95-4	
Manganese	**895**	ug/L	5.0	0.74	1	12/03/21 10:02	12/07/21 18:12	7439-96-5	
Potassium	**470J**	ug/L	500	146	1	12/03/21 10:02	12/07/21 18:12	7440-09-7	
Sodium	**4840**	ug/L	500	254	1	12/03/21 10:02	12/07/21 18:12	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Indianapolis								
Alkalinity, Total as CaCO3	**426**	mg/L	2.0	2.0	1		11/16/21 11:33		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**534**	mg/L	10.0	10.0	1		11/15/21 09:45		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**7.4**	mg/L	1.0	0.39	1		11/22/21 10:15	16887-00-6	
Fluoride	**<0.086**	mg/L	0.20	0.086	1		11/22/21 10:15	16984-48-8	
Sulfate	**31.8**	mg/L	5.0	2.1	5		11/22/21 10:27	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCL4A
Pace Project No.: 60385861

Sample: S-BMW-3S **Lab ID: 60385860002** Collected: 11/08/21 15:15 Received: 11/10/21 05:17 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**67.8J**	ug/L	100	8.6	1	12/03/21 10:02	12/07/21 18:14	7440-42-8	
Calcium	**137000**	ug/L	2000	754	10	12/03/21 10:02	12/08/21 12:36	7440-70-2	
Iron	**56.3**	ug/L	50.0	21.4	1	12/03/21 10:02	12/07/21 18:14	7439-89-6	
Magnesium	**23500**	ug/L	50.0	31.4	1	12/03/21 10:02	12/07/21 18:14	7439-95-4	
Manganese	**364**	ug/L	5.0	0.74	1	12/03/21 10:02	12/07/21 18:14	7439-96-5	
Potassium	**533**	ug/L	500	146	1	12/03/21 10:02	12/07/21 18:14	7440-09-7	
Sodium	**5710**	ug/L	500	254	1	12/03/21 10:02	12/07/21 18:14	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Indianapolis								
Alkalinity, Total as CaCO3	**356**	mg/L	2.0	2.0	1		11/16/21 11:33		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**461**	mg/L	10.0	10.0	1		11/15/21 09:45		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**12.0**	mg/L	1.0	0.39	1		11/22/21 10:38	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	0.086	1		11/22/21 10:38	16984-48-8	
Sulfate	**31.2**	mg/L	5.0	2.1	5		11/22/21 10:50	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCL4A
Pace Project No.: 60385861

Sample: S-UG-3 **Lab ID: 60385860009** Collected: 11/09/21 10:20 Received: 11/10/21 05:17 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**210**	ug/L	100	8.6	1	12/03/21 10:02	12/07/21 18:35	7440-42-8	
Calcium	**126000**	ug/L	2000	754	10	12/03/21 10:02	12/08/21 12:48	7440-70-2	
Iron	**<21.4**	ug/L	50.0	21.4	1	12/03/21 10:02	12/07/21 18:35	7439-89-6	
Magnesium	**24000**	ug/L	50.0	31.4	1	12/03/21 10:02	12/07/21 18:35	7439-95-4	
Manganese	**614**	ug/L	5.0	0.74	1	12/03/21 10:02	12/07/21 18:35	7439-96-5	
Potassium	**5570**	ug/L	500	146	1	12/03/21 10:02	12/07/21 18:35	7440-09-7	
Sodium	**24500**	ug/L	500	254	1	12/03/21 10:02	12/07/21 18:35	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Indianapolis								
Alkalinity, Total as CaCO3	**328**	mg/L	2.0	2.0	1		11/16/21 11:33		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**519**	mg/L	10.0	10.0	1		11/16/21 09:55		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**24.5**	mg/L	2.0	0.78	2		11/23/21 18:00	16887-00-6	
Fluoride	**0.38**	mg/L	0.20	0.086	1		11/23/21 17:48	16984-48-8	
Sulfate	**66.0**	mg/L	10.0	4.2	10		11/22/21 17:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

QC Batch: 757476
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60385861001, 60385861002, 60385861003, 60385861004, 60385861005

METHOD BLANK: 3031144 Matrix: Water
Associated Lab Samples: 60385861001, 60385861002, 60385861003, 60385861004, 60385861005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<8.6	100	8.6	11/23/21 16:31	
Calcium	ug/L	<75.4	200	75.4	11/23/21 16:31	
Iron	ug/L	<21.4	50.0	21.4	11/23/21 16:31	
Magnesium	ug/L	<31.4	50.0	31.4	11/23/21 16:31	
Manganese	ug/L	<0.74	5.0	0.74	11/23/21 16:31	
Potassium	ug/L	<146	500	146	11/23/21 16:31	
Sodium	ug/L	<254	500	254	11/23/21 16:31	

LABORATORY CONTROL SAMPLE: 3031145

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	968	97	85-115	
Calcium	ug/L	10000	9780	98	85-115	
Iron	ug/L	10000	9960	100	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Manganese	ug/L	1000	981	98	85-115	
Potassium	ug/L	10000	10000	100	85-115	
Sodium	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3031146 3031147

Parameter	Units	60385861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	69.8J	1000	1000	1040	1060	97	99	70-130	2	20	
Calcium	ug/L	111000	10000	10000	118000	123000	77	128	70-130	4	20	
Iron	ug/L	33.5J	10000	10000	9840	9920	98	99	70-130	1	20	
Magnesium	ug/L	19100	10000	10000	26600	27200	76	81	70-130	2	20	
Manganese	ug/L	260	1000	1000	1210	1230	95	97	70-130	1	20	
Potassium	ug/L	5490	10000	10000	15500	16000	100	105	70-130	3	20	
Sodium	ug/L	3050	10000	10000	13000	13400	100	104	70-130	3	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

QC Batch: 759536
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60385860001, 60385860002, 60385860009

METHOD BLANK: 3038952 Matrix: Water
Associated Lab Samples: 60385860001, 60385860002, 60385860009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<8.6	100	8.6	12/07/21 18:04	
Calcium	ug/L	<75.4	200	75.4	12/07/21 18:04	
Iron	ug/L	<21.4	50.0	21.4	12/07/21 18:04	
Magnesium	ug/L	<31.4	50.0	31.4	12/07/21 18:04	
Manganese	ug/L	<0.74	5.0	0.74	12/07/21 18:04	
Potassium	ug/L	<146	500	146	12/07/21 18:04	
Sodium	ug/L	<254	500	254	12/07/21 18:04	

LABORATORY CONTROL SAMPLE: 3038953

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1000	100	85-115	
Calcium	ug/L	10000	9980	100	85-115	
Iron	ug/L	10000	10000	100	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Manganese	ug/L	1000	1000	100	85-115	
Potassium	ug/L	10000	10000	100	85-115	
Sodium	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3038956 3038957

Parameter	Units	60385860004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	22500	1000	1000	25100	24300	259	181	70-130	3	20	M1
Calcium	ug/L	291000	10000	10000	304000	303000	131	123	70-130	0	20	M1
Iron	ug/L	43.0J	10000	10000	10500	10300	105	103	70-130	2	20	
Magnesium	ug/L	71300	10000	10000	84000	82600	127	113	70-130	2	20	
Manganese	ug/L	509	1000	1000	1590	1550	108	104	70-130	3	20	
Potassium	ug/L	4790	10000	10000	15800	15300	110	105	70-130	3	20	
Sodium	ug/L	97500	10000	10000	115000	111000	170	130	70-130	4	20	M1

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

QC Batch: 650630
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Indianapolis
Associated Lab Samples: 60385860001, 60385860002, 60385860009, 60385861001, 60385861002, 60385861003, 60385861004, 60385861005

METHOD BLANK: 2998639 Matrix: Water
Associated Lab Samples: 60385860001, 60385860002, 60385860009, 60385861001, 60385861002, 60385861003, 60385861004, 60385861005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<2.0	2.0	2.0	11/16/21 11:33	

LABORATORY CONTROL SAMPLE: 2998640

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	50	48.8	98	90-110	

SAMPLE DUPLICATE: 2998641

Parameter	Units	60385860003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	310	316	2	20	

SAMPLE DUPLICATE: 2998642

Parameter	Units	60385860004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	342	357	4	20	

SAMPLE DUPLICATE: 2998643

Parameter	Units	60385861001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	286	298	4	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

QC Batch: 756220
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60385860001, 60385860002

METHOD BLANK: 3026260 Matrix: Water
Associated Lab Samples: 60385860001, 60385860002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/15/21 09:44	

LABORATORY CONTROL SAMPLE: 3026261

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	981	98	80-120	

SAMPLE DUPLICATE: 3026262

Parameter	Units	60385853001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	489	484	1	10	

SAMPLE DUPLICATE: 3026263

Parameter	Units	60385573006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	371	349	6	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

QC Batch: 756566
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60385860009, 60385861002, 60385861003, 60385861004

METHOD BLANK: 3027452 Matrix: Water
Associated Lab Samples: 60385860009, 60385861002, 60385861003, 60385861004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/16/21 09:52	

LABORATORY CONTROL SAMPLE: 3027453

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	981	98	80-120	

SAMPLE DUPLICATE: 3027454

Parameter	Units	60385860003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1620	1630	0	10	

SAMPLE DUPLICATE: 3027455

Parameter	Units	60385860004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1570	1600	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

QC Batch: 756569
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60385861001, 60385861005

METHOD BLANK: 3027456 Matrix: Water
Associated Lab Samples: 60385861001, 60385861005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/16/21 09:56	

LABORATORY CONTROL SAMPLE: 3027457

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	989	99	80-120	

SAMPLE DUPLICATE: 3027458

Parameter	Units	60385861001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	390	384	2	10	

SAMPLE DUPLICATE: 3027459

Parameter	Units	60385866001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	461	474	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

QC Batch: 756748
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60385861002, 60385861003, 60385861005

METHOD BLANK: 3028317 Matrix: Water
Associated Lab Samples: 60385861002, 60385861003, 60385861005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.53J	1.0	0.39	11/17/21 19:42	
Fluoride	mg/L	<0.086	0.20	0.086	11/17/21 19:42	
Sulfate	mg/L	<0.42	1.0	0.42	11/17/21 19:42	

METHOD BLANK: 3032080 Matrix: Water
Associated Lab Samples: 60385861002, 60385861003, 60385861005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.54J	1.0	0.39	11/19/21 08:48	
Fluoride	mg/L	<0.086	0.20	0.086	11/19/21 08:48	
Sulfate	mg/L	<0.42	1.0	0.42	11/19/21 08:48	

METHOD BLANK: 3032296 Matrix: Water
Associated Lab Samples: 60385861002, 60385861003, 60385861005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.58J	1.0	0.39	11/20/21 09:52	
Fluoride	mg/L	<0.086	0.20	0.086	11/20/21 09:52	
Sulfate	mg/L	<0.42	1.0	0.42	11/20/21 09:52	

METHOD BLANK: 3033016 Matrix: Water
Associated Lab Samples: 60385861002, 60385861003, 60385861005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/21/21 13:18	
Fluoride	mg/L	<0.086	0.20	0.086	11/21/21 13:18	
Sulfate	mg/L	<0.42	1.0	0.42	11/21/21 13:18	

METHOD BLANK: 3035242 Matrix: Water
Associated Lab Samples: 60385861002, 60385861003, 60385861005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/24/21 07:22	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

METHOD BLANK: 3035242 Matrix: Water
Associated Lab Samples: 60385861002, 60385861003, 60385861005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.086	0.20	0.086	11/24/21 07:22	
Sulfate	mg/L	<0.42	1.0	0.42	11/24/21 07:22	

LABORATORY CONTROL SAMPLE: 3028318

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.7	106	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

LABORATORY CONTROL SAMPLE: 3032081

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.7	108	90-110	
Sulfate	mg/L	5	5.2	103	90-110	

LABORATORY CONTROL SAMPLE: 3032297

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	104	90-110	
Fluoride	mg/L	2.5	2.7	107	90-110	
Sulfate	mg/L	5	5.4	108	90-110	

LABORATORY CONTROL SAMPLE: 3033017

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 3035243

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3028319 3028320

Parameter	Units	60385861002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.8	5	5	6.1	6.2	85	87	80-120	2	15	
Fluoride	mg/L	0.36	2.5	2.5	2.8	2.9	99	103	80-120	3	15	
Sulfate	mg/L	46.0	25	25	71.5	70.9	102	100	80-120	1	15	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

QC Batch: 756749
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60385861001

METHOD BLANK: 3028333 Matrix: Water
Associated Lab Samples: 60385861001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.62J	1.0	0.39	11/18/21 19:27	
Fluoride	mg/L	<0.086	0.20	0.086	11/18/21 19:27	
Sulfate	mg/L	<0.42	1.0	0.42	11/18/21 19:27	

METHOD BLANK: 3032298 Matrix: Water
Associated Lab Samples: 60385861001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.55J	1.0	0.39	11/20/21 15:11	
Fluoride	mg/L	<0.086	0.20	0.086	11/20/21 15:11	
Sulfate	mg/L	<0.42	1.0	0.42	11/20/21 15:11	

METHOD BLANK: 3033018 Matrix: Water
Associated Lab Samples: 60385861001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/19/21 06:44	
Fluoride	mg/L	<0.086	0.20	0.086	11/19/21 06:44	
Sulfate	mg/L	<0.42	1.0	0.42	11/19/21 06:44	

METHOD BLANK: 3035246 Matrix: Water
Associated Lab Samples: 60385861001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/24/21 07:22	
Fluoride	mg/L	<0.086	0.20	0.086	11/24/21 07:22	
Sulfate	mg/L	<0.42	1.0	0.42	11/24/21 07:22	

METHOD BLANK: 3035260 Matrix: Water
Associated Lab Samples: 60385861001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/21/21 13:18	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

METHOD BLANK: 3035260 Matrix: Water
Associated Lab Samples: 60385861001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.086	0.20	0.086	11/21/21 13:18	
Sulfate	mg/L	<0.42	1.0	0.42	11/21/21 13:18	

LABORATORY CONTROL SAMPLE: 3028334

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	101	90-110	
Fluoride	mg/L	2.5	2.7	110	90-110	
Sulfate	mg/L	5	5.5	110	90-110	

LABORATORY CONTROL SAMPLE: 3032299

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	104	90-110	
Sulfate	mg/L	5	5.4	108	90-110	

LABORATORY CONTROL SAMPLE: 3033019

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	90-110	
Fluoride	mg/L	2.5	2.7	109	90-110	
Sulfate	mg/L	5	5.2	105	90-110	

LABORATORY CONTROL SAMPLE: 3035247

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

LABORATORY CONTROL SAMPLE: 3035261

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3028335 3028336

Parameter	Units	60385861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.9	5	5	6.4	6.4	91	91	80-120	0	15	
Fluoride	mg/L	0.46	2.5	2.5	3.2	3.1	108	107	80-120	1	15	
Sulfate	mg/L	41.5	25	25	68.8	68.9	109	109	80-120	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3028338 3028339

Parameter	Units	60385866001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	33.7	25	25	59.8	60.3	104	106	80-120	1	15	
Fluoride	mg/L	0.23	2.5	2.5	3.0	2.8	110	104	80-120	5	15	
Sulfate	mg/L	41.7	25	25	68.1	68.4	105	107	80-120	1	15	

SAMPLE DUPLICATE: 3028337

Parameter	Units	60385861001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	1.9	1.8	2	15	
Fluoride	mg/L	0.46	0.39	18	15	D6
Sulfate	mg/L	41.5	41.7	0	15	

SAMPLE DUPLICATE: 3028340

Parameter	Units	60385866001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	33.7	33.2	2	15	
Fluoride	mg/L	0.23	0.24	4	15	
Sulfate	mg/L	41.7	42.4	2	15	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

QC Batch: 757720
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60385860001, 60385860002, 60385860009

METHOD BLANK: 3032270 Matrix: Water
Associated Lab Samples: 60385860001, 60385860002, 60385860009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/22/21 07:09	
Fluoride	mg/L	<0.086	0.20	0.086	11/22/21 07:09	
Sulfate	mg/L	<0.42	1.0	0.42	11/22/21 07:09	

METHOD BLANK: 3035149 Matrix: Water
Associated Lab Samples: 60385860001, 60385860002, 60385860009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.69J	1.0	0.39	11/23/21 16:29	
Fluoride	mg/L	<0.086	0.20	0.086	11/23/21 16:29	
Sulfate	mg/L	<0.42	1.0	0.42	11/23/21 16:29	

METHOD BLANK: 3035264 Matrix: Water
Associated Lab Samples: 60385860001, 60385860002, 60385860009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/24/21 08:56	
Fluoride	mg/L	<0.086	0.20	0.086	11/24/21 08:56	
Sulfate	mg/L	<0.42	1.0	0.42	11/24/21 08:56	

LABORATORY CONTROL SAMPLE: 3032271

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.7	109	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

LABORATORY CONTROL SAMPLE: 3035150

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	90-110	
Fluoride	mg/L	2.5	2.6	106	90-110	
Sulfate	mg/L	5	5.2	103	90-110	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

LABORATORY CONTROL SAMPLE: 3035265

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	90-110	
Fluoride	mg/L	2.5	2.7	109	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3032272 3032273

Parameter	Units	60385860003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	21.8	25	25	45.8	46.3	96	98	80-120	1	15	
Fluoride	mg/L	0.55	2.5	2.5	3.0	3.0	97	99	80-120	1	15	
Sulfate	mg/L	835	500	500	1440	1410	121	116	80-120	2	15	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3032274 3032275

Parameter	Units	60385860004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.3	5	5	8.6	7.5	107	86	80-120	13	15	
Fluoride	mg/L	<0.086	2.5	2.5	2.9	2.9	116	115	80-120	1	15	
Sulfate	mg/L	809	500	500	1330	1350	104	108	80-120	2	15	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SCL4A
Pace Project No.: 60385861

QC Batch: 758485
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60385861004

METHOD BLANK: 3035488 Matrix: Water
Associated Lab Samples: 60385861004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.71J	1.0	0.39	11/27/21 09:35	
Fluoride	mg/L	<0.086	0.20	0.086	11/27/21 09:35	
Sulfate	mg/L	<0.42	1.0	0.42	11/27/21 09:35	

METHOD BLANK: 3036469 Matrix: Water
Associated Lab Samples: 60385861004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/29/21 09:05	
Fluoride	mg/L	<0.086	0.20	0.086	11/29/21 09:05	
Sulfate	mg/L	<0.42	1.0	0.42	11/29/21 09:05	

LABORATORY CONTROL SAMPLE: 3035489

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Fluoride	mg/L	2.5	2.7	107	90-110	
Sulfate	mg/L	5	4.7	94	90-110	

LABORATORY CONTROL SAMPLE: 3036470

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	99	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3035490 3035491

Parameter	Units	60386062007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.0	5	5	9.2	9.0	143	140	80-120	2	15	M1
Fluoride	mg/L	0.56	2.5	2.5	4.7	4.7	167	165	80-120	2	15	M1
Sulfate	mg/L	177	250	500	451	1070	109	179	80-120	81	15	M1,R1

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: AMEREN SCL4A
Pace Project No.: 60385861

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 - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

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.

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SCL4A
Pace Project No.: 60385861

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60385860001	**S-BMW-1S**	EPA 200.7	759536	EPA 200.7	759739
60385860002	**S-BMW-3S**	EPA 200.7	759536	EPA 200.7	759739
60385860009	**S-UG-3**	EPA 200.7	759536	EPA 200.7	759739
60385861001	**S-TMW-1**	EPA 200.7	757476	EPA 200.7	757597
60385861002	**S-TMW-2**	EPA 200.7	757476	EPA 200.7	757597
60385861003	**S-TMW-3**	EPA 200.7	757476	EPA 200.7	757597
60385861004	**S-SCL4A-DUP-1**	EPA 200.7	757476	EPA 200.7	757597
60385861005	**S-SCL4A-FB-1**	EPA 200.7	757476	EPA 200.7	757597
60385860001	**S-BMW-1S**	EPA 903.1	475137		
60385860002	**S-BMW-3S**	EPA 903.1	475137		
60385860009	**S-UG-3**	EPA 903.1	475137		
60385860001	**S-BMW-1S**	EPA 904.0	475138		
60385860002	**S-BMW-3S**	EPA 904.0	475138		
60385860009	**S-UG-3**	EPA 904.0	475138		
60385860001	**S-BMW-1S**	SM 2320B	650630		
60385860002	**S-BMW-3S**	SM 2320B	650630		
60385860009	**S-UG-3**	SM 2320B	650630		
60385861001	**S-TMW-1**	SM 2320B	650630		
60385861002	**S-TMW-2**	SM 2320B	650630		
60385861003	**S-TMW-3**	SM 2320B	650630		
60385861004	**S-SCL4A-DUP-1**	SM 2320B	650630		
60385861005	**S-SCL4A-FB-1**	SM 2320B	650630		
60385860001	**S-BMW-1S**	SM 2540C	756220		
60385860002	**S-BMW-3S**	SM 2540C	756220		
60385860009	**S-UG-3**	SM 2540C	756566		
60385861001	**S-TMW-1**	SM 2540C	756569		
60385861002	**S-TMW-2**	SM 2540C	756566		
60385861003	**S-TMW-3**	SM 2540C	756566		
60385861004	**S-SCL4A-DUP-1**	SM 2540C	756566		
60385861005	**S-SCL4A-FB-1**	SM 2540C	756569		
60385860001	**S-BMW-1S**	EPA 300.0	757720		
60385860002	**S-BMW-3S**	EPA 300.0	757720		
60385860009	**S-UG-3**	EPA 300.0	757720		
60385861001	**S-TMW-1**	EPA 300.0	756749		
60385861002	**S-TMW-2**	EPA 300.0	756748		
60385861003	**S-TMW-3**	EPA 300.0	756748		
60385861004	**S-SCL4A-DUP-1**	EPA 300.0	758485		
60385861005	**S-SCL4A-FB-1**	EPA 300.0	756748		

REPORT OF LABORATORY ANALYSIS

Pace Analytical® www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60385861

60385861

Client Name: Golder Assoc.

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

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

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

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑ Zip

Thermometer Used: T240 **Type of Ice:** ~~Wet~~ Blue None

Cooler Temperature (°C): **As-read** 2.1, 3.3, 2.2 / 1.8, 4.3, 1.8 **Corr. Factor** -0.2 **Corrected** 1.9, 3.1, 2.0 / 1.6, 4.3, 1.6

Date and initials of person examining contents: CL 11/12

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	TDS exp 11/15
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT# 603173	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

REVIEWED
By jchurch at 2:37 pm, 11/12/21

Project Manager Review: _____ Date: _____

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Golder Associates	Report To:	Jeffrey Ingram	Attention:	
Address:	13515 Barrett Parkway Dr., Ste 260	Copy To:	Ryan Feldmann/Eric Schneider	Company Name:	
	Ballwin, MO 63021			Address:	
Email To:	jeffrey_ingram@golder.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	636-724-9191 Fax: 636-724-9323	Project Name:	Ameren SCL4A	Pace Project Manager:	Jamie Church
Requested Due Date/TAT:	Standard	Project Number:	153-140632.0003D (COC #11)	Pace Profile #:	9285

REGULATORY AGENCY

NPDES ☑ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MO

Requested Analysis Filtered (Y/N)

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
	WP
	AR
	OT
	TS

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride/Fluoride/Sulfate N	App III and Cat/An Metals N	Alkalinity N	TDS N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	S-TMW-1	WT	G			11-9-21	1030		2	1		1							/	/	/	/		60385861
2	S-TMW-2	WT	G				1200																	
3	S-TMW-3	WT	G				1335																	
4	S-UG-3	WT	G				1020																	
5	S-SCL4A-DUP-1	WT	G				—																	
6	S-SCL4A-FB-1	WT	G				1350																	
7	S-SCL4A-MS-1	WT	G				1030																	
8	S-SCL4A-MSD-1	WT	G				1030																	
9	S-BMW-1S	WT	G			11-8-21	1441																	
10	S-BMW-3S	WT	G			11-8-21	1515																	
11		WT	G																					
12		WT	G																					

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)
*EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B	Sierra Shields/Golder	11/9/21	1530	Angela Nuna	11/9	1535	1.9	Y	Y	Y
	Angela Nuna	11/9	1535				2.0	↓	↓	↓
							1.6	↓	↓	↓

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Sierra Shields

SIGNATURE of SAMPLER: Sierra Shields DATE Signed (MM/DD/YY): 11/9/21

*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.

MEMORANDUM

DATE January 11, 2022 **Project No.** 153140603

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Annie Muehlfarth **EMAIL AMuehlfarth@golder.com**

DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCL4A – DETECTION MONITORING - DATA PACKAGE 60385861

The following is a summary of instances where quality control criteria in the functional guidelines were not met and data qualification was required:

- When a compound was detected in a sample result between the MDL and the PQL the results were recorded at the detection value and qualified as estimates (J).
- When a compound was detected in a blank (i.e. method, field), and the blank comparison criterion was not met, associated sample results were qualified as estimates (J) or non-detects (U).
- When duplicate criterion was not met, the associated sample result was qualified as an estimate (J for detects, UJ for non-detects).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Manager: J. Ingram
Project Name: Ameren- Sioux - SCL4A
Project Number: 153140603
Reviewer: A. Muehlfarth
Validation Date: 1/11/2022

Laboratory: Pace Analytical Services - Kansas City
SDG #: 60385861
Analytical Method (type and no.): EPA 200.7 (Total Metals); SM2320B (Alkalinity); SM2540C (TDS); EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names S-TMW-1, S-TMW-2, S-TMW-3, S-SCL4A-DUP-1, S-SCL4A-FB-1, S-BMW-1S, S-BMW-3S, S-UG-3

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			11/8/2021 - 11/9/2021
b) Sampling team indicated?	x			SSS/ETF
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See Notes
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies:

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	x			
b) Was the COC signed by both field and laboratory personnel?	x			
c) Were samples received in good condition?	x			

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	x			
b) Were hold times met for sample analysis?	x			
c) Were the correct preservatives used?	x			
d) Was the correct method used?	x			
e) Were appropriate reporting limits achieved?	x			
f) Were any sample dilutions noted?	x			See Notes
g) Were any matrix problems noted?	x			See Notes

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	x			See Notes
b) Were analytes detected in the field blank(s)?	x			See Notes
c) Were analytes detected in the equipment blank(s)?			x	
d) Were analytes detected in the trip blank(s)?			x	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	x			
b) Were the proper analytes included in the LCS?	x			
c) Was the LCS accuracy criteria met?	x			

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			See Notes
b) Were field dup. precision criteria met (note RPD)?		x		See Notes
c) Were lab duplicates analyzed (note original and duplicate samples)?	x			
d) Were lab dup. precision criteria met (note RPD)?		x		See Notes

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?			x	
b) Was the %D within control limits?			x	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?		x		See Notes
Recovery could not be calculated since sample contained high concentration of analyte?			x	
b) Was MSD accuracy criteria met?		x		See Notes
Recovery could not be calculated since sample contained high concentration of analyte?			x	
c) Were MS/MSD precision criteria met?		x		See Notes

Comments/Notes:

Calcium, sulfate, and chloride analyzed at a dilution in multiple samples. No qualification necessary.

Blanks:

3028317/3032080/3032296: Chloride (0.53J/0.54J/0.58J). Associated with samples -61002, -61003, and -61005.

Results >RL but <10x blank qualified as estimates. Results <RL reported at RL and qualified as estimate.

3028333/3032298: Chloride (0.62J/0.55J). Associated with samples -61001. Result >RL but <10x blank qualified as estimate.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

3035149: Chloride (0.69J). Associated with samples -60001, -60002, -60009. Results >RL and 10x blank, no qualification necessary.

3035488: Chloride (0.71J). Associated with sample -61004. Result >RL but <10x blank, qualified as estimate.

S-SCL4A-FB-1 @ S-TMW-3: Alkalinity (2.2), chloride (0.55J). Results >RL but <10x blank, qualified as estimate. Results >RL and 10x blank not qualified.

Duplicates:

S-SCL4A-DUP-1 @ S-TMW-2: RPD for chloride (78.0%) exceeds limit (20%).

Laboratory analyzed duplicates for alkalinity, TDS, and anions.

3028337: RPD for fluoride (18%) exceeds limit (15%). Associated with sample -61001.

MS/MSD:

3038956/3038957: MS % recovery limit high for calcium and sodium. MS/MSD % recovery high for boron. MS/MSD performed on unrelated sample, no qualification necessary.

3032272/3032273: MS % recovery high for sulfate. MS performed on unrelated sample, no qualification necessary.

3035490/3035491: MS/MSD % recovery high for chloride and fluoride. MSD % recovery high and RPD exceeds limit for sulfate. MS/MSD performed on unrelated sample, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-TMW-3	Chloride	2.6	J	Detected in MB, 10x blank > result > RL
S-TMW-1	"	1.9	J	"
S-SCL4A-FB-1	"	1.0	U	Detected in MB, RL > results > MDL
S-SCL4A-DUP-1	"	4.1	J	Detected in MB/FB, 10x blank > result > RL; dup RPD exceeds limit
S-TMW-2	"	1.8	J	Detected in MB, 10x blank > result > RL; dup RPD exceeds limit
S-TMW-1	Fluoride	0.46	J	Lab duplicate RPD exceeds limit

Signature: Ann Muehlfarth Date: 1/11/2022

APPENDIX B

Alternative Source Demonstration - April 2021 Sampling Event

GOLDER
MEMBER OF WSP

REPORT

SCL4A - Alternative Source Demonstration

Sioux Energy Center, St. Charles County, Missouri, USA

Submitted to:

Ameren Missouri

1901 Chouteau Avenue, St. Louis, MO, 63103

Submitted by:

Golder Associates Inc.

13515 Barrett Parkway Drive, Suite 260, Ballwin, Missouri, USA 63021

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153140603

November 19, 2021

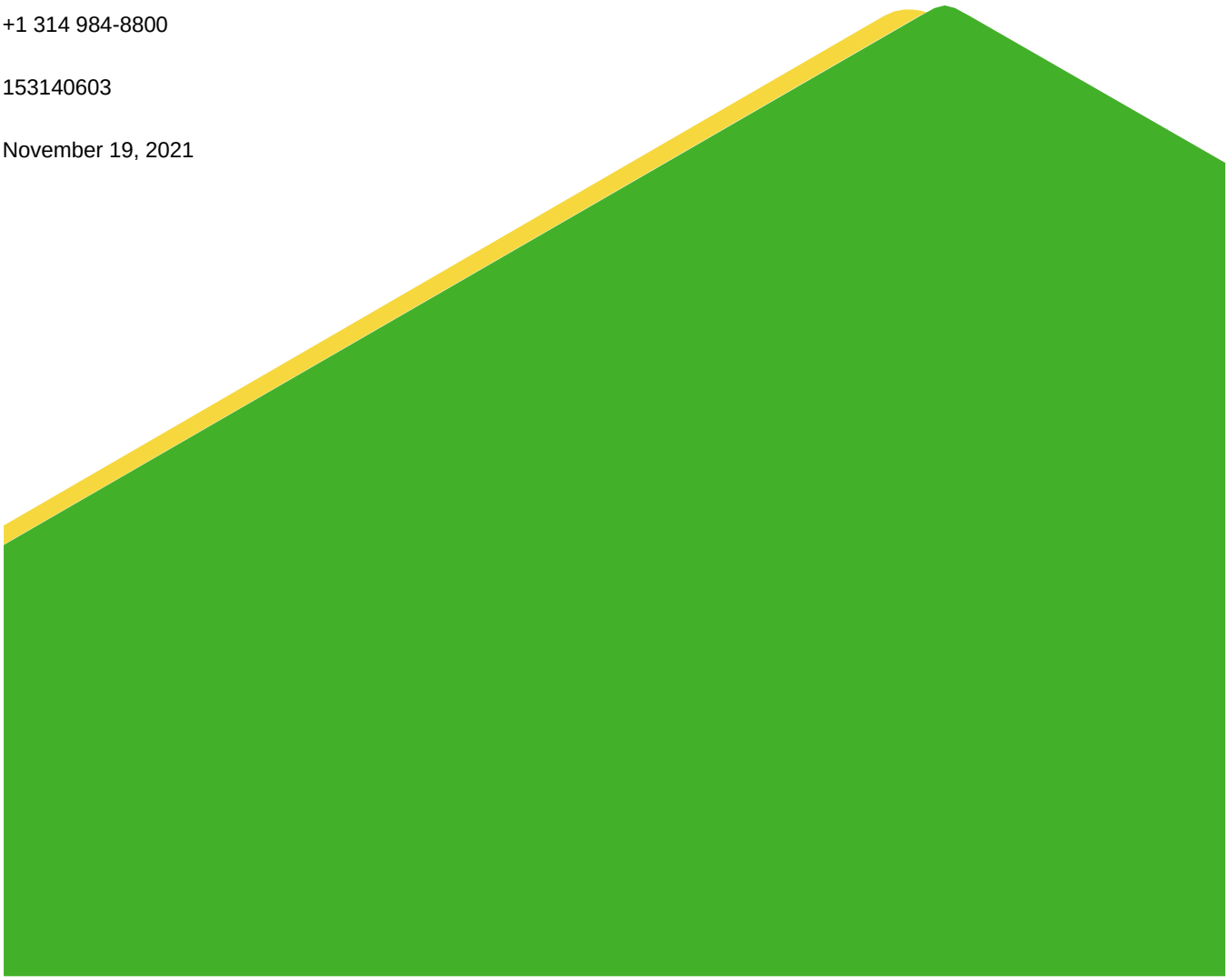

Table of Contents

1.0 CERTIFICATION STATEMENT

This *SCL4A – Alternative Source Demonstration, Sioux Energy Center, St. Charles County, Missouri, USA* has been prepared to comply with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule under the direction of a licensed professional engineer with Golder Associates Inc.

I hereby certify that this *SCL4A – Alternative Source Demonstration, Sioux Energy Center, St. Charles County, Missouri, USA* located at 8501 Missouri 94, West Alton, Missouri 63386 has been prepared to meet the requirements of 40 CFR §257.94(e)(2).

GOLDER ASSOCIATES INC.

_____

Mark Haddock, P.E., R.G.

Principal, Practice Leader

2.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (CCR Rule or The Rule), this SCL4A – Alternative Source Demonstration has been prepared to document an Alternative Source Demonstration (ASD) for Statistically Significant Increases (SSIs) identified for Ameren Missouri's (Ameren) Sioux Energy Center (SEC), Utility Waste Landfill (UWL) Cell 4A - SCL4A. This document satisfies the requirements of §257.94(e)(2), which allows the owner or operator to demonstrate that a source other than the CCR Unit has caused the SSIs and that the apparent SSIs were the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

3.0 SITE DESCRIPTION AND BACKGROUND

Ameren owns and operates the SEC in St. Charles County, Missouri, located approximately 12 miles west-northwest of the confluence of the Mississippi and Missouri Rivers. **Figure 1** depicts the site location and layout, including the location of the SCL4A. The SEC is approximately 1,025 acres and is located in the floodplain between the Mississippi and Missouri Rivers. The SEC is bounded to the north by wooded areas associated with the Mississippi River; to the south by a railroad; and to the east and west by agricultural fields.

3.1 Geological and Hydrogeological Setting

Hydrogeologically, the SCL4A lies between the Mississippi River to the north and the Missouri River to the south. Flow and deposition from these rivers have resulted in thick alluvial deposits which lie unconformably on top of bedrock. These alluvial deposits, which can range from approximately 100 to 130 feet thick, make up the uppermost aquifer called the alluvial aquifer. Overall, this aquifer is described as a fining upwards sequence of stratified sands and gravels with varying amounts of silts and clays. Drilling in the alluvial aquifer identified different sub-units, including floodplain deposits, natural levee deposits, and channel deposits along with volumetrically less important loess deposits. Grain sizes of these alluvial deposits are highly variable.

Beneath the alluvial aquifer lies the bedrock aquifer. Bedrock in this region includes Mississippian-aged rocks of the Meramecian Series. Formations include primarily limestone, dolomite, and shale and are comprised of the Salem Formation overlying the Warsaw Formation and the Burlington-Keokuk Formation.

3.2 Utility Waste Landfill Cell 4A – SCL4A

UWL Cell 4A is referred to by Ameren as the SCL4A, or "Landfill Cell 4A." The SCL4A is approximately 15 acres in size and is located south of the generating plant on the south side of Highway 94 (**Figure 1**). The CCR Unit manages CCR from the SEC including "fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels" (Gredell and Reitz & Jens, 2014). These wastes are managed using a dry disposal process and are moisture conditioned (30-40% moisture content) to minimize dust and facilitate disposal. The CCR waste is trucked across Highway 94 from the plant and disposed in the SCL4A.

The SCL4A was constructed with a composite liner system consisting of two feet of compacted clay soil with a hydraulic conductivity of less than 1 X 10^{-7} centimeters per second (cm/sec) overlain by a 60-mil HDPE

geomembrane liner. Information on the design of the UWL is available in the 2014 Proposed Construction Permit Modification, Construction Permit Number 0918301 (Gredell and Reitz & Jens, 2014).

A groundwater monitoring well network was installed in 2007 and 2008 in order to permit the UWL construction. This monitoring well network was approved by the Missouri Department of Natural Resources (MDNR) and consists of 16 monitoring wells ringing the current and proposed future extents of the UWL (**Figure 1**). These monitoring wells are installed in the uppermost portions of the alluvial aquifer, just below the seasonal low elevation for groundwater. Quarterly groundwater samples have been collected at UG-3 since June 2008 for the analysis of state required UWL parameters, and TMW-1, TMW-2, and TMW-3 have been sampled since May 2016.

The permit for the Sioux UWL was issued July 30, 2010 (permit #0918301) for the SCPC (Cell 1). Nine (9) sampling events were performed prior to July 30, 2010 and represent groundwater quality prior to CCR placement in the SCPC. The SCL4A was the second cell that was constructed at this UWL. The SCL4A construction was not completed until 2014 and no CCR was placed in the unit until after the final revisions to the Proposed Construction Permit Modification on August 16, 2014. The results from these pre-disposal monitoring events are used, in conjunction with other site information, in the ASD presented below.

3.3 CCR Rule Groundwater Monitoring

As required by the CCR Rule, the following were completed prior to the October 17, 2017 deadline; (1) a groundwater monitoring well system was installed and certified by a Professional Engineer, (2) a Statistical Method Certification was prepared and certified by a Professional Engineer, (3) a Groundwater Monitoring Plan (GMP) was prepared recording the design, installation, development, sampling procedures, as well as statistical methods, and placed in the owner's operating record, and (4) the required eight (8) baseline groundwater sampling events were completed for all Appendix III and Appendix IV parameters of the CCR Rule.

The groundwater monitoring system for the SCL4A consists of six (6) monitoring wells screened in the uppermost aquifer (alluvial aquifer) as shown on **Figure 1**. One (1) existing monitoring well (UG-3) was installed by Gredell Engineering Resources, Inc., in December 2007 as a part of the state UWL monitoring program. The remaining monitoring wells (TMW-1, TMW-2, TMW-3, BMW-1S, and BMW-3S) were installed by Golder in 2015 and 2016 for CCR Rule groundwater monitoring purposes. More information on the design and installation of the monitoring wells is provided in the SCL4A GMP and the SCL4A 2017 Annual Report.

Between May 2016 and June 2017, eight (8) baseline sampling events were completed for the SCL4A. After baseline sampling, the first Detection Monitoring event was completed in November 2017 and Detection Monitoring has continued on a semi-annual basis thereafter. Laboratory testing was performed for the following Appendix III constituents during Detection Monitoring:

- Boron
- Calcium
- Chloride
- pH
- Sulfate
- Total dissolved solids (TDS)

- Fluoride

In January 2018, background results from the eight (8) baseline sampling events were used to calculate statistical upper prediction limits (UPLs). These UPLs were then compared to the Detection Monitoring results from the November 2017 samples and subsequent semi-annual detection monitoring sampling events. If results from Detection Monitoring were higher than the calculated UPL, it was considered an initial exceedance, in which case a verification sample was then collected and tested in accordance with the SCL4A Statistical Analysis Plan. The following provide a summary of the detection monitoring results to date:

- In November 2017, there were no initial exceedances.
- In May 2018, three (3) initial exceedances were identified including chloride at UG-3; as well as sulfate and TDS at TMW-2. Verification sampling results confirmed all three (3) SSIs. All three (3) SSIs were determined to be from an alternate source and the ASD for the May 2018 sampling event can be found in the 2018 Annual Report for the SCL4A.
- In November 2018, one (1) initial exceedance was identified, sulfate at TMW-2. Verification sampling did not confirm the initial exceedance and no SSIs were identified for the November 2018 event.
- In May 2019, six (6) initial exceedances were identified including boron, calcium, chloride, and TDS at UG-3; as well as sulfate and TDS at TMW-2. Verification sampling results confirmed all six (6) SSIs. All six (6) SSIs were determined to be from an alternate source and the ASD for the May 2019 sampling event can be found in the 2019 Annual Report for the SCL4A.
- In November 2019, five (5) initial exceedances were identified including sulfate and TDS at UG-3; as well as chloride, sulfate, and TDS at TMW-2. Only the initial three (3) exceedances at TMW-2 were verified in the subsequent verification sampling event. All three (3) SSIs were determined to be from an alternative source, as described in the ASD for the November 2019 sampling event, dated June 5, 2020.
- In April 2020, three (3) initial exceedances were identified including fluoride at UG-3; as well as sulfate and TDS at TMW-2. Only fluoride at UG-3 was confirmed by verification sampling and this SSI was determined to be from an alternative source and is described in the ASD for the April 2020 sampling event, which can be found in the 2020 Annual report for the SCL4A.
- In November 2020, four (4) initial exceedances were identified including calcium and fluoride at TMW-1, TDS at TMW-2, and fluoride at TMW-3. Subsequent verification sampling did not confirm the initial exceedance and no SSIs were identified for the November 2020 event.
- In April 2021, three (3) initial exceedances were identified including fluoride at UG-3, fluoride at TMW-2, and sulfate at TMW-2. Only sulfate at TMW-2 was confirmed by verification sampling. The results from the April 2021 detection monitoring event are summarized in **Table 1**.

4.0 REVIEW OF THE STATISTICALLY SIGNIFICANT INCREASE

The SSI for sulfate occurred at monitoring well TMW-2. TMW-2 is screened in the upper portion of the alluvial aquifer just below the average seasonal low for groundwater. As shown in **Figure 1**, TMW-2 is located south of the SCL4A and Highway 94, and north of Dwiggins Road.

Based on Golder's review of the pre-disposal data (discussed in Section 3.2 above), as well as our comparison of those pre-disposal data with the results from the eight CCR-rule baseline events, it was concluded that the

groundwater at the SCL4A contained low-level pre-existing impacts from CCR that pre-dated SCL4A operation. As a result of these pre-existing impacts, the SCL4A statistical analysis plan uses intrawell upper prediction limits (UPL) to determine SSIs. Intrawell UPLs are calculated from historical data within a particular well, and not by pooling data from the background wells, such that individual limits are calculated for each constituent in each well in the monitoring program.

The intrawell UPL for sulfate at TMW-2 was 37.9 milligrams per liter (mg/L) based on the results from the initial eight (8) baseline sampling events that ranged from 30.0 to 35.5 mg/L, as summarized in **Table 2** and **Figure 2**. The results from this small dataset were normally distributed, and a calculated UPL was used. In August 2019, the baseline data set was expanded to include the next four (4) sampling events, and the UPL changed from 37.9 to 52.1 mg/L. During the April 2021 detection monitoring event, a concentration of 64.8 mg/L was reported for sulfate in TMW-2, which was confirmed in June by a verification result of 64.0 mg/L.

Table 2: Review of Statistically Significant Increase

Constituent	Well ID	UPL Based on Baseline Events	August 2019 Updated UPL	Baseline Sampling Event Range	Detection Monitoring Sampling Range (November 2017 - January 2021)	April 2021 Results	June 2021 Results
Sulfate (mg/L)	TMW-2	37.9	52.1	30.0-35.5	26.4-85.8	64.8	64.0

Notes:

1) mg/L – milligrams per liter.
2) UPL – upper prediction limit.
3) UPLs calculated using Sanitas™ software.
4) UWL – Utility Waste Landfill.

5.0 EVIDENCE OF SSI FROM ALTERNATIVE SOURCE

Several different lines of evidence indicate that the SSI at the SCL4A is not caused by a release from the SCL4A, but rather from an alternative source. The following section describes the different lines of evidence, listed below, that demonstrate this position.

- Documentation of pre-existing, low-level concentrations of CCR indicators in groundwater that pre-date the SCL4A operation, especially on the northern side of the SCL4A.
- Review of concentrations in nearby and background monitoring wells.
- Review of historical and current sulfate concentrations at TMW-2.
- Documentation of the construction of the SCL4A with a 60-mil geomembrane liner and a 2-foot thick clay barrier.

5.1 CCR Indicators

Several types of CCR byproducts are generated by coal-fired power plants. The different types of CCR typically display distinct geochemical signatures and indicator parameters. **Table 3** below describes the different types of CCRs and their typical indicator parameters (USEPA 2018, EPRI 2011, EPRI 2012, and EPRI 2017).

Table 3: Types of CCR and Typical Indicator Parameters

Type of CCR	Description of CCR (USEPA 2018)	Key Indicators (EPRI 2011, 2012, 2017)
Fly Ash	Fine grained, powdery material composed mostly of silica made from the burning of finely ground coal in the boiler.	■ Boron ■ Molybdenum ■ Lithium ■ Sulfate ■ Bromide ■ Potassium ■ Sodium ■ Fluoride
Boiler Slag / Bottom Ash	Molten bottom ash from the slag tap and cyclone type furnaces that turns into pellets that have a smooth glassy appearance after quenching with water.	
Flue Gas Desulfurization Material (FGD)	A material leftover from the process of reducing sulfur dioxide emissions from a coal-fired boiler that can be a wet sludge consisting of calcium sulfite or calcium sulfate or a dry powdered material that is a mixture of sulfites and sulfates.	■ Sulfate ■ Fluoride ■ Calcium ■ Boron ■ Bromide ■ Chloride

Notes:

1) Fly ash and boiler slag/bottom ash typically have the same indicator parameters.
2) Definitions from USEPA website, available at https://www.epa.gov/coalash/coal-ash-basics.
3) Key indicators from EPRI 2011, 2012, and 2017 as well as Gredell and Reitz & Jens, 2014.

As described above, the SCL4A has historically received fly ash. FGD type wastes at the SEC are managed at the SCPC, located to the west of the SCL4A.

5.2 Evaluation of SSI

5.2.1 Boron Concentrations

Boron is typically the key indicator for fly ash and boiler slag/bottom ash impacts because it is typically present in the leachate from these types of waste, is not a common anthropogenic contaminant, and is non-reactive and mobile in most hydrogeological environments (EPRI 2012). This non-reactive and mobile nature makes boron an early indicator of impacts from a CCR Unit. If groundwater was impacted by the SCL4A, current boron concentrations should be statistically elevated with respect to pre-CCR placement, background monitoring wells, and compared to those in the baseline sampling.

Figure 2 displays historical boron concentrations at TMW-2, as well as background wells BMW-1S and BMW-3S and nearby wells TMW-1 and TMW-3. If the SSI at TMW-2 was caused by impacts from the SCL4A, boron concentrations would be expected to increase as a first indicator of CCR influence on the groundwater. **Figure 2** demonstrates that current boron concentrations are similar to those from previous sampling events and are similar to background levels. This information displays that TMW-2 does not have boron impacts, and therefore, a source other than CCR is likely the cause of the SSI at TMW-2.

5.2.2 Sulfate Concentrations

Sulfate, much like boron, is a key indicator for potential CCR impacts because sulfate is highly mobile in most hydrogeological environments, except where conditions are strongly reducing. The groundwater around the SCL4A does not demonstrate strongly reducing conditions, such as negative oxidation reduction potential (ORP) and dissolved iron concentrations above 1 mg/L. No hydrogen sulfide odors have been reported at the SCL4A. Therefore, if the SSI was caused by impacts from the SCL4A, it would be expected that sulfate values would increase following placement of CCR. Given that boron concentrations are not indicative of CCR impacts, it follows that the elevated sulfate values in well TMW-2 are from an alternative source.

As displayed on **Figure 3**, during baseline sampling at TMW-2, sulfate ranged from 30.0 to 35.5 mg/L. During the subsequent sampling events sulfate concentrations at TMW-2 have ranged from 26.4 to 85.8 mg/L. The time series plot on **Figure 3** shows the high degree of variability in sulfate concentrations at TMW-2 since the onset of detection monitoring. This figure provides further evidence that the limited number of data points used to calculate the intrawell UPL for sulfate at TMW-2 do not accurately reflect the natural geochemical variability within the well. Two other compliance monitoring wells are located within 350 feet to the east and west of TMW-2 as displayed in **Figure 1**; TMW-1 (west) and TMW-3 (east). Sulfate concentrations in these monitoring wells ranged from 23.2 to 60.9 mg/L during the baseline sampling events, and UPLs for these monitoring wells are 50.29 mg/L at TMW-1 and 60.9 mg/L at TMW-3. Based on the sulfate concentration range of the nearby wells, the sulfate concentration in TMW-2 for April 2021 is within the range of historical concentrations for adjacent wells, which indicates that the SSI for sulfate in TMW-2 is likely the result of a limited baseline sampling period that did not capture the full range of natural geochemical variability within the shallow zone of the alluvial aquifer at TMW-3.

To further investigate the geochemical variability of sulfate in the area of the SCL4A, the historical data from the state UWL wells [located on the south side of the UWL, outside the zone of impact from the SCPA] were reviewed. These UWL wells (labeled “DG-xx”) were installed and sampled on multiple occasions prior to the receipt of CCR at the SCL4A. These DG-xx monitoring wells are screened at approximately the same depth as TMW-2 in the shallow zone of the alluvial aquifer. **Figure 4** displays a box and whisker plot of the natural variability of the sulfate concentrations within the alluvial aquifer prior to the receipt of CCR in the SCL4A for these wells. As shown on **Figure 4**, the recent results from TMW-2 are within range of concentrations for the DG-xx wells, which represent groundwater quality from a period that occurred prior to the receipt of CCR in SCL4A.

The lines of evidence listed above indicate that the higher sulfate concentration in TMW-2 in April 2021 is not the result of a release from the SCL4A, but instead can be attributed to variability in the alluvial aquifer combined with the limited dataset used for the calculation of the previous sulfate UPLs in TMW-2.

6.0 DEMONSTRATION THAT SSI WAS NOT CAUSED BY SCL4A IMPACT

Based on the information presented in Section 5.1.1, above, the SSI reported for the April 2021 monitoring event at TMW-2 is not a result of impacts from the SCL4A. The SSI appears to be a result of numerous factors, including (1) pre-existing low concentrations of CCR indicators from the upgradient SCPA that predate the SCL4A, (2) relatively low calculated UPLs, and (3) a relatively small set of baseline data that do not reflect the full natural temporal and spatial variability within the aquifer. Only twelve (12) samples have been used thus far to calculate the intrawell UPLs in TMW-2. It can take many years of data gathering to observe the range of variability in groundwater concentrations that are representative of natural conditions or pre-existing impacts for any given aquifer. The results gathered thus far have obviously not captured the full extent of the spatial and temporal variability in the downgradient alluvial aquifer monitoring wells at the SEC.

Along with the lines of evidence listed above, SCL4A is constructed with 2-feet of compacted clay baseliner which is overlain by a 60-mil HDPE liner. These components act to limit the potential that the SSI reported for sulfate in TMW-2 during April 2021 is a result of influence from the SCL4A. The SSI observed in TMW-2 is not caused by impacts from the SCL4A, but is a result natural variability and/or pre-existing impacts within the alluvial aquifer at the site.

7.0 REFERENCES

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USEPA. 2015. Federal Register. Volume 80. No. 74. Friday April 17, 2015. Part II. Environmental Protection Agency. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule/ [EPA-HQ-RCRA-2009-0640; FRL-9919-44-OSWER].

Tables

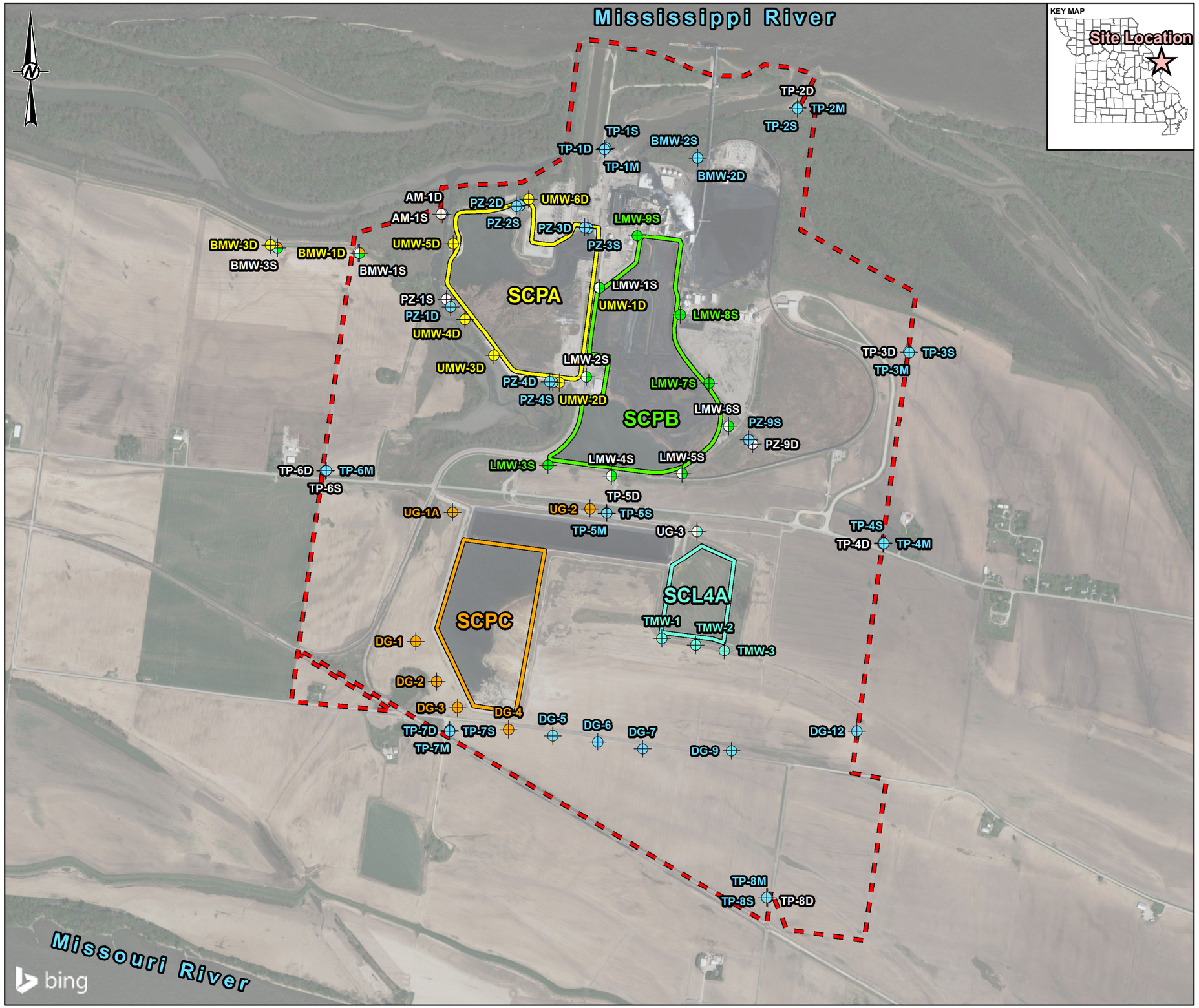
Table 1
April 2021 Detection Monitoring Results
SCL4A - Landfill Cell 4A
Sioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-3S	Prediction Limit UG-3	UG-3	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
April 2021 Detection Monitoring Event											
DATE	NA	4/13/2021	4/13/2021	NA	4/13/2021	NA	4/13/2021	NA	4/13/2021	NA	4/13/2021
pH	SU	6.85	6.98	6.243-7.648	7.08	6.216-7.528	7.07	6.441-7.519	6.99	6.337-7.638	6.99
BORON, TOTAL	µg/L	70.8 J	74.2J	1,027	225	DQR	57.2 J	DQR	76.0 J	114.8	75.8 J
CALCIUM, TOTAL	µg/L	149,000	134,000	160,085	139,000	115,800	93,200	134,272	105,000	150,887	114,000
CHLORIDE, TOTAL	mg/L	8.2	12.8	102.2	41.4	4.463	2.1	3.954	3.4	3.1	2.2 J
FLUORIDE, TOTAL	mg/L	0.36	0.39	0.3772	0.38	0.4264	0.41	0.4061	0.43	0.3573	0.32
SULFATE, TOTAL	mg/L	29.4	34.8	165.7	58.2	50.29	47.7	52.1	64.8	60.9	33.1
TOTAL DISSOLVED SOLIDS	mg/L	579	509	698.7	578	485.1	386	495.8	439	505.9	445
June 2021 Verification Sampling Event											
DATE	NA				6/2/2021				6/2/2021		
pH	SU										
BORON, TOTAL	µg/L										
CALCIUM, TOTAL	µg/L										
CHLORIDE, TOTAL	mg/L										
FLUORIDE, TOTAL	mg/L				0.33				0.38		
SULFATE, TOTAL	mg/L								64.0		
TOTAL DISSOLVED SOLIDS	mg/L										

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. Prediction Limits calculated using Sanitas Software.
5. Values highlighted in yellow indicate a Statistically Significant Increase (SSI).
6. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).
7. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
8. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantification Rule (DQR) is used.

Prepared By: EMS
Checked By: LMS
Reviewed By: SCP

Figures



KEY MAP

LEGEND

- Sioux Energy Center Property Boundary
- SCPA - Unlined Bottom Ash Surface Impoundment
- SCPB - Lined Fly Ash Surface Impoundment
- SCPC - Active WFGD Disposal Impoundment
- SCL4A - Active Dry CCR Disposal Area

Monitoring Well Networks

- Corrective Action Monitoring Well
- SCPA Detection and Assessment Monitoring Well
- SCPB Detection Monitoring and SCPA Corrective Action Monitoring Well
- SCPB Detection Monitoring Well
- SCPB, SCPC and SCL4A Detection Monitoring and SCPA Corrective Action Monitoring Well
- SCPC Detection Monitoring Well
- SCL4A Detection Monitoring and SCPA Corrective Action Monitoring Well
- SCL4A Detection Monitoring Well
- Monitoring Well Used for Water Level Elevation Measurements Only

0 1,000 2,000 3,000

Feet

NOTE(S)

1.) ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE.
2.) WFGD - WET FLUE GAS DESULFURIZATION
3.) CCR - COAL COMBUSTION RESIDUAL

REFERENCE(S)

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
GROUNDWATER MONITORING PROGRAM

TITLE
SIOUX ENERGY CENTER GROUNDWATER MONITORING PROGRAMS AND MONITORING WELL LOCATION MAP

CONSULTANT
GOLDER
MEMBER OF WSP

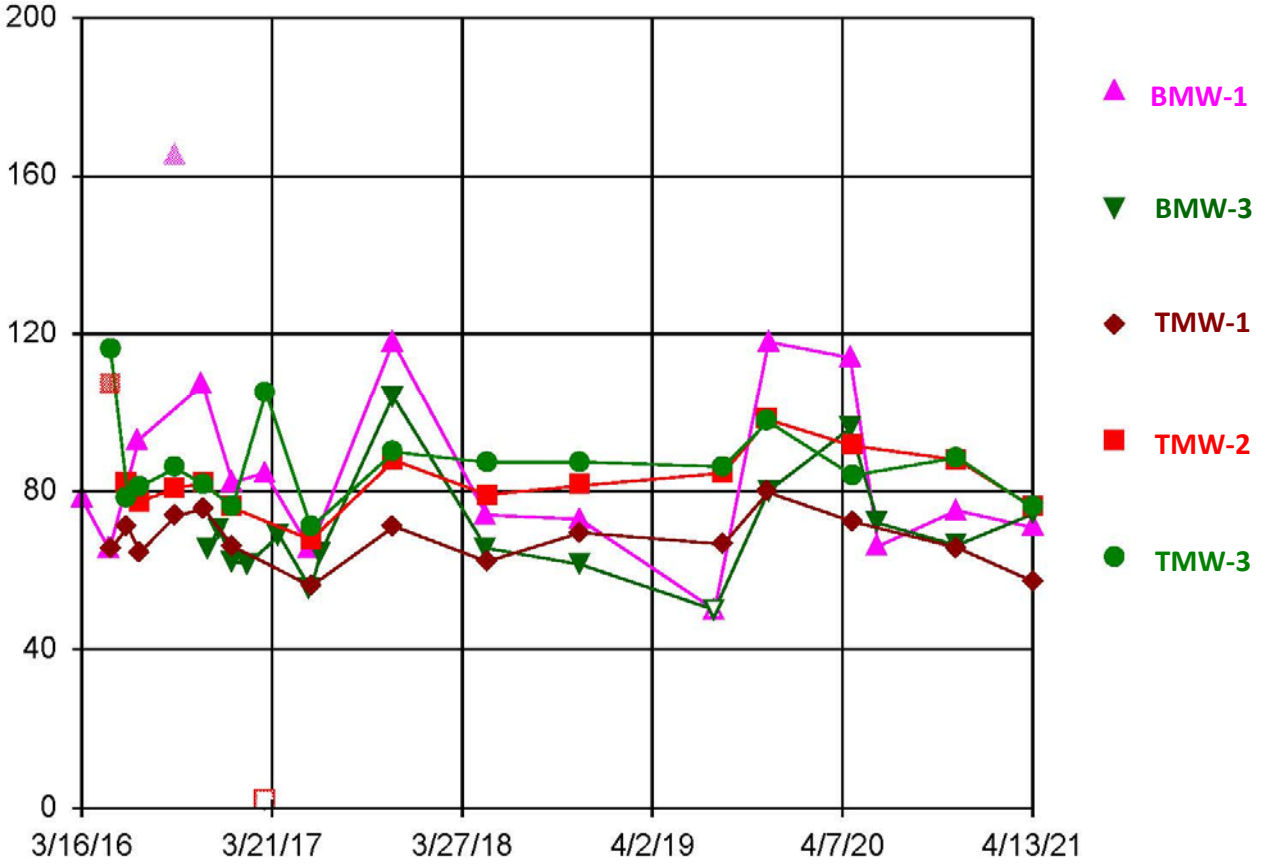
YYYY-MM-DD	2021-10-18
DESIGNED	JSI
PREPARED	ETF
REVIEWED	BTT
APPROVED	SCP

PROJECT NO.	CONTROL	REV.	FIGURE
1531406-03	1240	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

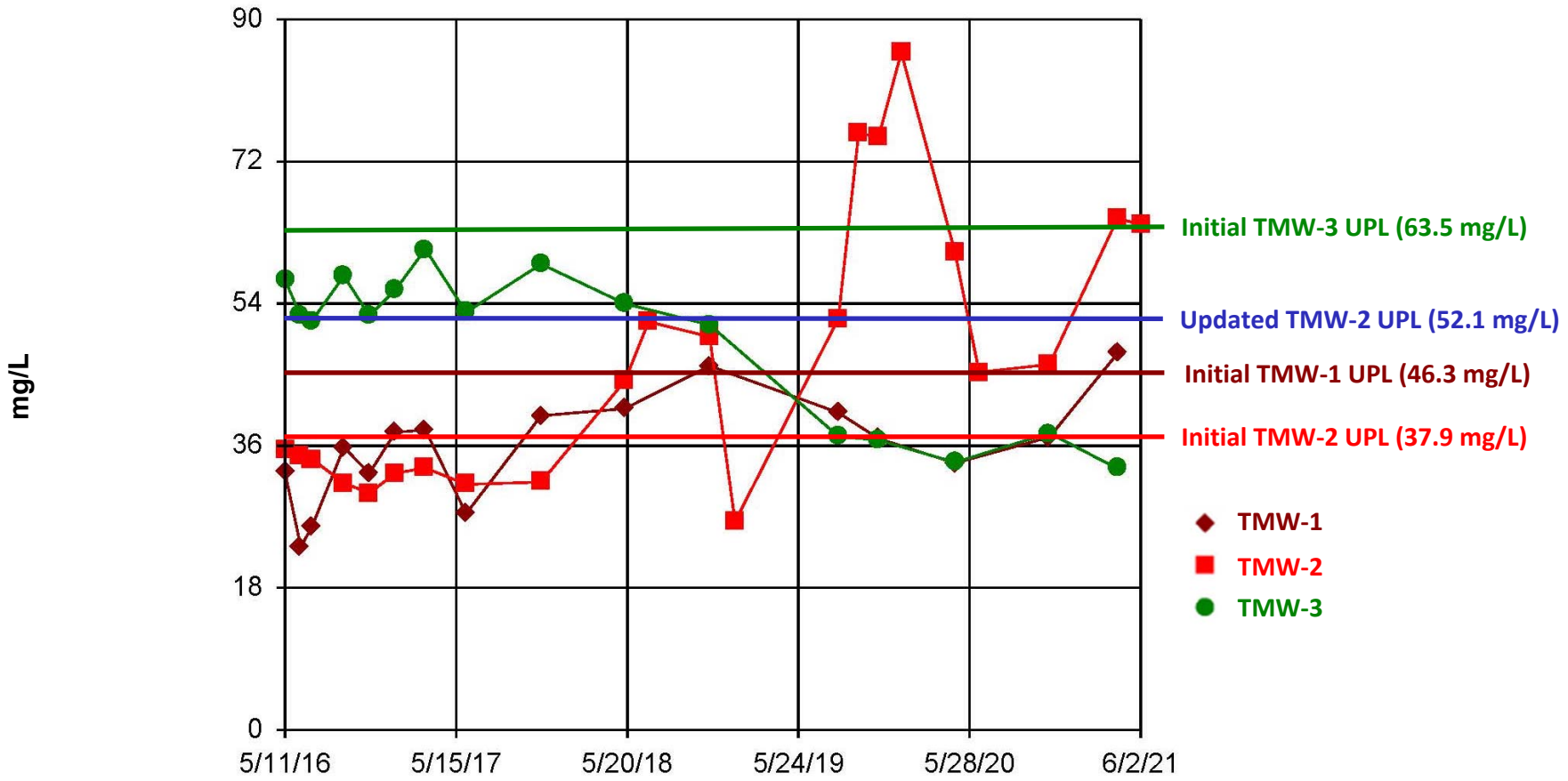
PATH: C:\Users\EVFormey\Golder Associates\1531406\01.02 - Ameren CCR GW Monitoring Program 2020 - 5 Technical Work\0003-SEC\3-5-Figures-Drawings\PRODUCTION\Other Maps\Figure 3 - CCR WELL PROGRAMS - Copy.mxd PRINTED ON: 2021-10-19 AT: 3:39:20 PM

Time Series



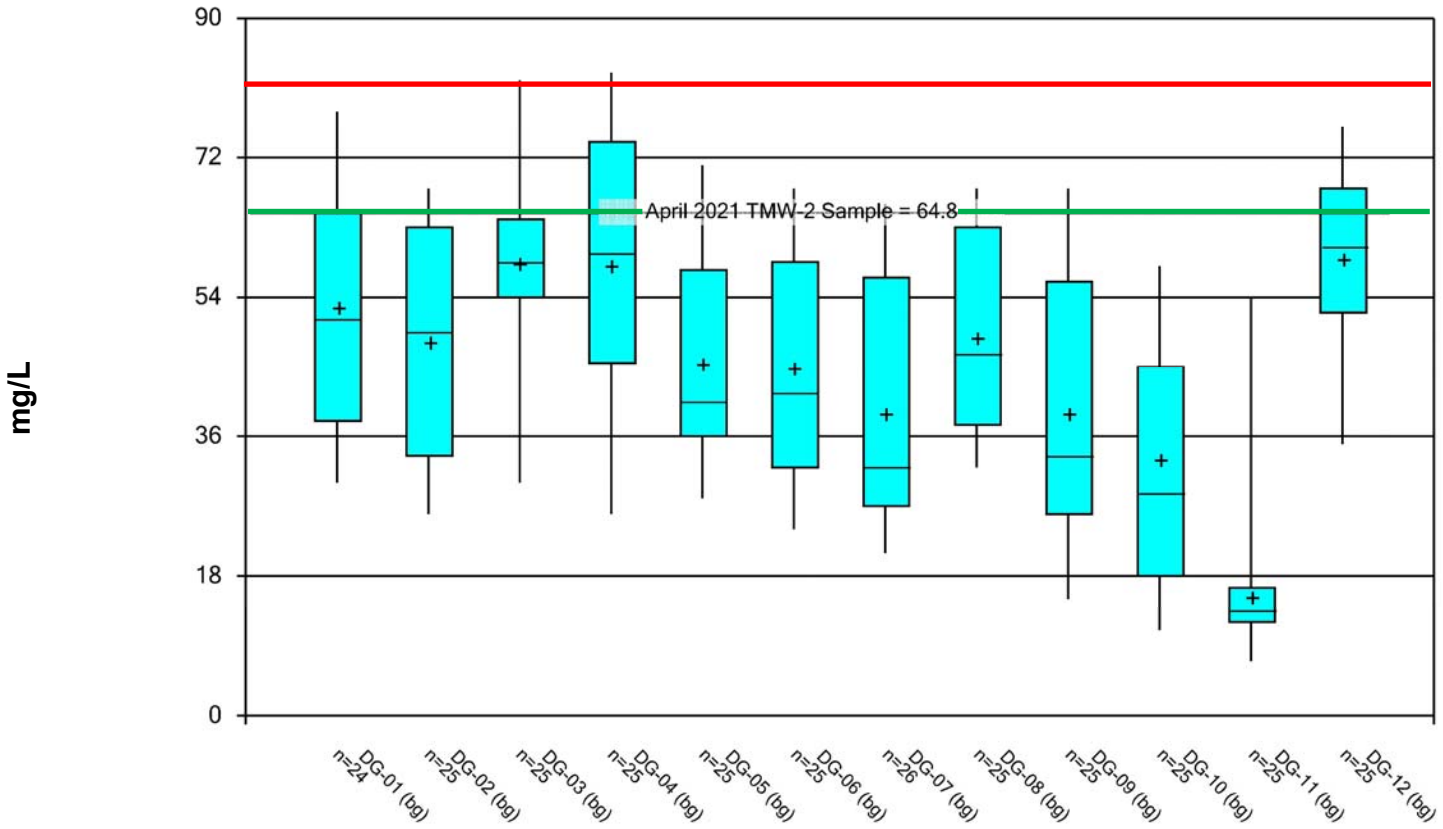
Notes
1) µg/L – Micrograms per liter.
2) Points not connect to the line are considered outliers as specified in the Statistical Analysis Plan for the SCL4A.

CLIENT/PROJECT							TITLE		
AMEREN MISSOURI **SIOUX ENERGY CENTER**				GOLDER			**Time Series Plot for Boron Concentrations**		
DRAWN EMS	CHECKED RSP	REVIEWED SCP	DATE 2021-10-28	SCALE N/A	FILE NO. N/A	JOB NO. 153140603.0003	DWG NO. N/A	SUBTITLE N/A	REV. NO. N/A	FIGURE **2**



Notes
1) mg/L – Milligrams per liter.
2) UPL – Upper Prediction Limit.

CLIENT/PROJECT								TITLE	
AMEREN MISSOURI **SIOUX ENERGY CENTER**				GOLDER				**Time Series Plot for Sulfate Concentrations South of the SCL4A**	
DRAWN EMS	CHECKED RSP	REVIEWED SCP	DATE 2021-10-28	SCALE N/A	FILE NO. N/A	JOB NO. 153140603.0003	DWG NO. N/A	SUBTITLE N/A	REV. NO. N/A	FIGURE **3**



Pre-CCR Downgradient UPL (83.0 mg/L)

April 2021 Result (64.8 mg/L)

Notes
1) mg/L – Milligrams per liter.
2) UPL – Upper Prediction Limit.
3) CCR – Coal Combustion Residuals.

CLIENT/PROJECT							TITLE	
AMEREN MISSOURI SIOUX ENERGY CENTER				GOLDER			**Pre-CCR Sulfate Plots – Downgradient Monitoring Wells**	
DRAWN	CHECKED	REVIEWED	DATE	SCALE	FILE NO.	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
EMS	RSP	SCP	2021-10-28	N/A	N/A	153140603.0003	N/A	N/A	N/A	**4**

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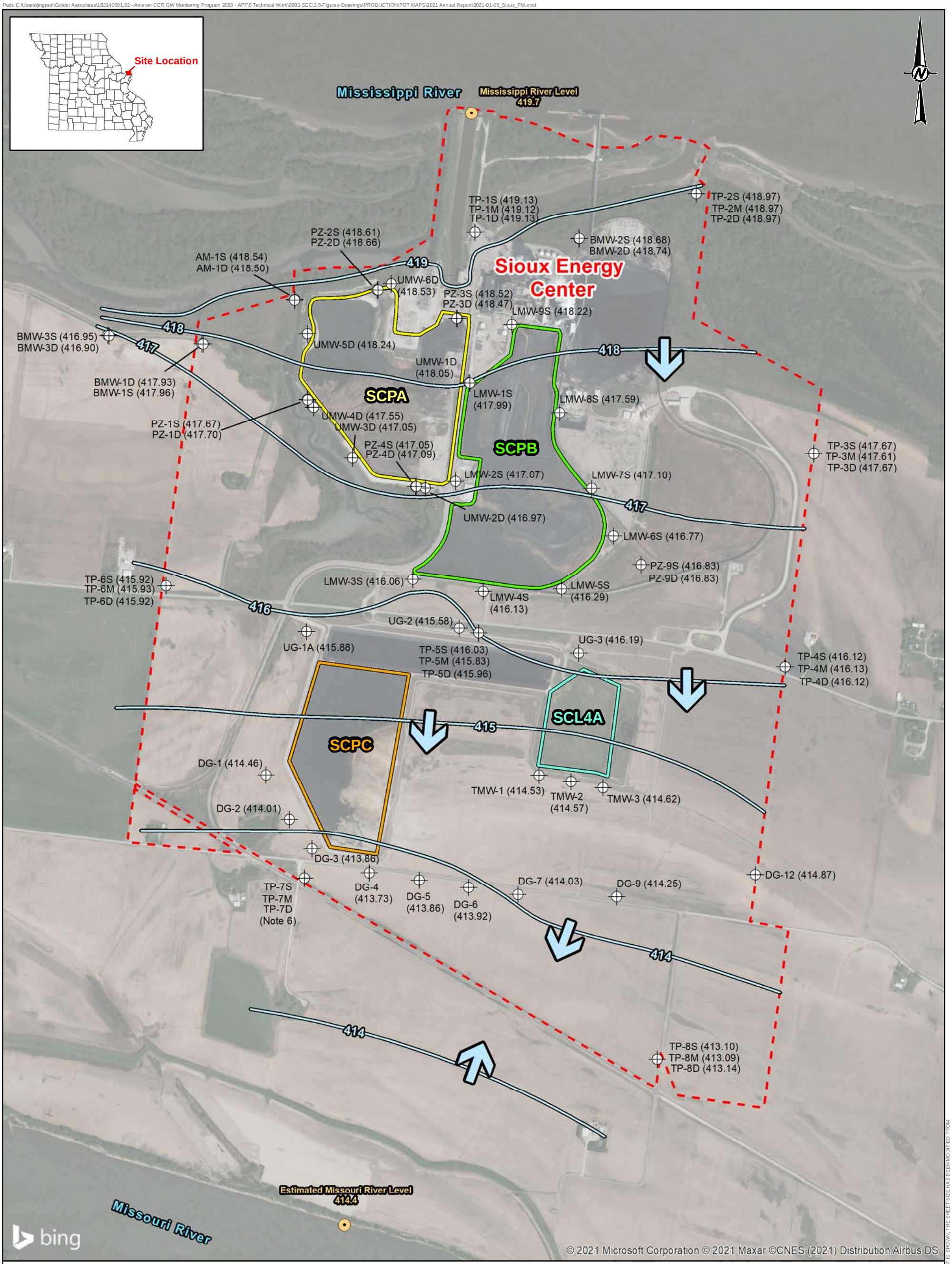
APPENDIX C

2021 Potentiometric Surface Maps

Path: C:\Users\jingram\Golder Associates\153140601,02 - Ameren CCR GW Monitoring Program 2020 - APF\5 Technical Work\0003-SEC\3.5-Figures-Drawings\PRODUCTION\POT MAPS\2021 Annual Report\2021-01-08_Sioux_PM.mxd



LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - WFGD Surface Impoundmet
- SCL4A - Dry CCR Disposal Area
- Groundwater Flow Direction

Groundwater Elevation Contour (FT MSL)

- Groundwater Elevation Contour (FT MSL)
- Inferred Groundwater Elevation Contour (FT MSL)

Ground/Surface Water Measurement Locations

- River Gauge Location
- Monitoring Well or Piezometer

NOTES

1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2.) GROUNDWATER AND SURFACE WATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FT MSL).
3.) GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
4.) MISSOURI RIVER ELEVATION ESTIMATED BASED ON NEARBY UNITED STATES GEOLOGICAL SURVEY (USGS) RIVER GAUGING LOCATIONS.
5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.
6.) TP-7S, TP-7M, AND TP-7D WERE NOT USED IN POTENTIOMETRIC CONTOURING DUE TO MEASUREMENT ERROR.
7.) WFGD - WET FLUE GAS DESULURIZATION.

REFERENCE

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.
3.) USGS NATIONAL WATER INFORMATION SYSTEM, USGS GAUGES 06935965 (ST. CHARLES), 07010000 (ST. LOUIS), 05587498 (ALTON), GRAFTON (05587450).

0 500 1,000 1,500 2,000 Feet

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
JANUARY 8, 2021 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-01-28
PREPARED	BTT
DESIGN	JSI
REVIEW	EMS
APPROVED	MNH

PROJECT No. 153-140603
PHASE 0003
FIGURE **C1**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 1 in 0

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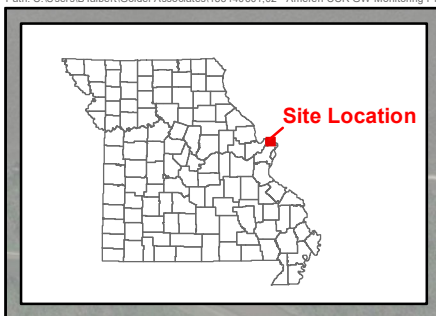

Mississippi River
Mississippi River Level
417.0
417
TP-2S (416.97)
TP-2M (416.96)
TP-2D (416.96)
TP-1S (417.17)
TP-1M (417.21)
TP-1D (417.20)
BMW-2S (417.13)
BMW-2D (417.15)
PZ-2S (417.64)
PZ-2D (417.66)
AM-1S (417.62)
AM-1D (417.65)
Sioux Energy Center
UMW-6D (417.47)
PZ-3D (417.73)
LMW-9S (417.60)
UMW-5D (417.79)
PZ-3S (417.79)
418
BMW-3D (418.30)
BMW-3S (418.29)
BMW-1S (418.11)
BMW-1D (Note 6)
UMW-1D (417.99)
SCPA
LMW-1S (418.07)
UMW-4D (418.16)
LMW-8S (417.95)
PZ-1S (418.24)
PZ-1D (418.23)
UMW-3D (418.35)
SCPB
TP-3S (417.63)
TP-3M (417.70)
TP-3D (417.66)
LMW-2S (418.31)
LMW-7S
(418.14)
PZ-4S (418.55)
PZ-4D (418.54)
UMW-2D (418.39)
LMW-6S (418.03)
419
PZ-9S (418.44)
PZ-9D (418.45)
LMW-3S
(418.71)
LMW-4S (418.60)
LMW-5S
(418.46)
TP-6S (419.07)
TP-6M (419.06)
TP-6D (419.04)
UG-2 (418.49)
UG-1A (419.32)
TP-5S (418.45)
TP-5M (418.35)
TP-5D (418.43)
UG-3 (418.93)
418
TP-4S (417.19)
TP-4M (417.21)
TP-4D (417.22)
SCL4A
SCPC
TMW-1
(418.87)
DG-1 (419.65)
TMW-2
(418.83)
TMW-3 (418.77)
DG-2 (419.69)
419
DG-3
(419.68)
DG-4 (419.58)
DG-6 (419.46)
DG-12 (418.95)
TP-7S (419.39)
TP-7M (419.37)
TP-7D (419.39)
DG-5 (419.52)
DG-9 (419.13)
DG-7 (419.41)
TP-8S (418.90)
TP-8M (418.91)
TP-8D (418.87)
Estimated Missouri River Level
418.8
Missouri River
bing
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LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - WFGD Surface Impoundmet
- SCL4A - Dry CCR Disposal Area
- Groundwater Flow Direction

Groundwater Elevation Contour (FT MSL)

- Groundwater Elevation Contour (FT MSL)
- Inferred Groundwater Elevation Contour (FT MSL)

Ground/Surface Water Measurement Locations

- River Gauge Location
- Monitoring Well or Piezometer

NOTES

1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2.) GROUNDWATER AND SURFACE WATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FT MSL).
3.) GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
4.) MISSOURI RIVER ELEVATION ESTIMATED BASED ON NEARBY UNITED STATES GEOLOGICAL SURVEY (USGS) RIVER GAUGING LOCATIONS.
5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.
6.) BMW-1D IS NOT USED FOR POTENTIOMETRIC CONTOURING DUE TO MEASUREMENT ERROR.
7.) WFGD - WET FLU GAS DESULURIZATION.

REFERENCE

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.
3.) USGS NATIONAL WATER INFORMATION SYSTEM, USGS GAUGES 06935965 (ST. CHARLES), 07010000 (ST. LOUIS), 05587498 (ALTON), GRAFTON (05587450).

0 500 1,000 1,500 2,000 Feet

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
APRIL 8, 2021 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-05-10
PREPARED	BTT
DESIGN	JSI
REVIEW	EMS
APPROVED	MNH

PROJECT No. 153-140603
PHASE 0003
FIGURE **C2**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 1 in 0

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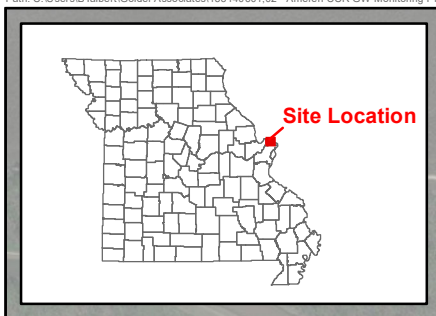

Mississippi River
Mississippi River Level
417.4
TP-1S (417.41)
TP-1M (417.43)
TP-1D (417.43)
TP-2S (417.21)
TP-2M (417.21)
TP-2D (417.21)
BMW-2S (417.37)
BMW-2D (417.42)
PZ-2S (417.8)
PZ-2D (417.84)
AM-1S (417.76)
AM-1D (417.76)
UMW-6D (417.68)
Sioux Energy Center
PZ-3S (418.04)
PZ-3D (418.00)
LMW-9S (417.89)
UMW-5D (417.91)
BMW-3S (418.38)
BMW-3D (418.41)
BMW-1S (418.20)
BMW-1D (418.18)
SCPA
LMW-1S (418.36)
UMW-1D (418.37)
UMW-4D (418.31)
LMW-8S (418.23)
418
PZ-1S (418.39)
PZ-1D (418.37)
UMW-3D (418.55)
TP-3S (417.98)
TP-3M (418.02)
TP-3D (418.03)
SCPB
LMW-7S (418.41)
LMW-2S (418.58)
PZ-4S (418.72)
PZ-4D (418.77)
UMW-2D (418.63)
LMW-6S (418.51)
TP-6S (419.42)
TP-6M (419.44)
TP-6D (419.44)
LMW-3S (418.89)
PZ-9S (418.75)
PZ-9D (418.78)
LMW-4S (418.82)
LMW-5S (418.75)
UG-1A (419.52)
UG-2 (418.72)
UG-3 (419.24)
TP-4S (418.39)
TP-4M (418.58)
TP-4D (418.61)
TP-5S (418.97)
TP-5M (418.98)
TP-5D (418.98)
419
SCPC
SCL4A
DG-1 (419.98)
TMW-1 (419.19)
TMW-2 (419.14)
TMW-3 (419.14)
DG-2 (419.99)
DG-3 (420.03)
DG-4 (419.97)
DG-12 (419.33)
TP-7S (419.76)
TP-7M (419.79)
TP-7D (419.79)
DG-5 (419.91)
DG-6 (419.83)
DG-9 (419.53)
DG-7 (419.77)
420
TP-8S (419.30)
TP-8M (419.35)
TP-8D (419.36)
Estimated Missouri River Level
420.6
Missouri River
bing
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LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - WFGD Surface Impoundmet
- SCL4A - Dry CCR Disposal Area
- Groundwater Flow Direction

Groundwater Elevation Contour (FT MSL)

- Groundwater Elevation Contour (FT MSL)
- Inferred Groundwater Elevation Contour (FT MSL)

Ground/Surface Water Measurement Locations

- River Gauge Location
- Monitoring Well or Piezometer

NOTES

1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2.) GROUNDWATER AND SURFACE WATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FT MSL).
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5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.
6.) WFGD - WET FLUE GAS DESULURIZATION.

REFERENCE

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.
3.) USGS NATIONAL WATER INFORMATION SYSTEM, USGS GAUGES 06935965 (ST. CHARLES), 07010000 (ST. LOUIS), 05587498 (ALTON), GRAFTON (05587450).

0 500 1,000 1,500 2,000 Feet

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
JUNE 1, 2021 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-10-11
PREPARED	ETF
DESIGN	JSI
REVIEW	EMS
APPROVED	MNH

PROJECT No. 153-140603
PHASE 0003
FIGURE **C3**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 1 in 0

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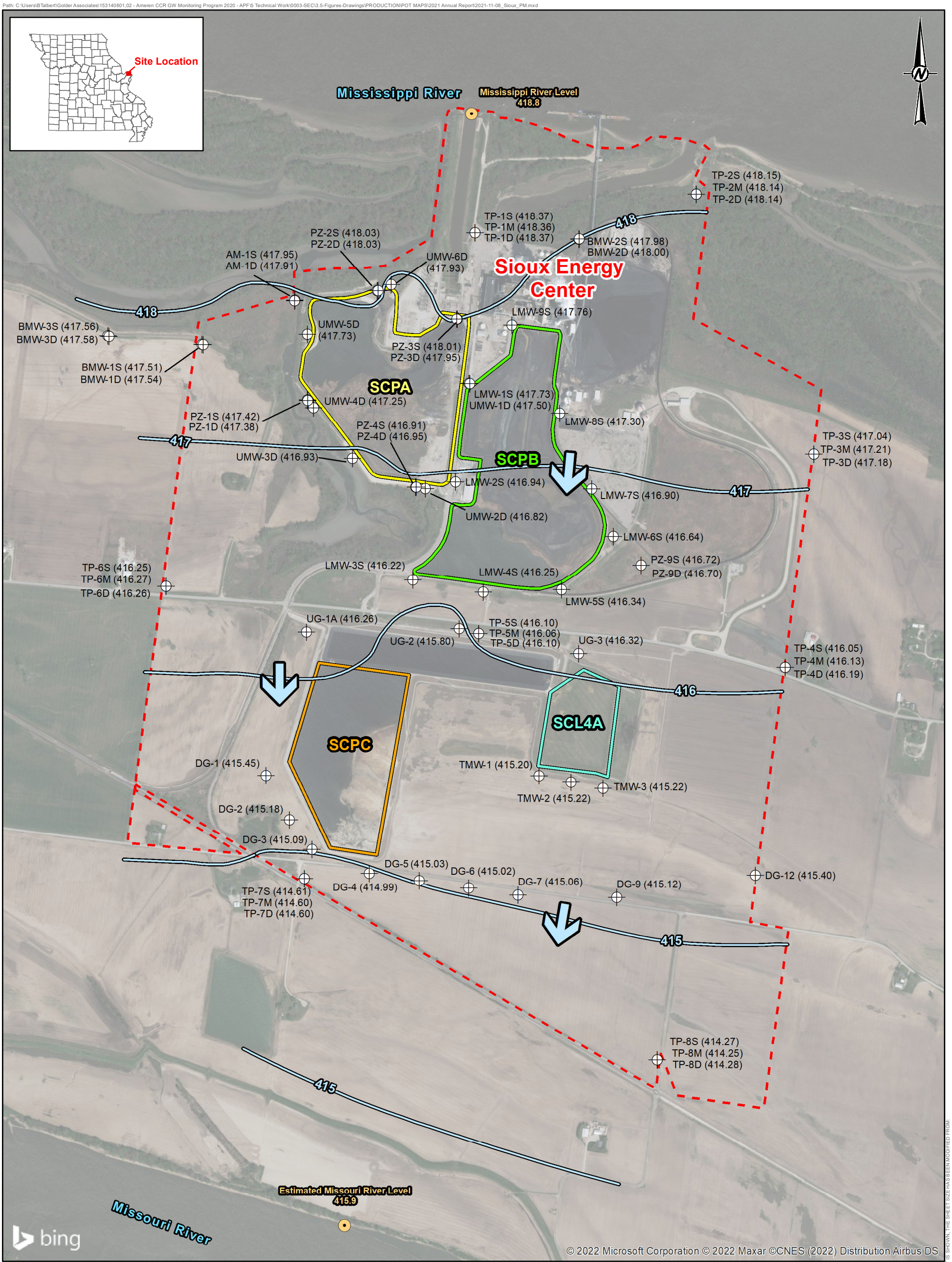

LEGEND

- Sioux Energy Center Property Boundary

CCR Units

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- Groundwater Elevation Contour (FT MSL)
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5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.
6.) WFGD - WET FLUE GAS DESULURIZATION.

REFERENCE

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.
3.) USGS NATIONAL WATER INFORMATION SYSTEM, USGS GAUGES 06935965 (ST. CHARLES), 07010000 (ST. LOUIS), 05587498 (ALTON), GRAFTON (05587450).

0 500 1,000 1,500 2,000 Feet

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
NOVEMBER 8, 2021 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-02
PREPARED	ETF
DESIGN	JSI
REVIEW	BTT
APPROVED	MNH

PROJECT No. 153-140603
PHASE 0003
FIGURE **C4**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 1 in 0

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