

#### REPORT

# 2022 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:

#### WSP USA Inc.

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GL153140604

January 31, 2023

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, 2022 through December 31, 2022 including verification results related to late 2021 sampling.

Throughout 2022, 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 2022, an SSI was determined for the March/April 2022 sampling event and a summary of the SSIs for the past year is provided in **Table 1**.

Event Name	Type of Event and Sampling Dates	Laboratory Analytical Data Receipt Date	Parameters Collected	Verified SSI	SSI Determination Date	ASD Completion Date
er 2021 g Event	Detection Monitoring, November 8-9, 2021	December 28, 2021	and Anions			
November Sampling E	Verification Sampling, February 8, 2022	February 18, 2022	Detected Appendix III parameters (See Note 1)	None	NA	NA
oril 2022 g Event	Detection Monitoring, March 29 to April 1, 2022	May 25, 2022	Appendix III, Major Cations and Anions		August 23,	November
March/April ; Sampling E	Verification Sampling, June 6, 2022	June 17, 2022	Detected Appendix III parameters (See Note 1)	<u>Sulfate:</u> TMW-1	2022	11, 2022
October 2022 Sampling Event	Detection Monitoring, October 18-21, 2022 November 22, 2022 Appendix III, Major Cations and Anions		To be determined after stat Sampling are c	istical analysis and completed in 2023.		

# Table 1 - Summary of 2022 SCL4A Sampling Events, Previous Year Verification, and Statistical Evaluations

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) 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 (ASD) was prepared for the March/April 2022 Detection Monitoring sampling event and is discussed further in this Annual Report.

There were no changes made to the monitoring system in 2022 with no new wells being installed or decommissioned.

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2022 Potentiometric Surface Maps

#### **1.0 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** and wells are listed on **Table 2** below. No new monitoring wells were installed or decommissioned in 2022 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.

#### 2.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION

The following sections discuss the sampling events completed for the SCL4A CCR Unit in 2022. **Table 2** provides a summary of the groundwater samples collected in 2022 including the number of samples, the date of sample collection, and the monitoring program.

		Gr	oundwater M	onitoring We	lls				
Sampling Event	BMW-1S	BMW-3S	UG-3	TMW-1	TMW-2	TMW-3	Monitoring Program		
	Date of Sample Collection								
February 2022 Verification Sampling	-	-	-	2/8/2022	-	-	Detection		
March/April 2022 Sampling Event	3/29/2022	3/29/2022	4/1/2022	3/29/2022	3/29/2022	3/29/2022	Detection		
June 2022 Verification Sampling	-	-	-	6/6/2022	-	-	Detection		
October 2022 Sampling Event	10/18/2022	10/18/2022	10/21/2022	10/20/2022	10/20/2022	10/20/2022	Detection		
Total Number of Samples Collected	2	2	2	4	2	2	NA		

#### Table 2 – Summary of Groundwater Sampling Dates

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.

#### 2.1 Detection Monitoring Program

A Detection Monitoring sampling event was completed November 8-9, 2021. Verification sampling and the statistical analysis to evaluate for SSIs for the November 2021 event were not completed until 2022 and are included in this report. Detections of Appendix III analytes triggered a Verification Sampling event, which was completed on February 8, 2022 and did not verify any SSIs. **Table 3** summarizes the results of the statistical

analysis of the November 2021 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

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 were used for November 2021 and subsequent statistical analyses.

Detection Monitoring samples were collected March 29 to April 1, 2022 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 6, 2022 and the testing results verified an SSI. **Table 4** summarizes the results of the statistical analysis of the March/April 2022 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 the SSI at TMW-1 was not caused by the SCL4A CCR Unit and the SCL4A CCR Unit remains in Detection Monitoring.

A Detection Monitoring sampling event was completed October 18-21, 2022 and testing was performed for all Appendix III analytes, as well as major cations and anions. Statistical analyses to evaluate for SSIs in the October 2022 data were not completed in 2022 and the results will be provided in the 2023 Annual Report. **Table 5** summarizes the results of the October 2022 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

#### 2.2 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, which affect water levels, gradients and flow directions in 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 at the SEC were estimated for the alluvial aquifer wells using commercially available software to evaluate data since 2016. Results indicate that groundwater flow direction at the SEC is variable due to fluctuating river levels but has often flowed from north to south. The overall net groundwater flow direction in the alluvial aquifer at the SEC was slightly to the southeast 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 four (4) feet per year in the prevailing downgradient direction.

#### 2.3 Sampling Issues

No notable sampling issues were encountered at the SCL4A in 2022.

#### 3.0 ACTIVITIES PLANNED FOR 2023

Detection Monitoring is scheduled to continue on a semi-annual basis in the second and fourth quarters of 2023. Statistical analysis of the October 2022 Detection Monitoring data will be completed in 2023 and included in the 2023 Annual Report.

## Tables

# Table 3November 2021 Detection Monitoring ResultsSCL4A - Landfill Cell 4ASioux Energy Center, St. Charles County, MO

		BACKGR	OUND			GROL	JNDWATER M	IONITORING W	/ELLS		
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
			N	ovember 2021	L Detection N	Ionitoring Eve	nt				
DATE	NA	11/8/2021	11/8/2021	NA	11/9/2021	NA	11/9/2021	NA	11/9/2021	NA	11/9/2021
рН	SU	6.86	6.99	6.659-7.397	6.71	6.356-7.504	6.94	6.601-7.399	6.97	6.41-7.31	6.96
BORON, TOTAL	μg/L	66.9 J	67.8 J	1,200	210	DQR	69.8 J	104.4	86.9 J	110.6	96.5 J
CALCIUM, TOTAL	μg/L	160,000	137,000	172,812	126,000	119,842	111,000	133,759	115,000	146,661	126,000
CHLORIDE, TOTAL	mg/L	7.4	12.0	85.54	24.5	4.199	1.9 J	4.641	1.8 J	3.1	2.6 J
FLUORIDE, TOTAL	mg/L	ND	0.46	0.3954	0.38	0.4537	0.46 J	0.4229	0.36	0.3773	0.32
SULFATE, TOTAL	mg/L	31.8	31.2	139.9	66.0	49.87	41.5	80.98	46.0	60.9	34.6
TOTAL DISSOLVED SOLIDS	mg/L	534	461	671.3	519	462.8	390	513	423	505.4	449
			í	ebruary 2022	Verification S	Sampling Even	t				
DATE	NA						2/8/2022				
рН	SU										
BORON, TOTAL	μg/L										
CALCIUM, TOTAL	μg/L										
CHLORIDE, TOTAL	mg/L										
FLUORIDE, TOTAL	mg/L						0.30 J				
SULFATE, TOTAL	mg/L										
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 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.

8. 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: EMS Checked By: LMS Reviewed By: MNH

#### Table 4 March/April 2022 Detection Monitoring Results SCL4A - Landfill Cell 4A Sioux Energy Center, St. Charles County, MO

		BACKGR	OUND			GROL	JNDWATER M	ONITORING V	VELLS		
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
			M	arch-April 202	2 Detection N	Aonitoring Eve	ent				
DATE	NA	3/29/2022	3/29/2022	NA	4/1/2022	NA	3/29/2022	NA	3/29/2022	NA	3/29/2022
рН	SU	6.80	6.94	6.659-7.397	6.94	6.356-7.504	7.10	6.601-7.399	6.95	6.41-7.31	6.92
BORON, TOTAL	μg/L	68.0 J	70.7 J	1,200	184	DQR	76.8 J	104.4	84.9 J	110.6	95.6 J
CALCIUM, TOTAL	μg/L	173,000	147,000	172,812	120,000	119,842	103,000	133,759	124,000	146,661	132,000
CHLORIDE, TOTAL	mg/L	8.5	11.8	85.54	73.5	4.199	3.2	4.641	3.4	3.1	2.4
FLUORIDE, TOTAL	mg/L	0.30	0.36	0.3954	0.35	0.4537	0.36	0.4229	0.34	0.3773	0.30
SULFATE, TOTAL	mg/L	44.9	47.8	139.9	18.6	49.87	64.9	80.98	79.0	60.9	51.0
TOTAL DISSOLVED SOLIDS	mg/L	591	508	671.3	612	462.8	365	513	447	505.4	476
				June 2022 V	erification Sa	mpling Event					
DATE	NA						6/6/2022				
рН	SU										
BORON, TOTAL	μg/L										
CALCIUM, TOTAL	μg/L										
CHLORIDE, TOTAL	mg/L										
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L						50.5 J				
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. 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.

# Table 5October 2022 Detection Monitoring ResultsSCL4A - Landfill Cell 4ASioux Energy Center, St. Charles County, MO

		BACKGR	OUND	GROU	INDWATER M	ONITORING V	VELLS
ANALYTE	UNITS	BMW-1S	BMW-3S	UG-3	TMW-1	TMW-2	TMW-3
	(	October 2022	Detection Mo	nitoring Even	t		
DATE	NA	10/18/2022	10/18/2022	10/21/2022	10/20/2022	10/20/2022	10/20/2022
pН	SU	6.84	7.01	6.94	7.04	6.89	6.84
BORON, TOTAL	μg/L	73.0 J	84.2 J	302	ND	83.7 J	90.5 J
CALCIUM, TOTAL	μg/L	168,000	131,000	126,000	95,000	118,000	136,000
CHLORIDE, TOTAL	mg/L	9.2	11.7	39.5	2.7 J	3.3 J	2.6
FLUORIDE, TOTAL	mg/L	0.20 J	0.22	ND	0.42	ND	ND
SULFATE, TOTAL	mg/L	61.1	27.8	44.1	53.5	35.8	44.9
TOTAL DISSOLVED SOLIDS	mg/L	711	467	496	407	ND	838 J

NOTES:

1. Unit Abbreviations:  $\mu$ g/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.

2. J - Result is an estimated value.

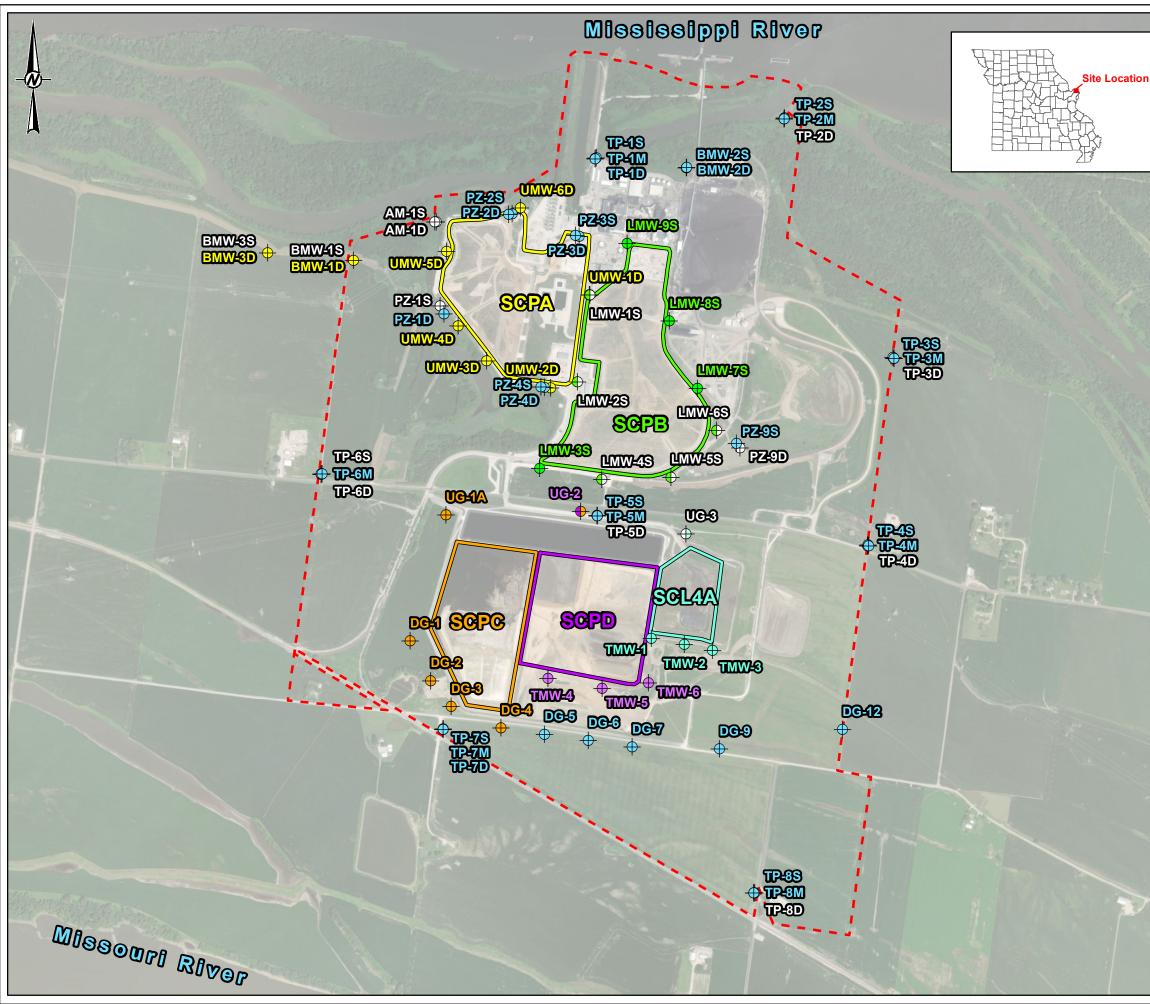
3. NA - Not applicable.

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: EMS Checked By: JAB Reviewed By: MNH

# Figures



_							
LEGEND							
124	Sioux E	nergy Cer	nter Pro	perty Bour	ndary		
CCR	Units						
	SCPA -	Closed Bo	ottom As	sh Surface	Impo	undment	
				urface Imp	•		
			•	•	ounu	nem	
Utility	y Wast	e Landfil	II (UWL	_)			
	SCPC -	WFGD S	urface I	mpoundme	ent		
	SCL4A	- Dry CCF	R Dispos	sal Area			
	SCPD -	WFGD S	urface I	mpoundme	ent		
		Well Net		1			
	_						
	Correcti	ive Action	Monitoi	ing well			
+	SCPA D	etection a	and Ass	essment M	lonito	ring Well	
<b>•</b>	SCPB a	and Correct	ctive Act	tion Monito	oring \	Nell	
+	SCPB D	Detection I	Monitori	ng Well			
+	SCPC D	Detection I	Monitori	ng Well			
6				ion Monito	rina V	Vell	
					inig i	<b>VOI</b>	
		Detection I		•			
	SCL4A	and Corre	ctive Ac	ction Monit	oring	Well	
•	SCL4A	Detection	Monito	ring Well			
		0		Water Lev	el Ele	evation	
Ŧ	Measur	ements O	nly				
S.							
0		1,000		2,000		3,000	
						Feet	
NOTE(S)		S AND LOCATIO					
2.) WFGI	D - WET FLU	IE GAS DESULI	FURIZATION				
REFERE							
		JRI SIOUX ENE	RGY CENTI	ER, SIOUX PROF	PERTY	CONTROL MAP,	FEBRUARY
	RDINATE SY	STEM: NAD 19	83 STATE P	LANE MISSOUR	I EAST F	IPS 2,401 FEET	
CLIENT						SV.	
		SOURI GY CENTE	P				meren
PROJEC			n				
GROU	INDWAT	ER MONIT	ORING	PROGRAM	1		
TITLE							
				NDWATER	-	ITORING	
CONSUL	-	ND SAMP	LE LOC	ATION MAI	P	2022-12-12	
				DESIGNED		JSI	
115	n c	GOLD	FD	-		EMS	
•••				REVIEWED		GTM/JSI	
I				APPROVED		MNH	
PROJEC 15314		CONTROL			rev. 0		FIGURE
		-					

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

APPENDIX A

## Laboratory Analytical Data



February 18, 2022

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

RE: Project: AMEREN VS SCL4A Pace Project No.: 60392269

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on February 09, 2022. 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,

Jami Church

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





#### CERTIFICATIONS

Project: AMEREN VS SCL4A

Pace Project No.: 60392269

#### 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



#### SAMPLE SUMMARY

Project: AMEREN VS SCL4A

Pace Project No.: 60392269

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60392269001	S-TMW-1	Water	02/08/22 13:20	02/09/22 04:04
60392269002	S-SCL4A-FB-1	Water	02/08/22 13:40	02/09/22 04:04
60392269003	S-SCL4A-DUP-1	Water	02/08/22 08:00	02/09/22 04:04



#### SAMPLE ANALYTE COUNT

Project: AMEREN VS SCL4A

Pace Project No.: 60392269

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60392269001	S-TMW-1	EPA 300.0	SK	1	PASI-K
60392269002	S-SCL4A-FB-1	EPA 300.0	SK	1	PASI-K
60392269003	S-SCL4A-DUP-1	EPA 300.0	SK	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City



#### ANALYTICAL RESULTS

Project: AMEREN VS SCL4A

Pace Project No.: 60392269

Sample: S-TMW-1	nple: S-TMW-1 Lab ID: 60392269001		Collecte	d: 02/08/22	2 13:20	Received: 02/09/22 04:04 Matrix: Water			
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	.0 IC Anions 28 Days Analytical Method: EPA 30 Pace Analytical Services -								
Fluoride	0.30	mg/L	0.20	0.12	1		02/16/22 14:42	16984-48-8	



#### ANALYTICAL RESULTS

Project: AMEREN VS SCL4A

Pace Project No.: 60392269

Sample: S-SCL4A-FB-1	Lab ID:	60392269002	Collecte	d: 02/08/22	2 13:40	Received: 02/0	09/22 04:04 Ma	trix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days		Method: EPA 3 lytical Services		lity					
Fluoride	<0.12	mg/L	0.20	0.12	1		02/15/22 13:49	16984-48-8	



#### ANALYTICAL RESULTS

Project: AMEREN VS SCL4A

Pace Project No.: 60392269

Sample: S-SCL4A-DUP-1	Lab ID: 60392269003		Collected	d: 02/08/22	2 08:00	Received: 02/09/22 04:04 Matrix: Water			
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Pace Ana	00.0 - Kansas Ci	ity						
Fluoride	0.38	mg/L	0.20	0.12	1		02/16/22 13:44	16984-48-8	



Project: AMEREN VS	SCL4A									
Pace Project No.: 60392269										
QC Batch: 771173		Analysis M	lethod:	EPA 3	300.0					
QC Batch Method: EPA 300.0		Analysis D			IC Anic					
Associated Lab Complexity 6020	226000 602026000	Laboratory	/:	Pace	Analytic	al Se	rvices - Kar	nsas City	/	
Associated Lab Samples: 6039	2269002, 60392269003									
METHOD BLANK: 3079295		Matr	x: Water							
Associated Lab Samples: 6039	2269002, 60392269003									
Parameter	Units	Blank Result	Reportir Limit	ig	MDL		Analyz	zed	Qualifier	S
Fluoride	mg/L	<0.1	2	0.20		0.12	02/15/22			
METHOD BLANK: 3081055		Matri	x: Water							
	2269002, 60392269003									
-		Blank	Reportir	g	•				<b>•</b> ••••	
Parameter	Units	Result	Limit		MDL		Analyz		Qualifier	S
Fluoride	mg/L	<0.1	2	0.20		0.12	02/16/22	13:17		
METHOD BLANK: 3081506		Matr	x: Water							
Associated Lab Samples: 6039	2269002, 60392269003									
Parameter	Units	Blank Result	Reportir Limit	ıg	MDL		Analyz	zed	Qualifier	S
Fluoride	mg/L	<0.1		0.20		0.12	02/17/22			
LABORATORY CONTROL SAMP	LE: 3079296									
		Spike	LCS	LC	S	0	% Rec			
Parameter	Units	Conc.	Result	% R	lec		Limits	Quali	fiers	
Fluoride	mg/L	2.5	2.4		97		90-110			
LABORATORY CONTROL SAMP	LE: 3081056	Quille	1.00							
Parameter	Units	Spike Conc.	LCS Result	LC % R			% Rec Limits	Quali	fiers	
			2.7		108		90-110			
Fluoride	mg/L	2.5								
	-	2.5								
Fluoride	LE: 3081507	Spike	LCS	LC			% Rec			
	-			LC % R			% Rec Limits 90-110	Quali	fiers	

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.



Project: AMEREN VS SCL4A

Pace Project No.: 60392269

MATRIX SPIKE & MATRIX SI	PIKE DUPL	ICATE: 3079	297 MS	MSD	3079298							
Parameter	Units	60392266002 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.47	2.5	2.5	2.7	2.8	91	95	80-120	3	15	
SAMPLE DUPLICATE: 307	9299											
Parameter		Units	603922 Res		Dup Result	RPI	)	Max RPD	Qualif	iers		
Fluoride		mg/L		0.47	0.47	7	1	15				

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



QC Batch: 77	92269 71288 PA 300.0											
	PA 300 0		Anal	ysis Metho	od:	EPA 300.0						
QC Batch Method: E	A 300.0		Anal	ysis Descr	iption:	300.0 IC Ani	ons					
				oratory:		Pace Analyti	cal Ser	vices - Kans	as City			
Associated Lab Samples	60392269	001										
METHOD BLANK: 307	9655			Matrix: W	/ater							
Associated Lab Samples	60392269	001										
Paramete	r	Units	Blaı Res		Reporting Limit	MDL		Analyzed	d Q	ualifiers		
Fluoride		mg/L		<0.12	0.2	20	0.12	02/16/22 09	9:04			
METHOD BLANK: 308	31504			Matrix: W	/ater							
Associated Lab Samples	60392269	001										
			Bla	nk	Reporting							
Parameter	r	Units	Res	sult	Limit	MDL		Analyzed	d Q	ualifiers		
Fluoride		mg/L		<0.12	0.2	20	0.12	02/17/22 20	0:30			
LABORATORY CONTR	OL SAMPLE:	3079656										
_			Spike		CS	LCS		Rec				
Paramete	r	Units	Conc.		sult	% Rec	L	imits	Qualifiers			
Fluoride		mg/L	2	.5	2.6	102		90-110				
LABORATORY CONTR	OL SAMPLE:	3081505										
Paramete		Units	Spike Conc.		CS sult	LCS % Rec		6 Rec .imits	Qualifiers			
Fluoride	l	mg/L		.5	2.7	<sup>36</sup> Rec 107	·	90-110	Quaimers	_		
MATRIX SPIKE & MATR	IX SPIKE DUP	LICATE: 3079	657 MS	MSD	3079658	3						
_		60392269001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units		Conc.	Conc.	Result	Result	% Red	c % Rec	Limits	RPD	RPD	Qua
Fluoride	mg/L	0.30	2.5	2.5	2.8	2.9	1	01 10	5 80-120	3	15	
MATRIX SPIKE SAMPL	E:	3079660										
Paramete	r	Units		2671001 esult	Spike Conc.	MS Result		MS % Rec	% Re Limits		Qualif	iers
	·										Quali	
Fluoride		mg/L		ND	25000	26	500	106	80	)-120		

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

#### **REPORT OF LABORATORY ANALYSIS**

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



Project: AMEREN VS SCL4A Pace Project No.: 60392269

SAMPLE DUPLICATE: 3079659		60392269001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Fluoride	mg/L	0.30	0.30	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.



#### QUALIFIERS

#### Project: AMEREN VS SCL4A

Pace Project No.: 60392269

#### 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.

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

TNI - The NELAC Institute.



#### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN VS SCL4A Pace Project No.: 60392269

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60392269001	S-TMW-1	EPA 300.0	771288		
60392269002 60392269003	S-SCL4A-FB-1 S-SCL4A-DUP-1	EPA 300.0 EPA 300.0	771173 771173		

					WO#:60392	2269
[	Pace	DC#_Title: EN	V-FRM-LENE-0009_	Sample (	60392269	
	ANALYTICAL SERVICES	Revision: 2	Effective Date: 01	/12/2022	Issued By: Lenexa	
Client Nam	ne:	Golder Ass	ociates		·	
Courier:	FedEx 🗆 UPS		ay 🗆 🛛 PEX 🗆 EC	I 🗆 🛛 Pace	e □ Xroads □ Client □	Other
Tracking #:			Pace Shipping Lat	el Used? Y	es 🗆 No 🗖	
Custody Seal		Present: Yes	No  Seals intact:	Yes Z	10 -	
Packing Mate		e Wrap 🗆 🦷 Bub			None  Other	
Thermometer		1 199		ue None	Date and ir	itials of person
Cooler Tempe			Corr. Factor <u>~ 0.2</u>	Corrected _	1-3 examining	contents:
	ould be above free	zing to 6°C			- P	001100
Chain of Custo	ody present:		Yes No			
Chain of Custo	ody relinquished:		Yes No	🗆 N/A		
Samples arrive	ed within holding	time:	Yes No			
Short Hold Ti	me analyses (<	72hr):		□n/A		
Rush Turn Ar	ound Time requ	lested:	□Yes ØNo	□n/a		
Sufficient volur	me:		Yes DNo	□n/A		
Correct contair	ners used:		Yes DNo	□n/A		
Pace containe	rs used:		Yes 🗆 No			
Containers inta						
		1006 soils frozen in 4				
	e received for dis					
		te / time / ID / analys	1			
	ain multiple phase					
Containers req (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , H (Exceptions: VC	quiring pH preser HCl<2; NaOH>9 Sι DA, Micro, O&G, KS	vation in compliance ulfide, NaOH>10 Cyani	? 🛛 Yes 🗆 No	IN/A List s	sample IDs, volumes, lot #'s of 'time added.	preservative and the
	sample checks: strip turns dark? (	(Record only)	□Yes □No			
		s blue/purple? (Pres	erve) 🛛 🖓 Yes 🗆 No	20		
Trip Blank pres	sent:		□Yes □No			
Headspace in V	VOA vials ( >6m	m):	□Yes □No			
Samples from	USDA Regulated	d Area: State:	□Yes □No			
			n the field? □Yes □No			
	ation/ Resolutio		Copy COC to Client? Y	N	Field Data Required? Y / N	
Person Contac	ted:		Date/Time:		÷	
Comments/ Re	esolution:					
Project Manage	er Review:			Date:		

1 1 00 11

Pace Analytical

# CHAIN-OF-CUSTODY / Analytical Request Document

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

Section B Required Project Information: Tett Parkway Dr., Ste 260 Geoprio: Eric Schnieder, Ryan Feldman, Brendan Talbert Tett Parkway Dr., Ste 260 Geoprio: Eric Schnieder, Ryan Feldman, Brendan Talbert Company Name: Golder Associates Inc. 0.63021 Difference: Purchase Order No: Fax: 636-724-9323 Project Number: 153140603, Doc 63 0 Manageria Sandard Matrix Codes Martial Ma	of				ER L DRINKING WATER	L				MARTIN CONTRACTOR			60392269	Pace Project No./ Lab I.D.	289211											SAMPLE CONDITIONS		XXX	4 0	Ier	(N) (N) (Oq) (N/A) (N/A)	() (
Section B Required Project Information. Tett Parkway Dr., Ste 260 Copy To: Eric Schnieder, Ryan Feldman, Brendan Talbert Tett Parkway Dr., Ste 260 Copy To: Eric Schnieder, Ryan Feldman, Brendan Talbert Tett Parkway Dr., Ste 260 Copy To: Eric Schnieder, Ryan Feldman, Brendan Talbert O 63021 Purchase Order No. D 63021 Purchase Order No. EarlingGolder.com Purchase Order No. Fax 636-724-9323 Project Name: Golder Associates Inc. Tett Parkway Dr., Ste 260 Copy To: Eric Schnieder, Ryan Feldman, Brendan Talbert O 63021 Purchase Order No. D 63021 Purchase Order No. Fax 636-724-9323 Project Name: Ameren - Verification Sampling - 5(LU4)A Purchase Order No. Fax 636-724-9323 Project Name: 153140603, D 5 (1) Parket Project Name: 153140603, D 5 (1) Prosentie Reserver. MATRIX M	Page:			٢	ITAW DUU			0			il cra	(N/A)	esidual Chlorine	Ы	-													61.3		0	. u (	dı
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F-ALL-Q-020rev.08, 12-Oct-2007

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"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.

# **\\**SOLDER

#### **MEMORANDUM**

Project No. 153140604

DATE March 1, 2022

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 60392269

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

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 USA Inc / WSP	Project Manager: <u>J. Ingram</u>
Project Name: Ameren- Sioux - SCL4A	Project Number: 153140604
Reviewer: A. Muehlfarth	Validation Date: 3/1/2022
Laboratory: Pace Analytical Services - Kansas City Analytical Method (type and no.): EPA 300.0 (Anions)	SDG #:
Matrix: 🗌 Air 🔲 Soil/Sed. 🔳 Water 🗌 Waste	□
Sample Names S-TMW-1, 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 In	nformation	YES	NO	NA	COMMENTS
a)	Sampling dates noted?	х			2/8/2022
b)	Sampling team indicated?	х			BTT
c)	Sample location noted?	х			
d)	Sample depth indicated (Soils)?			х	
e)	Sample type indicated (grab/composite)?	X			Grab
f)	Field QC noted?	х			See Notes
g)	Field parameters collected (note types)?	х			pH, Sp.Cond, ORP, Temp, DO, Turb
h)	Field Calibration within control limits?	х			
i)	Notations of unacceptable field conditions/performa	nces fr	om field lo	ogs or field	notes?
			×		
j)	Does the laboratory narrative indicate deficiencies?			х	
	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?	×			
c)	Were samples received in good condition?	х			
Gonor	al (reference QAPP or Method)	YES	NO	NA	COMMENTS
Genera		120	NO	NA	COMMENTS
a)	Were hold times met for sample pretreatment?	х			
b)	Were hold times met for sample analysis?	х			
c)	Were the correct preservatives used?	х			
d)	Was the correct method used?	х			
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		
b)	Were analytes detected in the field blank(s)?		x		S-SCL4A-FB-1 @ S-TMW-1
c)	Were analytes detected in the equipment blank(s)?			х	
d)	Were analytes detected in the trip blank(s)?			Х	
Labora	tory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	х			
b)	Were the proper analytes included in the LCS?	x			
c)	Was the LCS accuracy criteria met?	Х			
Duplica	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	iplicate	sample n	ames)?	
		х			S-SCL4A-DUP-1 @ S-TMW-1
b)	Were field dup. precision criteria met (note RPD)?		×		See Notes
c)	Were lab duplicates analyzed (note original and dup	olicate	samples)?	)	
		х			
d)	Were lab dup. precision criteria met (note RPD)?	х			RPD: 2% [<15%]
Blind S	Standards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			х	
	analytes included and concentrations)?				
b)	Was the %D within control limits?			х	
Matrix	Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a)	Was MS accuracy criteria met?	х			
	Recovery could not be calculated since sample contained high concentration of analyte?			x	
b)	Was MSD accuracy criteria met?	х			
	Recovery could not be calculated since sample contained high concentration of analyte?			x	
c)	Were MS/MSD precision criteria met?	Х			

#### Comments/Notes:

S-SCL4A-DUP-1 @ S-TMW-1: RPD for fluoride (23.5%) exceeds limit (20%). Results qualified as estimates.

#### **QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST**

#### Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-TMW-1	Fluoride	0.30	J	Dup RPD exceeds limit
S-SCL4A-DUP-1	"	0.38	J	"
	$\backslash$			
		$\overline{\}$		
	- 1 M III	#		
Signature:	_ Ann Muhlfo	ani		Date: 3/1/2022



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

May 25, 2022

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

RE: Project: AMEREN SEC SCL4A Pace Project No.: 60396339

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory between March 30, 2022 and April 02, 2022. 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
- Pace Analytical Services Greensburg

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

Sincerely,

Parmi Church

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.: 60396339

#### 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

#### 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 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 #: 460198 Washington Certification #: C868 West Virginia DEP Certification #: 143 West Virginia DHHR Certification #: 9964C Wisconsin Approve List for Rad Wyoming Certification #: 8TMS-L

Nevada Certification #: KS000212020-2 Oklahoma Certification #: 9205/9935 Florida: Cert E871149 SEKS WET Texas Certification #: T104704407-21-15 Utah Certification #: KS000212019-9 Illinois Certification #: 004592 Kansas Field Laboratory Accreditation: # E-92587 Missouri SEKS Micro Certification: 10070



#### SAMPLE SUMMARY

Project: AMEREN SEC SCL4A Pace Project No.: 60396339

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60396339001	S-TMW-1	Water	03/29/22 11:05	03/30/22 04:23
60396339002	S-TMW-2	Water	03/29/22 09:13	03/30/22 04:23
60396339003	S-TMW-3	Water	03/29/22 10:15	03/30/22 04:23
60396339004	S-SCL4A-DUP-1	Water	03/29/22 08:00	03/30/22 04:23
60396339005	S-SCL4A-FB-1	Water	04/01/22 14:20	04/02/22 03:00
60396333016	S-UG-3	Water	04/01/22 13:59	04/02/22 03:00
60396337002	S-BMW-1S	Water	03/29/22 14:00	03/30/22 04:23
60396337003	S-BMW-3S	Water	03/29/22 12:20	03/30/22 04:23



#### SAMPLE ANALYTE COUNT

Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laborator
60396339001		EPA 200.7	MRV	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
60396339002	S-TMW-2	EPA 200.7	MRV	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
0396339003	S-TMW-3	EPA 200.7	MRV	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
0396339004	S-SCL4A-DUP-1	EPA 200.7	MRV	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
0396339005	S-SCL4A-FB-1	EPA 200.7	MRV	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
0396333016	S-UG-3	EPA 200.7	JLH, MRV	7	PASI-K
		EPA 903.1	RPS	1	PASI-PA
		EPA 904.0	JSM	1	PASI-PA
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
0396337002	S-BMW-1S	EPA 200.7	JLH, MRV	7	PASI-K
		EPA 903.1	RPS	1	PASI-PA
		EPA 904.0	JSM	1	PASI-PA
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
0396337003	S-BMW-3S	EPA 200.7	JLH, MRV	7	PASI-K
		EPA 903.1	RPS	1	PASI-PA
		EPA 904.0	JSM	1	PASI-PA
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K



#### SAMPLE ANALYTE COUNT

Project: AMEREN SEC SCL4A Pace Project No.: 60396339

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

PASI-K = Pace Analytical Services - Kansas City

PASI-PA = Pace Analytical Services - Greensburg



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

Sample: S-TMW-1	Lab ID:	60396339001	Collected	d: 03/29/22	2 11:05	Received: 03/	/30/22 04:23 M	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	nod: EP	A 200.7			
	Pace Ana	lytical Services	- Kansas Ci	ity					
Boron	76.8J	ug/L	100	7.1	1	04/04/22 09:58	04/06/22 11:01	7440-42-8	
Calcium	103000	ug/L	400	143	2	04/04/22 09:58	04/06/22 11:38	7440-70-2	
Iron	<21.1	ug/L	50.0	21.1	1	04/04/22 09:58	04/06/22 11:01	7439-89-6	
Magnesium	18200	ug/L	50.0	11.7	1	04/04/22 09:58	04/06/22 11:01	7439-95-4	
Manganese	254	ug/L	5.0	1.1	1	04/04/22 09:58	04/06/22 11:01	7439-96-5	
Potassium	4440	ug/L	500	224	1	04/04/22 09:58	04/06/22 11:01	7440-09-7	
Sodium	3150	ug/L	500	166	1	04/04/22 09:58	04/06/22 11:01	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Ana	lytical Services	- Kansas Ci	ity					
Alkalinity, Total as CaCO3	284	mg/L	20.0	4.6	1		04/05/22 11:07		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Ana	lytical Services	- Kansas Ci	ity					
Total Dissolved Solids	365	mg/L	5.0	5.0	1		03/31/22 14:25		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
-	Pace Ana	lytical Services	- Kansas Ci	ity					
Chloride	3.2	mg/L	1.0	0.53	1		04/01/22 20:51	16887-00-6	
Fluoride	0.36	mg/L	0.20	0.12	1		04/01/22 20:51	16984-48-8	
Sulfate	64.9	mg/L	5.0	2.8	5		04/01/22 21:05	14808-79-8	



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

Sample: S-TMW-2	Lab ID:	60396339002	Collected	d: 03/29/22	2 09:13	Received: 03/	30/22 04:23 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	od: EP	A 200.7			
	Pace Anal	ytical Services	- Kansas C	ity					
Boron	84.9J	ug/L	100	7.1	1	04/04/22 09:58	04/06/22 11:04	7440-42-8	
Calcium	124000	ug/L	400	143	2	04/04/22 09:58	04/06/22 11:12	7440-70-2	M1
Iron	1140	ug/L	50.0	21.1	1	04/04/22 09:58	04/06/22 11:04	7439-89-6	
Magnesium	22100	ug/L	50.0	11.7	1	04/04/22 09:58	04/06/22 11:04	7439-95-4	
Manganese	372	ug/L	5.0	1.1	1	04/04/22 09:58	04/06/22 11:04	7439-96-5	
Potassium	5310	ug/L	500	224	1	04/04/22 09:58	04/06/22 11:04	7440-09-7	
Sodium	3820	ug/L	500	166	1	04/04/22 09:58	04/06/22 11:04	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Anal	ytical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	328	mg/L	20.0	4.6	1		04/05/22 11:07		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Anal	ytical Services	- Kansas C	ity					
Total Dissolved Solids	447	mg/L	10.0	10.0	1		03/31/22 14:25		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
-	Pace Anal	ytical Services	- Kansas C	ity					
Chloride	3.4	mg/L	1.0	0.53	1		04/01/22 21:18	16887-00-6	
Fluoride	0.34	mg/L	0.20	0.12	1		04/01/22 21:18	16984-48-8	
Sulfate	79.0	mg/L	5.0	2.8	5		04/01/22 22:14	14808-79-8	



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

Sample: S-TMW-3	Lab ID:	60396339003	Collected	d: 03/29/22	2 10:15	Received: 03/	/30/22 04:23 M	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	nod: EP	A 200.7			
	Pace Analy	tical Services	- Kansas C	ity					
Boron	95.6J	ug/L	100	7.1	1	04/04/22 09:58	04/06/22 11:23	7440-42-8	
Calcium	132000	ug/L	400	143	2	04/04/22 09:58	04/06/22 11:25	7440-70-2	
Iron	1630	ug/L	50.0	21.1	1	04/04/22 09:58	04/06/22 11:23	7439-89-6	
Magnesium	23900	ug/L	50.0	11.7	1	04/04/22 09:58	04/06/22 11:23	7439-95-4	
Manganese	455	ug/L	5.0	1.1	1	04/04/22 09:58	04/06/22 11:23	7439-96-5	
Potassium	6280	ug/L	500	224	1	04/04/22 09:58	04/06/22 11:23	7440-09-7	
Sodium	4620	ug/L	500	166	1	04/04/22 09:58	04/06/22 11:23	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Analy	tical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	406	mg/L	20.0	4.6	1		04/05/22 11:07		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Analy	tical Services	- Kansas Ci	ity					
Total Dissolved Solids	476	mg/L	10.0	10.0	1		03/31/22 14:25		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
-	Pace Analy	tical Services	- Kansas C	ity					
Chloride	2.4	mg/L	1.0	0.53	1		04/01/22 23:37	16887-00-6	
Fluoride	0.30	mg/L	0.20	0.12	1		04/01/22 23:37	16984-48-8	
Sulfate	51.0	mg/L	5.0	2.8	5		04/01/22 23:51	14808-79-8	



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

Sample: S-SCL4A-DUP-1	Lab ID:	60396339004	Collected	d: 03/29/22	2 08:00	Received: 03/	'30/22 04:23 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Method: EPA 2 ytical Services	•		od: EP/	A 200.7			
Boron Calcium Iron Magnesium Manganese Potassium	75.5J 107000 <21.1 18100 249 4420	ug/L ug/L ug/L ug/L ug/L ug/L	100 400 50.0 50.0 5.0 500	7.1 143 21.1 11.7 1.1 224	1 2 1 1 1	04/04/22 09:58 04/04/22 09:58 04/04/22 09:58 04/04/22 09:58 04/04/22 09:58 04/04/22 09:58	04/06/22 11:27 04/06/22 12:01 04/06/22 11:27 04/06/22 11:27 04/06/22 11:27 04/06/22 11:27	7440-70-2 7439-89-6 7439-95-4 7439-96-5	
Sodium 2320B Alkalinity	-	ug/L Method: SM 23 vtical Services		166 itv	1	04/04/22 09:58	04/06/22 11:27	7440-23-5	
Alkalinity, Total as CaCO3 2540C Total Dissolved Solids	<b>276</b> Analytical	mg/L Method: SM 25 ytical Services	20.0 540C	4.6	1		04/05/22 11:07		
Total Dissolved Solids 300.0 IC Anions 28 Days	,	mg/L Method: EPA 3 ytical Services		10.0	1		03/31/22 14:25		
Chloride Fluoride Sulfate	3.1 0.34 65.7	mg/L mg/L mg/L	1.0 0.20 5.0	0.53 0.12 2.8	1 1 5		04/02/22 00:05 04/02/22 00:05 04/02/22 00:19	16984-48-8	



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

Sample: S-SCL4A-FB-1	Lab ID:	60396339005	Collected	: 04/01/22	2 14:20	Received: 04/	02/22 03:00 M	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Method: EPA 2 ytical Services	•		iod: EP/	A 200.7			
Boron Calcium Iron Magnesium Manganese Potassium	<7.1 <71.3 <21.1 15.4J <1.1 <224	ug/L ug/L ug/L ug/L ug/L ug/L	100 200 50.0 50.0 5.0 5.0	7.1 71.3 21.1 11.7 1.1 224	1 1 1 1 1	04/07/22 13:51 04/07/22 13:51 04/07/22 13:51 04/07/22 13:51 04/07/22 13:51 04/07/22 13:51	04/09/22 15:57 04/09/22 15:57 04/09/22 15:57 04/09/22 15:57 04/09/22 15:57 04/09/22 15:57	7440-70-2 7439-89-6 7439-95-4 7439-96-5 7440-09-7	
Sodium 2320B Alkalinity	Pace Anal	ug/L Method: SM 23 ytical Services	- Kansas Cit	,	1	04/07/22 13:51	04/10/22 14:28	7440-23-5	
Alkalinity, Total as CaCO3 2540C Total Dissolved Solids	Pace Anal	mg/L Method: SM 25 ytical Services	- Kansas Cit	,	1		04/08/22 12:27		
Total Dissolved Solids 300.0 IC Anions 28 Days		mg/L Method: EPA 3 ytical Services		5.0 y	1		04/07/22 16:12		
Chloride Fluoride Sulfate	<0.53 <0.12 <0.55	mg/L mg/L mg/L	1.0 0.20 1.0	0.53 0.12 0.55	1 1 1		04/08/22 11:12 04/08/22 11:12 04/08/22 11:12	16984-48-8	



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

Lab ID:	60396333016	Collecte	d: 04/01/2	2 13:59	Received: 04/	02/22 03:00 Ma	atrix: Water	
Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
		•		nod: EP	A 200.7			
Pace Anal	ytical Services	- Kansas C	ity					
184	ug/L	100	7.1	1	04/07/22 16:00	04/09/22 20:13	7440-42-8	
120000	ug/L	400	143	2	04/07/22 16:00	04/11/22 20:09	7440-70-2	
<21.1	ug/L	50.0	21.1	1	04/07/22 16:00	04/09/22 20:13	7439-89-6	
24500	ug/L	50.0	11.7	1	04/07/22 16:00	04/09/22 20:13	7439-95-4	
1120	ug/L	5.0	1.1	1	04/07/22 16:00	04/09/22 20:13	7439-96-5	
5970	ug/L	500	224	1	04/07/22 16:00	04/11/22 15:19	7440-09-7	
52900	ug/L	500	166	1	04/07/22 16:00	04/11/22 15:19	7440-23-5	
Analytical	Method: SM 23	20B						
Pace Anal	ytical Services	- Kansas C	ity					
393	mg/L	20.0	4.6	1		04/13/22 19:14		
Analytical	Method: SM 25	40C						
Pace Anal	ytical Services	- Kansas C	ity					
612	mg/L	10.0	10.0	1		04/07/22 16:12		
Analytical	Method: EPA 3	00.0						
Pace Anal	ytical Services	- Kansas C	ity					
73.5	mg/L	10.0	5.3	10		04/15/22 18:49	16887-00-6	
0.35	mg/L	0.20	0.12	1		04/15/22 18:06	16984-48-8	
18.6	mg/L	1.0	0.55	1		04/15/22 18:06	14808-79-8	
	Results Analytical Pace Anal 184 120000 <21.1 24500 1120 5970 52900 Analytical Pace Anal 393 Analytical Pace Anal 612 Analytical Pace Anal 612	Analytical Method: EPA 2 Pace Analytical Services 184 ug/L 120000 ug/L <11 ug/L 24500 ug/L 5970 ug/L 5970 ug/L 52900 ug/L Analytical Method: SM 23 Pace Analytical Services 393 mg/L Analytical Method: SM 25 Pace Analytical Services 612 mg/L Analytical Method: EPA 3 Pace Analytical Services 73.5 mg/L 0.35 mg/L	ResultsUnitsPQLAnalytical Method: EPA 200.7Prepara Pace Analytical Services - Kansas C184ug/L100120000ug/L400<21.1	ResultsUnitsPQLMDLAnalytical Method: EPA 200.7Preparation Meth Pace Analytical Services - Kansas City184ug/L1007.1120000ug/L400143<21.1	Results         Units         PQL         MDL         DF           Analytical Method: EPA 200.7         Preparation Method: EPP Pace Analytical Services - Kansas City         184         ug/L         100         7.1         1           120000         ug/L         400         143         2              4         ug/L         50.0         21.1         1               1         1               1         1                   1         1         1          1	Results         Units         PQL         MDL         DF         Prepared           Analytical Method: EPA 200.7         Preparation Method: EPA 200.7         Pace Analytical Services - Kansas City         1         04/07/22 16:00           120000         ug/L         400         143         2         04/07/22 16:00           120000         ug/L         400         143         2         04/07/22 16:00           24500         ug/L         50.0         21.1         1         04/07/22 16:00           24500         ug/L         50.0         11.7         1         04/07/22 16:00           1120         ug/L         5.0         1.1         1         04/07/22 16:00           5970         ug/L         500         166         1         04/07/22 16:00           5970         ug/L         500         166         1         04/07/22 16:00           5970         ug/L         500         166         1         04/07/22 16:00           Analytical Method: SM 2320B         Pace Analytical Services - Kansas City         393         mg/L         20.0         4.6         1           Analytical Method: SM 2540C         Pace Analytical Services - Kansas City         1         1         0.0         1	Results         Units         PQL         MDL         DF         Prepared         Analyzed           Analytical Method: EPA 200.7         Preparation Method: EPA 200.7         Pace Analytical Services - Kansas City         184         ug/L         100         7.1         1         04/07/22 16:00         04/09/22 20:13           120000         ug/L         400         143         2         04/07/22 16:00         04/09/22 20:09           <21.1	Results         Units         PQL         MDL         DF         Prepared         Analyzed         CAS No.           Analytical Method: EPA 200.7         Preparation Method: EPA 200.7         Pace Analytical Services - Kansas City         14         04/07/22 16:00         04/09/22 20:13         7440-42-8           120000         ug/L         400         143         2         04/07/22 16:00         04/09/22 20:13         7440-42-8           120000         ug/L         50.0         21.1         1         04/07/22 16:00         04/09/22 20:13         7440-42-8           120000         ug/L         50.0         21.1         1         04/07/22 16:00         04/09/22 20:13         7439-89-6           24500         ug/L         50.0         11.7         1         04/07/22 16:00         04/09/22 20:13         7439-89-5           24500         ug/L         50.0         11.1         04/07/22 16:00         04/09/22 20:13         7439-89-5           3970         ug/L         50.0         166         1         04/07/22 16:00         04/01/122 15:19         7440-09-7           52900         ug/L         500         166         1         04/07/22 16:00         04/11/22 19:14           Analytical Method: SM 2320B         Exercise - Kans



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

Sample: S-BMW-1S	Lab ID:	60396337002	Collecte	d: 03/29/22	2 14:00	Received: 03/	/30/22 04:23 M	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Method: EPA 2	•		nod: EP	A 200.7			
	Pace Anal	ytical Services	- Kansas C	ity					
Boron	68.0J	ug/L	100	7.1	1	04/07/22 13:51	04/09/22 16:38	7440-42-8	
Calcium	173000	ug/L	400	143	2	04/07/22 13:51	04/11/22 18:22	7440-70-2	
Iron	<21.1	ug/L	50.0	21.1	1	04/07/22 13:51	04/09/22 16:38	7439-89-6	
Magnesium	30000	ug/L	50.0	11.7	1	04/07/22 13:51	04/09/22 16:38	7439-95-4	
Manganese	675	ug/L	5.0	1.1	1	04/07/22 13:51	04/09/22 16:38	7439-96-5	
Potassium	470J	ug/L	500	224	1	04/07/22 13:51	04/09/22 16:38	7440-09-7	
Sodium	4900	ug/L	1000	332	2	04/07/22 13:51	04/11/22 18:22	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	320B						
	Pace Anal	ytical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	505	mg/L	20.0	4.6	1		04/05/22 10:05		
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
	Pace Anal	ytical Services	- Kansas C	ity					
Total Dissolved Solids	591	mg/L	10.0	10.0	1		04/01/22 17:19		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
-	Pace Anal	ytical Services	- Kansas C	ity					
Chloride	8.5	mg/L	1.0	0.53	1		04/01/22 18:04	16887-00-6	
Fluoride	0.30	mg/L	0.20	0.12	1		04/01/22 18:04	16984-48-8	
Sulfate	44.9	mg/L	5.0	2.8	5		04/01/22 18:18	14808-79-8	



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

Sample: S-BMW-3S	Lab ID:	60396337003	Collected	: 03/29/22	2 12:20	Received: 03/	'30/22 04:23 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Method: EPA 2 ytical Services	•		iod: EP/	A 200.7			
Boron Calcium Iron Magnesium Manganese Potassium	70.7J 147000 <21.1 24100 215 569	ug/L ug/L ug/L ug/L ug/L ug/L	100 400 50.0 50.0 5.0 500	7.1 143 21.1 11.7 1.1 224	1 2 1 1 1	04/07/22 13:51 04/07/22 13:51 04/07/22 13:51 04/07/22 13:51 04/07/22 13:51 04/07/22 13:51	04/09/22 16:40 04/11/22 18:29 04/09/22 16:40 04/09/22 16:40 04/09/22 16:40 04/09/22 16:40	7440-70-2 7439-89-6 7439-95-4 7439-96-5 7440-09-7	
Sodium 2320B Alkalinity		ug/L Method: SM 23 ytical Services		166 y 4.6	1	04/07/22 13:51	04/10/22 15:06	7440-23-5	
Alkalinity, Total as CaCO3 2540C Total Dissolved Solids	Analytical	mg/L Method: SM 25 ytical Services	40C	-	1		04/05/22 10.05		
Total Dissolved Solids 300.0 IC Anions 28 Days		mg/L Method: EPA 3 ytical Services		10.0 y	1		04/01/22 17:19		
Chloride Fluoride Sulfate	11.8 0.36 47.8	mg/L mg/L mg/L	1.0 0.20 5.0	0.53 0.12 2.8	1 1 5		04/01/22 18:32 04/01/22 18:32 04/01/22 18:46	16984-48-8	



Project:	AMEREN SEC SCL4A

	Pace Pro	ject No.:	60396339
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QC Batch: 779353		Analysis Meth	hod: E	EPA 200.7				
QC Batch Method: EPA 200.7		Analysis Des	Analysis Description: 200.7 Metals, Total					
		Laboratory:	F	Pace Analytical Se	rvices - Kansas City	y		
Associated Lab Samples: 603963	39001, 60396339002	2, 60396339003, 60	0396339004					
METHOD BLANK: 3108936		Matrix:	Water					
Associated Lab Samples: 603963	39001, 6039633900	2, 60396339003, 6	0396339004					
		Blank	Reporting					
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers		
Boron	ug/L	<7.1	10	0 7.1	04/05/22 18:01			
Calcium	ug/L	<71.3	20	0 71.3	04/05/22 18:01			
Iron	ug/L	<21.1	50.0	0 21.1	04/05/22 18:01			
Magnesium	ug/L	<11.7	50.0	0 11.7	04/05/22 18:01			
Manganese	ug/L	<1.1	5.0	0 1.1	04/05/22 18:01			
Potassium	ug/L	<224	50	0 224	04/05/22 18:01			
Sodium	ug/L	<166	50	0 166	04/05/22 18:01			

#### LABORATORY CONTROL SAMPLE: 3108937

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	950	95	85-115	
Calcium	ug/L	10000	9980	100	85-115	
Iron	ug/L	10000	10000	100	85-115	
Magnesium	ug/L	10000	10500	105	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	9570	96	85-115	
Sodium	ug/L	10000	9750	97	85-115	

MATRIX SPIKE & MATRIX	SPIKE DUPL	ICATE: 3108	938 MS	MSD	3108939							
Parameter	Units	60396339002 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L		1000	1000	1080	1080	100	100	70-130	0	20	
Calcium	ug/L	124000	10000	10000	133000	127000	89	37	70-130	4	20	M1
Iron	ug/L	1140	10000	10000	11300	11200	102	100	70-130	1	20	
Magnesium	ug/L	22100	10000	10000	30500	30000	84	79	70-130	2	20	
Manganese	ug/L	372	1000	1000	1390	1380	102	101	70-130	1	20	
Potassium	ug/L	5310	10000	10000	15900	15800	106	105	70-130	1	20	
Sodium	ug/L	3820	10000	10000	14600	14600	107	108	70-130	0	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**



Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

QC Batch:	780187	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Sam	ples: 60396337002, 60396337003, 6	0396339005	

METHOD BLANK: 3111909		Matrix:	Water			
Associated Lab Samples: 60	396337002, 60396337003,	60396339005				
Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<7.1	100	7.1	04/09/22 15:48	
Calcium	ug/L	<71.3	200	71.3	04/09/22 15:48	
Iron	ug/L	<21.1	50.0	21.1	04/09/22 15:48	
Magnesium	ug/L	<11.7	50.0	11.7	04/09/22 15:48	
Manganese	ug/L	<1.1	5.0	1.1	04/09/22 15:48	
Potassium	ug/L	<224	500	224	04/09/22 15:48	
Sodium	ug/L	<166	500	166	04/12/22 13:11	

#### LABORATORY CONTROL SAMPLE: 3111910

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	978	98	85-115	
Calcium	ug/L	10000	9160	92	85-115	
Iron	ug/L	10000	9920	99	85-115	
Magnesium	ug/L	10000	9930	99	85-115	
Manganese	ug/L	1000	963	96	85-115	
Potassium	ug/L	10000	11100	111	85-115	
Sodium	ug/L	10000	11000	110	85-115	

MATRIX SPIKE & MATRIX SP	PIKE DUPL	LICATE: 3111	• • •	1405	3111912							
Parameter	Units	60396338004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qua
Boron	ug/L	93.3J	1000	1000	1090	1100	100	101	70-130	1	20	
Calcium	ug/L	163000	10000	10000	171000	172000	72	86	70-130	1	20	
Iron	ug/L	2250	10000	10000	12100	12100	99	98	70-130	1	20	
Magnesium	ug/L	28300	10000	10000	36300	35800	80	75	70-130	1	20	
Manganese	ug/L	1110	1000	1000	2100	2080	99	96	70-130	1	20	
Potassium	ug/L	6150	10000	10000	17900	17700	117	116	70-130	1	20	
Sodium	ug/L	5150	10000	10000	16800	16700	116	116	70-130	0	20	
MATRIX SPIKE SAMPLE:		3111913										
			60396	338008	Spike	MS		MS	% Rec			
Parameter		Units	Re	esult	Conc.	Result	9	6 Rec	Limits		Qualif	iers
Boron		ug/L		113	1000	1	140	103	70	-130		
Calcium		ug/L		97300	10000	119	000	216	70	-130 M	1	

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**



Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

MATRIX SPIKE SAMPLE:	3111913						
		60396338008	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Iron	ug/L	<21.1	10000	9940	99	70-130	
Magnesium	ug/L	21400	10000	30000	87	70-130	
Manganese	ug/L	14.8	1000	995	98	70-130	
Potassium	ug/L	5150	10000	17700	126	70-130	
Sodium	ug/L	43400	10000	56900	135	70-130 M <sup>2</sup>	1

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.



Project: AMEREN SEC SCL4A

Pace Project No.:	60396339
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QC Batch:	780254	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Sar	mples: 60396333016		
METHOD BLANK:	3112107	Matrix: Water	
Associated Lab Sar	mples: 60396333016		
		Blank Reportir	na

		Didilik	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<7.1	100	7.1	04/20/22 18:03	
Calcium	ug/L	<71.3	200	71.3	04/09/22 19:27	
Iron	ug/L	<21.1	50.0	21.1	04/09/22 19:27	
Magnesium	ug/L	13.2J	50.0	11.7	04/09/22 19:27	
Manganese	ug/L	1.3J	5.0	1.1	04/09/22 19:27	
Potassium	ug/L	<224	500	224	04/09/22 19:27	
Sodium	ug/L	<166	500	166	04/09/22 19:27	

#### LABORATORY CONTROL SAMPLE: 3112108

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	999	100	85-115	
Calcium	ug/L	10000	10100	101	85-115	
Iron	ug/L	10000	10400	104	85-115	
Magnesium	ug/L	10000	10500	105	85-115	
Manganese	ug/L	1000	1020	102	85-115	
Potassium	ug/L	10000	10600	106	85-115	
Sodium	ug/L	10000	11000	110	85-115	

MATRIX SPIKE & MATRIX	SPIKE DUPLI	CATE: 3112			3112112							
Parameter	( Units	60396333011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	87.1J	1000	1000	1100	1100	101	101	70-130	0	20	
Calcium	ug/L	105000	10000	10000	118000	114000	132	93	70-130	3	20	M1
Iron	ug/L	6090	10000	10000	16300	16400	102	103	70-130	1	20	
Magnesium	ug/L	26000	10000	10000	33800	33900	78	79	70-130	0	20	
Manganese	ug/L	378	1000	1000	1370	1370	99	100	70-130	0	20	
Potassium	ug/L	3480	10000	10000	13900	14300	105	108	70-130	2	20	
Sodium	ug/L	9380	10000	10000	19900	19900	105	106	70-130	0	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**



Project:	AMEREN SEC S	CL4A						
Pace Project No.:	60396339							
QC Batch:	779612		Analysis Me	ethod:	SM 2320B			
QC Batch Method:	SM 2320B		Analysis De	escription:	2320B Alkalin	ity		
			Laboratory:		Pace Analytic	al Services - K	ansas C	lity
Associated Lab San	nples: 6039633	7002, 60396337003	, 60396339001,	60396339002,	, 60396339003	8, 6039633900	4	
METHOD BLANK:	3109702		Matrix	: Water				
Associated Lab San	nples: 6039633	7002, 60396337003	, 60396339001,	60396339002,	, 60396339003	8, 6039633900	4	
			Blank	Reporting				
Paran	neter	Units	Result	Limit	MDL	Ana	lyzed	Qualifiers
Alkalinity, Total as C	aCO3	mg/L	<4.6	5 20	0.0	4.6 04/05/2	2 09:48	
LABORATORY COM	NTROL SAMPLE:	3109703						
			Spike	LCS	LCS	% Rec		
Paran	neter	Units	Conc.	Result	% Rec	Limits	Qua	alifiers
Alkalinity, Total as C	aCO3	mg/L	500	490	98	90-11	0	
SAMPLE DUPLICA	TE: 3109704							
_			60395733004	Dup		Ma		
Paran	neter	Units	Result	Result	RPD	RPI	) 	Qualifiers
Alkalinity, Total as C	aCO3	mg/L	154	1:	52	1	10	
SAMPLE DUPLICA	TE: 3109705							
			60396339002	Dup		Ma		
SAMPLE DUPLICA		Units	60396339002 Result	Dup Result	RPD	Ma: RPI		Qualifiers

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.



- <b>1</b>	MEREN SEC SCL4A								
,	396339		Analysia M	lathad	CM 0000D				
			Analysis M		SM 2320B				
QC Batch Method: S	SM 2320B		Analysis D	•	2320B Alka				
Associated Lab Sample	es: 60396339005		Laboratory	<u>'</u>	Pace Analy	lical Se	rvices - Kai	nsas C	ity
METHOD BLANK: 31	11773		Matri	x: Water					
Associated Lab Sample	es: 60396339005								
			Blank	Reportir	g				
Paramete	er	Units	Result	Limit	MD	L	Analyz	zed	Qualifiers
Alkalinity, Total as CaC	03	mg/L	<4.	6	20.0	4.6	04/08/22	11:08	
LABORATORY CONTR		1774	Spike	LCS	LCS		% Rec		
Paramete	er	Units	Conc.	Result	% Rec		Limits	Qua	alifiers
Alkalinity, Total as CaC	03	mg/L	500	490	9	8	90-110		
SAMPLE DUPLICATE:	3111775								
_			60396168004	•			Max		
Paramete	er	Units	Result	Result	RPI	)	RPD		Qualifiers
Alkalinity, Total as CaC	O3	mg/L	60	4	603	0		10	
SAMPLE DUPLICATE:	3112713								
			60396338004	Dup			Max		
Paramete	er	Units	Result	Result	RPI	)	RPD		Qualifiers
Alkalinity, Total as CaC	03	mg/L	46	0	461	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.



Project: AMEREN SE Pace Project No.: 60396339	C SCL4A						
QC Batch: 780896		Analysis Met	hod: S	M 2320B			
QC Batch Method: SM 2320B		Analysis Des		320B Alkalin	ity		
		Laboratory:			al Services - Ka	nsas C	ity
Associated Lab Samples: 6039	6333016						
METHOD BLANK: 3114512		Matrix:	Water				
Associated Lab Samples: 6039	6333016						
		Blank	Reporting				
Parameter	Units	Result	Limit	MDL	Analy		Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0		4.6 04/13/22	16:56	
LABORATORY CONTROL SAMP	LE: 3114513	Spike	LCS	LCS	% Rec		
Parameter	Units			% Rec	Limits	Qua	alifiers
Alkalinity, Total as CaCO3	mg/L	500	491	98	90-110		
SAMPLE DUPLICATE: 3114516	;				Mari		
Parameter	Units	60396332004 Result	Dup Result	RPD	Max RPD		Qualifiers
Alkalinity, Total as CaCO3	mg/L	95.3	95.7		0	10	
SAMPLE DUPLICATE: 3114517	,						
Parameter	Units	60396333011 Result	Dup Result	RPD	Max RPD		Qualifiers
				·			Quaimers
Alkalinity, Total as CaCO3	mg/L	291	288		1	10	
SAMPLE DUPLICATE: 3114518	<b>i</b>						
	11.5	60396735001	Dup	000	Max		Qualifiana
Parameter	Units	Result	Result	RPD	RPD		Qualifiers
Alkalinity, Total as CaCO3	mg/L	437	442		1	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**



Project:	AMEREN SEC SC	CL4A							
Pace Project No .:	60396339								
QC Batch:	778990		Analysis M	ethod:	SM 2540C				
QC Batch Method:	SM 2540C		Analysis D	escription:	2540C Total D	Dissolv	ved Solids		
			Laboratory	:	Pace Analytic	al Ser	vices - Kar	nsas Ci	ity
Associated Lab San	nples: 60396339	0001, 6039633900	02, 60396339003,	60396339004					
METHOD BLANK:	3107469		Matri	x: Water					
Associated Lab San	nples: 60396339	0001, 6039633900	02, 60396339003,	60396339004					
			Blank	Reporting					
Paran	neter	Units	Result	Limit	MDL		Analyz	zed	Qualifiers
Total Dissolved Solie	ds	mg/L	<5.0	0 5	5.0	5.0	03/31/22	14:23	
LABORATORY CON		3107470							
		0101410	Spike	LCS	LCS	%	6 Rec		
Paran	neter	Units	Conc.	Result	% Rec	L	imits	Qua	alifiers
Total Dissolved Solie	ds	mg/L	1000	1020	102		80-120		
SAMPLE DUPLICA	TE: 3107471								
			60396339004	Dup			Max		
Paran	neter	Units	Result	Result	RPD		RPD		Qualifiers
Total Dissolved Solid	ds	mg/L	35	7 30	66	2		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.



Project: AMEREN SEC S Pace Project No.: 60396339	SCL4A						
QC Batch: 779231		Analysis Me	ethod:	SM 2540C			
QC Batch Method: SM 2540C		Analysis De	escription:	2540C Total D	Dissolved Solids		
		Laboratory		Pace Analytic	al Services - Ka	nsas City	y
Associated Lab Samples: 6039633	7002, 60396337003						
METHOD BLANK: 3108391		Matrix	k: Water				
Associated Lab Samples: 6039633	7002, 60396337003						
		Blank	Reporting				
Parameter	Units	Result	Limit	MDL	Analy	zed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	) {	5.0	5.0 04/01/22	17:19	
LABORATORY CONTROL SAMPLE:	3108392						
		Spike	LCS	LCS	% Rec		
Parameter	Units	Conc.	Result	% Rec	Limits	Quali	ifiers
Total Dissolved Solids	mg/L	1000	966	97	80-120		
SAMPLE DUPLICATE: 3108393							
		60396337001	Dup		Max		
Parameter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Solids	mg/L	621	6	13	1	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.



Project:	AMEREN SI	EC SCL4A								
Pace Project No.:	60396339									
QC Batch:	780233		Analysis M	ethod:	SM 25	540C				
QC Batch Method:	SM 2540C		Analysis D	escription:	25400	C Total D	Dissol	ved Solids		
			Laboratory	:	Pace	Analytica	al Se	rvices - Kar	nsas C	ity
Associated Lab San	nples: 603	96333016, 60396339005								
METHOD BLANK:	3112059		Matri	x: Water						
Associated Lab San	nples: 603	96333016, 60396339005								
			Blank	Reportin	g					
Paran	neter	Units	Result	Limit		MDL		Analyz	zed	Qualifiers
Total Dissolved Solie	ds	mg/L	<5.0	)	5.0		5.0	04/07/22	16:11	
LABORATORY COM	NTROL SAMP	PLE: 3112060								
			Spike	LCS	LC	-		% Rec		
Paran	neter	Units	Conc.	Result	% R	lec	I	_imits	Qua	alifiers
Total Dissolved Solie	ds	mg/L	1000	972		97		80-120		
SAMPLE DUPLICA	TE: 311206	1								
_			60396333011	Dup				Max		0 11/1
Paran	neter	Units	Result	Result		RPD		RPD		Qualifiers
Total Dissolved Solid	ds	mg/L	534	1	515		4		10	
SAMPLE DUPLICA	TE: 311206	2								
_			60396338004					Max		
Paran	neter	Units	Result	Result		RPD		RPD		Qualifiers
Total Dissolved Solie	ds	mg/L	578	3	589		2		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.



QC Batch:	77901	8		Analy	ysis Method	1: E	PA 300.0						
QC Batch Met					ysis Descrij		00.0 IC Anio	ons					
de Baton mot		00.0		-	ratory:		ace Analytic		es - Kansas	s Citv			
Associated La	b Samples:	603963370	02, 6039633700				•						
METHOD BLA	NK: 310751	3			Matrix: W	ater							
Associated La	b Samples:	603963370	02, 6039633700	3, 6039633 Blai		96339002, 6 Reporting	039633900	3, 603963	339004				
	Parameter		Units	Res		Limit	MDL		Analyzed	Qı	ualifiers		
Chloride			mg/L		<0.53	1.0		0.53 0	4/02/22 01:	00			
Fluoride			mg/L		<0.12	0.20	)	0.12 0	4/02/22 01:	00			
Sulfate			mg/L		<0.55	1.0	)	0.55 0	4/02/22 01:	00			
LABORATOR	CONTROL S	AMPLE:	3107514										
				Spike	LC	S	LCS	% R	ec				
	Parameter		Units	Conc.	Res	ult	% Rec	Lim	its C	Qualifiers	_		
Chloride			mg/L		5	4.8	96		90-110				
Fluoride			mg/L	2	.5	2.5	102		90-110				
Sulfate			mg/L		5	4.8	97		90-110				
MATRIX SPIK	E SAMPLE:		3107517										
	Parameter		Units		337001 sult	Spike Conc.	MS Result	0,	MS 6 Rec	% Rec Limits	;	Qualif	iers
Chloride					33.4	50		, 7.9	89		-120		
Fluoride			mg/L mg/L		<0.12	50 2.5		2.8	69 108		-120 -120		
Sulfate			mg/L		65.0	50		14	97		-120		
MATRIX SPIK	F & MATRIX S		ICATE: 3107	518		3107519							
_		-		MS	MSD								
			60396339002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Para	meter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride		mg/L	3.4	5	5	8.0	8.0	92	92	80-120	0		
Fluoride		mg/L	0.34	2.5	2.5	3.0	3.0	105	106			15	-
Sulfate		mg/L	79.0	25	25	105	108	106	115	80-120	2	15	E
SAMPLE DUP	LICATE: 310	)7520											
	Parameter		Units	603963 Res		Dup Result	RPD		Max RPD	Qualif	iers		
Chloride			mg/L		3.4	3.4	Ļ	0	15	5			
			mg/L mg/L		3.4 0.34 79.0	3.4 0.35 78.9	;	0 1	15 15 15	5			

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## **REPORT OF LABORATORY ANALYSIS**



Pace Project No.: 6039	007		• •	ate Mart	. –							
	)287			sis Method		PA 300.0						
QC Batch Method: EP	A 300.0			sis Descrip		00.0 IC Ani			-			
Associated Lab Samples:	603963390	005	Labo	ratory:	Р	ace Analyt	cal Servic	es - Kansas	s City			
METHOD BLANK: 3112	201			Matrix: Wa	ater							
Associated Lab Samples:	603963390	005										
			Blar	nk I	Reporting							
Parameter		Units	Res		Limit	MDL	_	Analyzed	Qu	ualifiers		
Chloride		mg/L		<0.53	1.0		0.53 04	4/08/22 10:	 44			
Fluoride		mg/L		<0.12	0.20			4/08/22 10:				
Sulfate		mg/L		<0.55	1.0		0.55 04	4/08/22 10:	44			
LABORATORY CONTRO		3112202										
ENDORATORY CONTRO	L ORIVIT LL.	0112202	Spike	LC	S	LCS	% R	ec				
Parameter		Units	Conc.	Res		% Rec	Lim		Qualifiers			
Chloride		mg/L		5	4.8	97	7	90-110		_		
Fluoride		mg/L	2.		2.6	105		90-110				
Sulfate		mg/L		5	5.0	99		90-110				
		-										
MATRIX SPIKE & MATRI	X SPIKE DUPI	LICATE: 3112	203		3112204							
MATRIX SPIKE & MATRI	X SPIKE DUPI		MS	MSD	3112204				~ 5			
MATRIX SPIKE & MATRI Parameter	X SPIKE DUPI Units	LICATE: 3112 60396338004 Result		MSD Spike Conc.		MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60396338004	MS Spike	Spike	3112204 MS					RPD 0	RPD	Qual
Parameter	Units	60396338004 Result	MS Spike Conc.	Spike Conc.	3112204 MS Result	Result	% Rec	% Rec	Limits		RPD 15	Qual
Parameter Chloride Fluoride	Units mg/L	60396338004 <u>Result</u> 8.5	MS Spike Conc. 5	Spike Conc. 5	3112204 MS Result 13.4	Result 13.4	% Rec 97	% Rec 98	Limits 80-120	0	RPD 15 15	Qual
Parameter Chloride Fluoride Sulfate	Units mg/L mg/L mg/L	60396338004 Result 8.5 0.38 63.9	MS Spike Conc. 5 2.5 25	Spike Conc. 5 2.5	3112204 MS Result 13.4 3.0	Result 13.4 3.0	% Rec 97 103	% Rec 98 107	Limits 80-120 80-120	0 3	RPD 15 15	Qual
Parameter Chloride Fluoride Sulfate	Units mg/L mg/L mg/L	60396338004 Result 8.5 0.38 63.9	MS Spike Conc. 5 2.5 25	Spike Conc. 5 2.5	3112204 MS Result 13.4 3.0 87.8	Result 13.4 3.0	% Rec 97 103	% Rec 98 107	Limits 80-120 80-120	0 3	RPD 15 15	Qual
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRI	Units mg/L mg/L X SPIKE DUPI	60396338004 Result 8.5 0.38 63.9 LICATE: 3112 60396332004	MS Spike Conc. 5 2.5 25 206 MS Spike	Spike Conc. 5 2.5 25 MSD Spike	3112204 MS Result 13.4 3.0 87.8 3112207 MS	Result 13.4 3.0 86.6 MSD	% Rec 97 103 95 MS	% Rec 98 107 91 MSD	Limits 80-120 80-120 80-120 % Rec	03	RPD 15 15 15	
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRI Parameter	Units mg/L mg/L mg/L	60396338004 Result 8.5 0.38 63.9 LICATE: 3112 60396332004 Result	MS Spike Conc. 5 2.5 25 206 MS	Spike Conc. 5 2.5 25 MSD	3112204 MS Result 13.4 3.0 87.8 3112207 MS Result	Result 13.4 3.0 86.6 MSD Result	% Rec 97 103 95	% Rec 98 107 91	Limits 80-120 80-120 80-120 % Rec Limits	0 3	RPD 15 15 15	Qual
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRI Parameter Chloride	Units mg/L mg/L mg/L X SPIKE DUPI Units mg/L	60396338004 Result 8.5 0.38 63.9 LICATE: 3112 60396332004 Result 15.5	MS Spike Conc. 5 2.5 25 206 MS Spike Conc. 5	Spike Conc. 5 2.5 25 MSD Spike Conc. 5	3112204 MS Result 13.4 3.0 87.8 3112207 MS Result 20.8	Result 13.4 3.0 86.6 MSD Result 20.8	% Rec 97 103 95 MS % Rec 105	% Rec 98 107 91 MSD % Rec 105	Limits 80-120 80-120 80-120 % Rec Limits 80-120	0 3 1 RPD 0	RPD 15 15 15 15 Max RPD 15	Qual
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRI Parameter Chloride Fluoride	Units mg/L mg/L mg/L X SPIKE DUPI Units mg/L mg/L	60396338004 Result 8.5 0.38 63.9 LICATE: 3112 60396332004 Result 15.5 0.77	MS Spike Conc. 5 2.5 25 206 MS Spike Conc. 5 2.5	Spike Conc. 5 2.5 25 MSD Spike Conc. 5 2.5	3112204 MS Result 13.4 3.0 87.8 3112207 MS Result 20.8 3.5	Result 13.4 3.0 86.6 MSD Result 20.8 3.5	% Rec 97 103 95 MS % Rec 105 110	% Rec 98 107 91 MSD % Rec 105 111	Limits 80-120 80-120 80-120 % Rec Limits 80-120 80-120	0 3 1 <u>RPD</u> 0 1	RPD 15 15 15 15 Max RPD 15 15	Qual
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRI Parameter Chloride Fluoride	Units mg/L mg/L mg/L X SPIKE DUPI Units mg/L	60396338004 Result 8.5 0.38 63.9 LICATE: 3112 60396332004 Result 15.5	MS Spike Conc. 5 2.5 25 206 MS Spike Conc. 5	Spike Conc. 5 2.5 25 MSD Spike Conc. 5	3112204 MS Result 13.4 3.0 87.8 3112207 MS Result 20.8	Result 13.4 3.0 86.6 MSD Result 20.8	% Rec 97 103 95 MS % Rec 105	% Rec 98 107 91 MSD % Rec 105	Limits 80-120 80-120 80-120 % Rec Limits 80-120 80-120	0 3 1 RPD 0	RPD 15 15 15 15 Max RPD 15 15	Qual
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRI Parameter Chloride Fluoride Sulfate	Units mg/L mg/L mg/L X SPIKE DUPI Units mg/L mg/L mg/L	60396338004 Result 8.5 0.38 63.9 LICATE: 3112 60396332004 Result 15.5 0.77	MS Spike Conc. 5 2.5 25 206 MS Spike Conc. 5 2.5 500	Spike Conc. 5 2.5 25 MSD Spike Conc. 5 2.5 500	3112204 MS Result 13.4 3.0 87.8 3112207 MS Result 20.8 3.5 1300	Result 13.4 3.0 86.6 MSD Result 20.8 3.5	% Rec 97 103 95 MS % Rec 105 110	% Rec 98 107 91 MSD % Rec 105 111 104	Limits 80-120 80-120 80-120 % Rec Limits 80-120 80-120	0 3 1 <u>RPD</u> 0 1	RPD 15 15 15 15 Max RPD 15 15	Qual
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRI Parameter Chloride Fluoride Sulfate SAMPLE DUPLICATE:	Units mg/L mg/L mg/L X SPIKE DUPI Units mg/L mg/L mg/L	60396338004 Result 8.5 0.38 63.9 LICATE: 3112 60396332004 Result 15.5 0.77 773	MS Spike Conc. 5 2.5 25 206 MS Spike Conc. 5 2.5 500 6039633	Spike Conc. 5 2.5 25 MSD Spike Conc. 5 2.5 500 388004	3112204 MS Result 13.4 3.0 87.8 3112207 MS Result 20.8 3.5 1300 Dup	Result 13.4 3.0 86.6 MSD Result 20.8 3.5 1290	% Rec 97 103 95 MS % Rec 105 110 104	% Rec 98 107 91 MSD % Rec 105 111 104 Max	Limits 80-120 80-120 80-120 % Rec Limits 80-120 80-120 80-120	0 3 1 RPD 0 1 0	RPD 15 15 15 15 Max RPD 15 15	Qual
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRI Parameter Chloride Fluoride Sulfate SAMPLE DUPLICATE: Parameter	Units mg/L mg/L mg/L X SPIKE DUPI Units mg/L mg/L mg/L	60396338004 Result 8.5 0.38 63.9 LICATE: 3112 60396332004 Result 15.5 0.77 773 Units	MS Spike Conc. 5 2.5 25 206 MS Spike Conc. 5 2.5 500	Spike Conc. 5 2.5 25 MSD Spike Conc. 5 2.5 500 38004 ult	3112204 MS Result 13.4 3.0 87.8 3112207 MS Result 20.8 3.5 1300 Dup Result	Result 13.4 3.0 86.6 MSD Result 20.8 3.5 1290 RPD	% Rec 97 103 95 MS % Rec 105 110 104	% Rec         98           91         91           MSD         % Rec           105         111           104         Max           RPD         Max	Limits 80-120 80-120 80-120 % Rec Limits 80-120 80-120 80-120	0 3 1 RPD 0 1 0	RPD 15 15 15 15 Max RPD 15 15	Qual
Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRI Parameter Chloride Fluoride Sulfate SAMPLE DUPLICATE:	Units mg/L mg/L mg/L X SPIKE DUPI Units mg/L mg/L mg/L	60396338004 Result 8.5 0.38 63.9 LICATE: 3112 60396332004 Result 15.5 0.77 773	MS Spike Conc. 5 2.5 25 206 MS Spike Conc. 5 2.5 500 6039633	Spike Conc. 5 2.5 25 MSD Spike Conc. 5 2.5 500 388004	3112204 MS Result 13.4 3.0 87.8 3112207 MS Result 20.8 3.5 1300 Dup	Result 13.4 3.0 86.6 MSD Result 20.8 3.5 1290 RPD	% Rec 97 103 95 MS % Rec 105 110 104	% Rec 98 107 91 MSD % Rec 105 111 104 Max	Limits 80-120 80-120 80-120 % Rec Limits 80-120 80-120 80-120 80-120 0	0 3 1 RPD 0 1 0	RPD 15 15 15 15 Max RPD 15 15	Qual

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



Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

SAMPLE DUPLICATE: 3112208						
		60396332004	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Chloride	mg/L	15.5	15.5	0	15	
Fluoride	mg/L	0.77	0.78	2	15	
Sulfate	mg/L	773	781	1	15	

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



Project: AMEREN	•											
Pace Project No.: 60396339			A re e la		l.							
QC Batch: 781385				ysis Meth		EPA 300.0						
QC Batch Method: EPA 30	0.0			ysis Deso	cription:	300.0 IC Ar			0.1			
Associated Lab Samples: 6	6039633301	16	Labo	oratory:		Pace Analy	tical Sei	vices - Kans	as City			
METHOD BLANK: 3116408				Matrix:	Water							
Associated Lab Samples: 6	6039633301	16										
			Blar	nk	Reporting							
Parameter		Units	Res	ult	Limit	MD	L	Analyze	d Qu	ualifiers		
Chloride		mg/L		<0.53	1	.0	0.53	04/15/22 13	3.11			
Fluoride		mg/L		<0.12	0.2		0.12	04/15/22 1				
Sulfate		mg/L		<0.55		.0	0.55	04/15/22 13				
METHOD BLANK: 3119073				Matrix:	Motor							
				matrix.	water							
Associated Lab Samples: 6	6039633301	16			Den il							
Parameter		Units	Blar Res		Reporting Limit	MD	L	Analyze	d Qu	ualifiers		
Oble side		mg/L	_	0.66J	1	.0	0.53	04/18/22 09	9:21			
Chioride												
Chloride Fluoride		mg/L		<0.12	0.2		0.12	04/18/22 09	9:21			
		-			0.2		0.12 0.55	04/18/22 09 04/18/22 09				
Fluoride Sulfate	AMPLE: 3	mg/L		<0.12	0.2	20						
Fluoride Sulfate LABORATORY CONTROL SA	AMPLE: 3	mg/L mg/L 3116409	Spike Conc.	<0.12 <0.55	0.2 1 LCS	20 .0 LCS	0.55	04/18/22 09	9:21			
Fluoride Sulfate LABORATORY CONTROL SA Parameter	\MPLE: 3	mg/L mg/L 3116409 Units	Spike Conc.	<0.12 <0.55	0.2 1 LCS 2esult	20 .0 LCS % Rec	0.55 	04/18/22 09				
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride	AMPLE: 3	mg/L mg/L 3116409 Units mg/L	Conc.	<0.12 <0.55	0.2 1 LCS Result 4.6	20 .0 LCS % Rec 9	0.55 	04/18/22 09 6 Rec Limits 90-110	9:21			
Fluoride Sulfate LABORATORY CONTROL SA Parameter	ample: 3	mg/L mg/L 3116409 Units		<0.12 <0.55	0.2 1 LCS 2esult	20 .0 <u>LCS</u> <u>% Rec</u> 9 10	0.55 	04/18/22 09	9:21			
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Fluoride Sulfate		mg/L mg/L 3116409 Units mg/L mg/L mg/L	Conc.	<0.12 <0.55	0.2 1 LCS Result 4.6 2.6	20 .0 <u>LCS</u> <u>% Rec</u> 9 10	0.55 	04/18/22 09	9:21	_		
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Fluoride Sulfate		mg/L mg/L 3116409 Units mg/L mg/L	2.	<0.12 <0.55	0.2 1 LCS 2.6 4.9	20 .0 <u>LCS</u> <u>% Rec</u> 9 10 9	0.55 	04/18/22 09 6 Rec .imits 90-110 90-110 90-110	9:21			
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Fluoride Sulfate LABORATORY CONTROL SA		mg/L mg/L 3116409 Units mg/L mg/L mg/L 3119074	Conc. 2. Spike	<0.12 <0.55	0.2 1 LCS 2.6 4.9 LCS	20 .0 LCS % Rec 9 10 9 LCS	0.55 9 1 3 5 8 9	04/18/22 09	Qualifiers			
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Fluoride Sulfate LABORATORY CONTROL SA Parameter		mg/L mg/L 3116409 Units mg/L mg/L 3119074 Units	2.	<0.12 <0.55	0.2 1 LCS 2.6 4.9 LCS 2.esult	20 .0 <u>LCS</u> % Rec 9 10 9 10 9 20 8 20 20 20 20 20 20 20 20 20 20 20 20 20	0.55 9 1 3 5 8 9 1 1 1 1 1 1 1 1 1 1 1 1 1	04/18/22 09	9:21	_		
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Fluoride Sulfate LABORATORY CONTROL SA		mg/L mg/L 3116409 Units mg/L mg/L mg/L 3119074	Conc. 2. Spike	<0.12 <0.55	0.2 1 LCS 2.6 4.9 LCS	20 .0 <u>LCS</u> % Rec 9 10 9 10 9 20 9 9 20 20 20 20 20 20 20 20 20 20 20 20 20	0.55 9 1 3 5 8 9	04/18/22 09	Qualifiers			
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Sulfate LABORATORY CONTROL SA Parameter Chloride Sulfate		mg/L mg/L 3116409 Units mg/L mg/L 3119074 Units mg/L mg/L	2	<0.12 <0.55	0.3 1 LCS 4.6 2.6 4.9 LCS 2.esult 4.5 4.9	20 .0 <u>LCS % Rec</u> 9 10 9 10 9 9 20 9 9 9 9 9 9 9	0.55 9 1 3 5 8 9 1 0 1 0	04/18/22 09	Qualifiers			
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride		mg/L mg/L 3116409 Units mg/L mg/L 3119074 Units mg/L mg/L	2	<0.12 <0.55	0.2 1 LCS 2.6 4.9 LCS 2.8 4.9	20 .0 <u>LCS % Rec</u> 9 10 9 10 9 9 20 9 9 9 9 9 9 9	0.55 9 1 3 5 8 9 1 0 1 0	04/18/22 09	Qualifiers			
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Sulfate LABORATORY CONTROL SA Parameter Chloride Sulfate		mg/L mg/L 3116409 Units mg/L mg/L 3119074 Units mg/L mg/L	Conc.	<0.12 <0.55	0.3 1 LCS 4.6 2.6 4.9 LCS 2.esult 4.5 4.9	20 .0 <u>LCS % Rec</u> 9 10 9 10 9 9 20 9 9 9 9 9 9 9	0.55 9 1 3 5 8 9 1 0 1 0	04/18/22 09	Qualifiers	_	Max	
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Sulfate LABORATORY CONTROL SA Parameter Chloride Sulfate		mg/L mg/L 3116409 Units mg/L mg/L 3119074 Units mg/L mg/L mg/L mg/L	Conc.	<0.12 <0.55	0.2 1 LCS 2.6 4.9 LCS 2.6 4.9 LCS 2.6 4.9 LCS 2.6 4.9 311641	20 .0 LCS % Rec 9 10 9 LCS % Rec 9 9 9 9	0.55 9 1 3 5 8 9 1 7 1 7	04/18/22 09 6 Rec imits 90-110 90-110 90-110 6 Rec imits 90-110 90-110 90-110	Qualifiers Qualifiers			Qual
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Sulfate MATRIX SPIKE & MATRIX SF Parameter	AMPLE: 3 PIKE DUPL Units	mg/L mg/L 3116409 Units mg/L mg/L 3119074 Units mg/L Mg/L ICATE: 31164 60397013002 Result	Conc. 2. Spike Conc.	<0.12 <0.55	0.2 1 LCS 2.6 2.6 4.9 LCS tesult 4.5 4.9 311641 MS Result	20 .0 LCS % Rec 9 10 9 10 9 9 10 9 10 9 9 10 9 10 9 9 10 9 10 9 9 10 10 9 10 10 9 10 9 10 10 10 10 10 10 10 10 10 10 10 10 10	0.55 9 1 3 5 8 9 1 0 7 1 0 7 MS % Re	04/18/22 09 6 Rec .imits 90-110 90-110 90-110 6 Rec .imits 90-110 90-110 90-110 90-110 90-110	Qualifiers Qualifiers % Rec Limits		RPD	
Fluoride Sulfate LABORATORY CONTROL SA Parameter Chloride Sulfate LABORATORY CONTROL SA Parameter Chloride Sulfate MATRIX SPIKE & MATRIX SF		mg/L mg/L 3116409 Units mg/L mg/L 3119074 Units mg/L mg/L 1CATE: 31164 60397013002	Conc.	<0.12 <0.55	0.2 1 LCS 2.6 2.6 4.9 LCS tesult 4.5 4.9 311641 MS Result 5 115	20 .0 LCS % Rec 9 10 9 LCS % Rec 9 9 9 1 1 MSD Result 106	0.55 9 1 3 5 8 9 1 0 7 MS % Re 1	04/18/22 09 6 Rec imits 90-110 90-110 90-110 6 Rec imits 90-110 90-110 90-110	Qualifiers Qualifiers Qualifiers		RPD 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**



#### **ANALYTICAL RESULTS - RADIOCHEMISTRY**

Project: AMEREN SEC SCL4A

Pace Project No.:	60396339
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Sample: S-UG-3 PWS:	Lab ID: 60396 Site ID:	333016 Collected: 04/01/22 13:59 Sample Type:	Received:	04/02/22 03:00	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical	Services - Greensburg				
Radium-226	EPA 903.1	0.372 ± 0.429 (0.697) C:NA T:86%	pCi/L	04/28/22 13:00	0 13982-63-3	
	Pace Analytical	Services - Greensburg				
Radium-228	EPA 904.0	0.975 ± 0.457 (0.768) C:71% T:86%	pCi/L	04/20/22 16:29	9 15262-20-1	



#### **ANALYTICAL RESULTS - RADIOCHEMISTRY**

Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

Sample: S-BMW-1S PWS:	Lab ID: 60396 Site ID:	337002 Collected: 03/29/22 14:00 Sample Type:	Received:	03/30/22 04:23	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical S	ervices - Greensburg				
Radium-226	EPA 903.1	0.283 ± 0.264 (0.347) C:NA T:88%	pCi/L	04/28/22 13:28	8 13982-63-3	
	Pace Analytical S	ervices - Greensburg				
Radium-228	EPA 904.0	0.467 ± 0.635 (1.36) C:76% T:88%	pCi/L	04/20/22 21:40	6 15262-20-1	



#### **ANALYTICAL RESULTS - RADIOCHEMISTRY**

Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

Sample: S-BMW-3S PWS:	Lab ID: 60396 Site ID:	337003 Collected: 03/29/22 12:20 Sample Type:	Received:	03/30/22 04:23	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical S	ervices - Greensburg				
Radium-226	EPA 903.1	0.0831 ± 0.379 (0.225) C:NA T:93%	pCi/L	04/27/22 16:23	3 13982-63-3	
	Pace Analytical S	ervices - Greensburg				
Radium-228	EPA 904.0	-0.0142 ± 0.558 (1.30) C:72% T:86%	pCi/L	04/26/22 16:4	3 15262-20-1	



Project:	AMEREN SEC S	CL4A				
Pace Project No.:	60396339					
QC Batch:	496688		Analysis Method:	EPA 904.0		
QC Batch Method:	EPA 904.0		Analysis Description:	904.0 Radium 2	228	
			Laboratory:	Pace Analytical	Services - Greensbu	ırg
Associated Lab Sar	mples: 6039633	3016, 60396337002				
METHOD BLANK:	2403505		Matrix: Water			
Associated Lab Sar	mples: 6039633	3016, 60396337002				
Parar	neter	Act ± Un	c (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228		$0.670 \pm 0.346$ (0.5	587) C:76% T:90%	pCi/L	04/20/22 16:30	

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



Project: AMEREN SEC S	SCL4A			
Pace Project No.: 60396339				
QC Batch: 497782	Analysis Method:	EPA 904.0		
QC Batch Method: EPA 904.0	Analysis Description:	904.0 Radium 2	228	
	Laboratory:	Pace Analytical	Services - Greensbu	ırg
Associated Lab Samples: 6039633	37003			
METHOD BLANK: 2409269	Matrix: Water			
Associated Lab Samples: 6039633	37003			
Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.264 ± 0.311 (0.655) C:80% T:88%	pCi/L	04/26/22 13:21	

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.



Project:	AMEREN SEC S	CL4A				
Pace Project No.:	60396339					
QC Batch:	496687		Analysis Method:	EPA 903.1		
QC Batch Method:	EPA 903.1		Analysis Description:	903.1 Radium-2	226	
			Laboratory:	Pace Analytical	Services - Greensbu	ırg
Associated Lab Sar	mples: 6039633	3016, 60396337002				
METHOD BLANK:	2403504		Matrix: Water			
Associated Lab Sar	mples: 6039633	3016, 60396337002				
Parar	neter	Act ± Unc	(MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226		-0.0453 ± 0.235 (0	.544) C:NA T:90%	pCi/L	04/28/22 12:28	

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.



Project: AMEREN SEC	C SCL4A			
Pace Project No.: 60396339				
QC Batch: 497781	Analysis Method:	EPA 903.1		
QC Batch Method: EPA 903.1	Analysis Description:	903.1 Radium-2	226	
	Laboratory:	Pace Analytical	Services - Greensbu	ırg
Associated Lab Samples: 60396	3337003			
METHOD BLANK: 2409265	Matrix: Water			
Associated Lab Samples: 60396	3337003			
Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0680 ± 0.310 (0.184) C:NA T:94%	pCi/L	04/27/22 16:06	

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



#### QUALIFIERS

#### Project: AMEREN SEC SCL4A

Pace Project No.: 60396339

#### 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

- E Analyte concentration exceeded the calibration range. The reported result is estimated.
- M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
- R1 RPD value was outside control limits.



## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SEC SCL4A

Pace Project No.: 0	60396339
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Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60396337002	S-BMW-1S	EPA 200.7	780187	EPA 200.7	780329
0396337003	S-BMW-3S	EPA 200.7	780187	EPA 200.7	780329
0396339001	S-TMW-1	EPA 200.7	779353	EPA 200.7	779414
0396339002	S-TMW-2	EPA 200.7	779353	EPA 200.7	779414
0396339003	S-TMW-3	EPA 200.7	779353	EPA 200.7	779414
0396339004	S-SCL4A-DUP-1	EPA 200.7	779353	EPA 200.7	779414
0396333016	S-UG-3	EPA 200.7	780254	EPA 200.7	780345
0396339005	S-SCL4A-FB-1	EPA 200.7	780187	EPA 200.7	780329
60396337002	S-BMW-1S	EPA 903.1	496687		
0396337003	S-BMW-3S	EPA 903.1	497781		
60396333016	S-UG-3	EPA 903.1	496687		
60396337002	S-BMW-1S	EPA 904.0	496688		
60396337003	S-BMW-3S	EPA 904.0	497782		
60396333016	S-UG-3	EPA 904.0	496688		
0396337002	S-BMW-1S	SM 2320B	779612		
0396337003	S-BMW-3S	SM 2320B	779612		
0396339001	S-TMW-1	SM 2320B	779612		
0396339002	S-TMW-2	SM 2320B	779612		
0396339003	S-TMW-3	SM 2320B	779612		
0396339004	S-SCL4A-DUP-1	SM 2320B	779612		
0396333016	S-UG-3	SM 2320B	780896		
0396339005	S-SCL4A-FB-1	SM 2320B	780151		
0396337002	S-BMW-1S	SM 2540C	779231		
0396337003	S-BMW-3S	SM 2540C	779231		
0396339001	S-TMW-1	SM 2540C	778990		
0396339002	S-TMW-2	SM 2540C	778990		
0396339003	S-TMW-3	SM 2540C	778990		
0396339004	S-SCL4A-DUP-1	SM 2540C	778990		
0396333016	S-UG-3	SM 2540C	780233		
0396339005	S-SCL4A-FB-1	SM 2540C	780233		
0396337002	S-BMW-1S	EPA 300.0	779018		
0396337003	S-BMW-3S	EPA 300.0	779018		
0396339001	S-TMW-1	EPA 300.0	779018		
0396339002	S-TMW-2	EPA 300.0	779018		
0396339003	S-TMW-3	EPA 300.0	779018		
0396339004	S-SCL4A-DUP-1	EPA 300.0	779018		
60396333016	S-UG-3	EPA 300.0	781385		
0396339005	S-SCL4A-FB-1	EPA 300.0	780287		

W0#:60396339
Pace DC#_Title: ENV-FRM-LENE-0009_Sample Con 60396339
Revision: 2 Effective Date: 01/12/2022 Issued By: Lenexa
Client Name: 60/04/
Courier: FedEx UPS VIA Clay Clay PEX ECI Pace Xroads Client Other
Tracking #: Pace Shipping Label Used? Yes D Note
Custody Seal on Cooler/Box Present: Yes No D Seals intact: Yes No D
Packing Material: Bubble Wrap 🗌 🖉 Bubble Bags 🗆 🚽 Foam 🗐 None 🗆 Other 🗆
Thermometer Used: Type of Ice: Wet Blue None
Cooler Temperature (°C): As-read /// Corr. Factor <u>0.2</u> Corrected <u>0.9</u> Date and initials of person examining contents:
Temperature should be above freezing to 6°C 03/30/22
Chain of Custody present:
Chain of Custody relinquished:
Samples arrived within holding time:
Short Hold Time analyses (<72hr):
Rush Turn Around Time requested:
Sufficient volume:
Correct containers used:
Pace containers used:
Containers intact:
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?
Filtered volume received for dissolved tests?
Sample labels match COC: Date / time / ID / analyses
Samples contain multiple phases? Matrix: WT Ses No SA
Containers requiring pH preservation in compliance? $Y_{\text{res}} \square N_0 \square N/A$ List sample IDs, volumes, lot #'s of preservative and the date/time added.
(HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT#: 55/97
Cyanide water sample checks:
Lead acetate strip turns dark? (Record only)
Potassium iodide test strip turns blue/purple? (Preserve)
Trip Blank present:
Headspace in VOA vials ( >6mm):
Samples from USDA Regulated Area: State: □Yes □No ØN/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:
Project Manager Review: Date:

Pace Analytical

# CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT, All relevant fields must be completed accurately.

Golder Associates USA, Inc. REGULATORY AGENCY ReGULATORY AGENCY Inite Church Inite	Section A Required C	lien	Section B Required Project Information:	.U			Section C Invoice Information	tation:					L	Page: 1	ď	-
Total Endemtine Rand, Siller 240         Oprio E. Ex. Strandare Nam Fallman, Binction Tables         Recurrence Rand, Siller 240         Recure Rand, Siller 240         Recurrence Rand, S	Сотра		Report To: Jeffrey Ingra	Ē			Attention:				Г		J			
Const Count Misson (1514)         Const Count Misson (1514)         Misson (1514)	Addres	701 Emerson Road, Suite 250		ler, Ryan Feldr	nan, Brend	an Talbert	Company Nai		sociates U	SA, Inc.	<u>u</u>	SUL ATOR	AGENCY			
0         Effect Instant/Statistical Instant/Statistat/Statistatistical Instant/Statistical Instant/Statistical In		Creve Coeur, Missouri, 63141					Address:				!   L	NPDES	GROIND	WATER		UC WATER
	Email T			IC #11			Pace Quote				T			. L		
Tank         Technik         Second         Second </td <td>Phone:</td> <td>636-724-9191</td> <td></td> <td>Sioux Energy</td> <td>Center SCI</td> <td>44</td> <td>Reference: Pace Project</td> <td>lamia Church</td> <td></td> <td></td> <td>-</td> <td></td> <td>RURA</td> <td>Contraction of the local division of the loc</td> <td>ОІНЕК</td> <td>CONTRACTOR DATE</td>	Phone:	636-724-9191		Sioux Energy	Center SCI	44	Reference: Pace Project	lamia Church			-		RURA	Contraction of the local division of the loc	ОІНЕК	CONTRACTOR DATE
Main         Topology         Andread         Started         Started         Started         Started         Started         Started         Started         Main         Control         Control         Started         Started         Started         Main         Control         Started         Control         Started         Started         Main         Control         Started         Started         Control         Control <thconted< th="">         Control<td></td><td></td><td></td><td></td><td></td><td>¢,</td><td>Manager.</td><td>ממוווב כיומומו</td><td></td><td></td><td>J.</td><td>te Location</td><td>CW</td><td>The same</td><td>Ten III</td><td>I THEFT</td></thconted<>						¢,	Manager.	ממוווב כיומומו			J.	te Location	CW	The same	Ten III	I THEFT
Мини Польки в пределение в в пределение в пред	Reque		Project Number: 153140	604. 0003			Pace Profile #:	9285				STATE:				Here and the second
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Общинования манимованимованимованимованимования манимования			(Jiel o	COLL	ECTED			Preservatives		z				Lines II		
Пими-1         Тими-1         Пими-1		DRINKING WATER WATER WASTE WATER PRODUCT SOL/SOLID OIL	우 약 가 % 거 %	COMPOSITE START	COMPOSIT		s			s/Sulfate				(N/X) ;		
Timu-1     F is in the line     The line     A in the lin     A in the lin     A in the line </td <td># W3.</td> <td></td> <td>a) ADOS XIRTA</td> <td></td> <td></td> <td>TA 9M91 TA 9M91 AT 0</td> <td>perved</td> <td>3<sup>5</sup>2<sup>5</sup>0<sup>3</sup> 30H 10 N0<sup>3</sup></td> <td><b>ynalysis Test</b> Analysis Test</td> <td>loride/Fluorid</td> <td>(alinity</td> <td></td> <td></td> <td>ssidual Chlorine</td> <td>0196</td> <td>96339</td>	# W3.		a) ADOS XIRTA			TA 9M91 TA 9M91 AT 0	perved	3 <sup>5</sup> 2 <sup>5</sup> 0 <sup>3</sup> 30H 10 N0 <sup>3</sup>	<b>ynalysis Test</b> Analysis Test	loride/Fluorid	(alinity			ssidual Chlorine	0196	96339
TIMU-2     WT     G     L     D       TIMU-3     WT     G     L     D       TIMU-3     WT     G     L     D       CLG-3     WT     G     L     D       WT     G     Z     L     L     D       CLG-3     WT     G     Z     L     L       UG-3     WT     G     Z     L     L       UG-3     WT     G     Z     L     L       UG-3     WT     G     Z     L     L       LAA-E1     WT     G     Z     L     L       LAA-E1     WT     G     Z     Z     L       LAA-MS1-1     WT     G     Z     Z     L       LAA-MS1-1     WT     G     Z     L     L       MW-1S     WT     G     Z     Z     Z       MWV-1S     WT     Z     Z     Z     Z       MWV-1S     WT     Z     Z     Z     Z    <	u -	S-TMW-1	's C			1.1	n -	N N H	/ <b>1</b> .0	10	11 <b>A</b> -			_	a .	No./ Eab I.D.
TIMV-3 EUG-3 WI C EUG-3 WI C EUG-3 WI C EUG-3 WI C EUG-3 WI C EUG-3 WI C EUG-3 WI C EUG-3 WI C EUG-4 EU	2	S-TMW-2	_		1 C	913	4			11,1	-	205				14
5-UG-3     Wr     C     318/L2     C     2     1     1     0       1.4A-DUP-1     Wr     C     318/L2     C     2     1     1     0     0       2.14A-FB-1     Wr     C     318/L2     C     2     1     1     0     0       2.14A-FB-1     Wr     C     318/L2     C     2     1     1     0     0       2.14A-FB-1     Wr     C     318/L2     C     2     1     1     0     0       2.14A-FB-1     Wr     C     318/L2     C     318/L2     C     0     0     0       3.14A-FB-1     Wr     C     318/L2     L     1     0     0     0       3.14A-FB-1     Wr     C     1     1     0     0     0     0       3.14A-FB-1     Wr     C     1     1     0     0     0     0       3.14A-FB-1     Wr     C     1     1     0     0     0     0       3.14A-FB-1     Wr     C     1     1     0     0     0     0       3.14A-FB-1     Wr     C     1     0     0     0     0       3.14A-FB-1 <td>6</td> <td>S-TMW-3</td> <td></td> <td></td> <td>4</td> <td>610</td> <td>11</td> <td>-1</td> <td>F</td> <td>F1</td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td></td>	6	S-TMW-3			4	610	11	-1	F	F1				1		
L4A-DUP-1     Wr     G     376/L2     C     2     1 <td>4</td> <td>S-UG-3</td> <td></td> <td>/</td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	4	S-UG-3		/			1									
I.da-FB-1       Wr       Wr       C       Mr       Mr       C       Mr	S	S-SCL4A-DUP-1		_	2128/22	1	12			111				7	~	
LidamS-1     Wr     C     Bisity     Coris     1     1     1     1     1       I.da-MSD-1     Wr     6     1     14     013     1 <td>9</td> <td>S-SCL4A-FB-1</td> <td>-</td> <td></td>	9	S-SCL4A-FB-1	-													
Image: Construction     Will G     Will G     Will G     Month       SIMW-1S     Will G     Will G     Month     Lace       SIMW-1S     Will G     Will G     Lace     Lace       SIMW-1S     Will G     Month     Lace     Lace       SIMW-1S     Will G     Lace     Lace     Lace       Minutation     Month     Zad     Lace     Lace       Minutation     Matter     Time     Accented on     Zad       Minutation     Matter     Time     Accented by Affiliation     Date       Minutation     Zad     Lace     Month     Zad     Lace       Minutation     Matter     Fridance     Month     Zad     Lace       Minutation     Matter     Fridance     Month     Zad     Lace       Minutation     Matter     Fridance     Matter     Lace     Lace       Minutation     Matter     Mat	~	S-SCL4A-MS-1	-	-	2	P13	2			111	~					
BIMW-1S         WT         C         Iuoc         I	80	S-SCL4A-MSD-1	-	-	-	7913					_					
MW-3S         WT         C         L <thl< thr="">         L         L         L<td>6</td><td></td><td>-</td><td>-</td><td></td><td>1400</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></thl<>	6		-	-		1400										
WT     G     WT     G       WT     G     WT     G       WT     G     M       MINUSHED BY / AFFILIATION     DATE     TIME       ATT     LGUW     310912     LGS       MMQ-U     MUMU     323     LGS       MMQ-U     MUMU     323     LGS       MMD-U     MUMU     324     LGS       SamPLER:     Fr.C.50M.ud     MOU       SIGNATURE of SAMPLER:     MOU	10	S-BMW-3S	_	_	-	0720	1	7		777	1					
Miletts     ReLinquisheb BY i AFFILIATION     Date     Time       Aments     ReLinquisheb BY i AFFILIATION     Date     Time       Aments     And to the method     Albert 11-3     Liuge     Multiple       Aments     And to the method     Albert 11-3     Liuge     Multiple       Amole L     Multiple     1/13     Liuge     Multiple       Amole L     Multiple     3     2.4     Liuge       Amole L     Multiple     3     2.4     Liuge       Amole L     Multiple     1/13     Liuge     3       Sampler Name of Sampler:     Er.L. 50m ud     Multiple     1/11	#													_		
Received on Sampler: Er. 50M Let 113 112 113 113 113 113 113 113 113 113	2	ADDITIONAL COMMENTS	BEI INDITSHE	D RV / AFFILIATI	2	DATE	TIME					DATE	- International			SHORE
Sampler Name of Sampler:	*EPA 2	00.7: B, Ca, Fe, Mn, Mg, K, Na	2ml	Salda/		3100122	1.2	MARACI	M	CALAN IL		2120	122	-		
Sampler Name of Sampler: C. C. Som of Date Signed on Late of Sampler: C. C. Som of Date Signed on Late Signed o			-	Mann		324	16.91	le l	1 miles	28		330	-	5		X
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: C. C. 50M, i.d. SIGNATURE of SAMPLER: DATE Signed A171																_
PRINT Name of SAMPLER:     C. C. SOM udv       Image: Signed Set Set Signed Set Sign	Pag			SAMPLE	ER NAME AN	D SIGNATUR	μ							uc		laci
SIGNATURE of SAMPLER: V DATE Signed A100 / 1.1 Terr Receipted A100 / 1.1	e 38				PRINT Name	of SAMPLER:	ر الار	San ide						bevie		(N/X
	s of 4							5		DATE Sign		1017		BoeR		

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

F-ALL-Q-020rev\_08, 12-Oct-2007

					LIO#:	603963	39
Pace	DC#_Title: ENV-FRM		-				
	Revision: 2 Ef	fective Date: 01/1	12/2022	Issued	60386338		
Client Name: (1(	)lder HSSOC				1		
Courier: FedEx DUPS	· · · · · · · · · · · · · · · · · · ·				ads Z Clien	t 🗋 Other 🗖	
Tracking #:	1	ace Shipping Label	1		10 12		
Custody Seal on Cooler/Box I	Present: Yes Ø No □ / 9 Wrap □ Bubble Bags	Seals intact:		o 🗆	ou d	1010	
Packing Material: Bubble Thermometer Used:		()	n∟ I • None	None 🗆	Other 🗹	cpic	
	s-read Corr. Fac	$\sim$	prrected		Date	and initials of perso	n Wab
Temperature should be above freez	2		mected		exar	nining contents:	5 4/2/20
Chain of Custody present:		Ves 🗆 No 🗆					
Chain of Custody relinquished:		Ves 🗆 No 🗆	Jn/a				-
Samples arrived within holding t	ime:	(	]n/a				
Short Hold Time analyses (<7		1	]N/A				
Rush Turn Around Time reque		1	]N/A				
Sufficient volume:		1. 2	IN/A Did	10 01	Vacia	10 [10] . 100 .	0
			1210	UG-1		Je. Volume	tor
Correct containers used:		1,		09-	>		
Pace containers used:			]n/a				
Containers intact:		Yes No C	]N/A				
Unpreserved 5035A / TX1005/10	006 soils frozen in 48hrs?	Yes No C					
Filtered volume received for diss	olved tests?	Yes No 7	Ж/А				
Sample labels match COC: Date			IN/A				_
Samples contain multiple phases	<u>s?</u> Matrix: WA		IN/A				
Containers requiring pH preserva (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulf	ide, NaOH>10 Cyanide)	15000		imple IDs, me addec		#'s of preservative a	and the
(Exceptions: VOA, Micro, O&G, KS Cyanide water sample checks:	TPH, OK-DRO) LOT	#: JUIX					
Lead acetate strip turns dark? (R		□Yes □No					
Potassium iodide test strip turns	blue/purple? (Preserve)	□Yes □No					
Trip Blank present:		Yes No	N/A				
Headspace in VOA vials ( >6mm	):		хіл				
Samples from USDA Regulated	Area: State:		NIA				
Additional labels attached to 503		1	NIA				
Client Notification/ Resolution:		/	N Fi	eld Data R	equired? Y	/ N	
Person Contacted: Comments/ Resolution:	Date/	lime:					
Project Manager Review:		_	Date:				

Pace Analytical

# CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A	A C	Section B		1					Sec	Section C										Page:	<b>~</b>	of	<b>4</b>
Require	Required Client Information:	Required Proje	ect Infor	rmation:					Invol	Invoice Information:	mation:												
Company:	y: Golder Associates	Report To: Jeffrey Ingram	ffrey h	ngram					Atter	Attention:													
Address:	701 Emerson Road, Suite 250	Copy To: Er	ic Sch	neider,	Ryan F	eldman.	Eric Schneider, Ryan Feldman, Brendan Talbert	ר Talber	-	Company Name:		Golder Associates USA, Inc.	sociate	ss US/	A, Inc.		REGULATORY AGENCY	<b>ATORY</b>	AGENC	×			
	Creve Coeur, Missouri, 63141								Address	Tess:							L NPDES	DES 🤇		GROUND WATER	TER	DRINKIN	DRINKING WATER
Email To:	o: jeffrey ingram@golder.com	Purchase Order No :	er No.:	COC #11	#11				Pace	n Quote Tence:							TSU		RCRA	7	9	OTHER	
Phone:	636-724-9191 Fax: 636-724-9323	Project Name:		teren Si	oux En	Ameren Sioux Energy Center SCL	Iter SCL	4A	Pace	Pace Project Manager		Jamie Church	L				Site Location	ation				1011	111111
Reques	Requested Due Date/TAT: Standard	Project Number: 153140604, 0003	ar: 155	314060	4.0003				Pace	Pace Profile #:	9285						ST	STATE:	Σ	MO			
															Requ	lested.	Requested Analysis Filtered (Y/N)	Filtered	(N/A) F			Consult.	
	Section D Valid Matrix Codes	ų				COLLECTED	LED				Prese	Preservatives	1-	1 N /A	z	z z							
		MM MM		1	COMPOSITE	-	COMPOSITE		NOIL					-1040						()			56
10	PRODUCT SoluSoud	و ۲2 م	bilev see BAAB=		START		END/GRAS		-					_						1/Y) ər	_	10	È
-	SAMPLE ID (A-Z, 0-9 /) Sample IDS MUST BE UNIQUE	AR DT TS							) TA 9M∃T RENIATU			E		səT sisı	daO bna ⊳inoul∃\s					al Chlorir		3E	2
# MƏTI			XIATAM JIIMAS	DATE		TIME	DATE	TIME		Nuprese	HCI HNO <sup>3</sup> H <sup>5</sup> 20 <sup>4</sup>	HOBN 0 <sub>s</sub> S <sub>s</sub> bN	Methan Other	(lenA		TDS Alkalinii				ubisəЯ		) se Project	Pace Project No./ Lab I.D.
_	S-TMW-1	~	WT G	1							_				-	_		_		_	_		
2	S-TMW-2		о ТМ						-	_		_			-	_	-	_	-				
e	S-TMW-3	-	WT G		_			4	-	-		_		_	-	-		_					
4	S-UG-3	_	U F	0		1	1 22/114	359	2			_	_	-1	يد لا	X	+	+		-	_		
ŝ	S-SCL4A-DUP-1	-	U T	U					-	_					-			+	+	-			
۵	S-SCL4A-FB-1	_	MT M	(7)	-	T	1 22/11/4	1470	2	-			_		x	× X				-			
7	S-SCL4A-MS-1	-	TN D	U	-				-		_				-	_	-	+		+	-		
8	S-SCL4A-MSD-1	-	۵ ۲	U	-				-		-	_		_	-	-		-	-		-		
6	S-BMW-1S		TN IN	U	1				-	+	-	+			-					-	_		
10	S-BMW-3S		-	U	+	1			-	-					-						-		
11			_	0	+	+				-		-	-	T	-			F				5	
12	ADDITIONAL COMMENTS		RELINO	QUISHED	BY / AFF	RELINQUISHED BY / AFFILIATION		DATE		TIME	-	AC	ACCEPTED BY / AFFILIATION	DBY/	AFFILIA	ATION		DATE	TIME	1	SA	SAMPLE CONDITIONS	
AG3.	EPA 200.7; B, Ca, Fe, Mn, Mg, K, Na	12	210	FAL SAMANN	Sir	1610	1	2/11/14	2	[win	N.	the state	M	LA	IT	MAC	Ce ya	4/2/22	03CO	2.0		5	>
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Pa									-								$\left  \right $					F	
ge 4					Ň	AMPLER	SAMPLER NAME AND SIGNATURE	ID SIGNA	ATURE											ე, I	uo p	(N/X)	oeini
0 01						PR	PRINT Name of SAMPLER:	of SAMPI	LER:	E),	1.1	Scimmell	1							n qm	_	ς λρο	
140						, N	SIGNATURE of SAMPLER:	of SAMPI	LER:	5	1. N			1	DATE	DATE Signed (MM/DD/YY):	04/01/22	12		0Ţ	00N	utsu O	
										11				1	Thomas	MARCH LINE	- 1 - A	1					

\* contact Noto: By signing this form you are accopting Pace's NET 30 day payment terms and agreeing to late charges of 4.5% per month for any involces no: paid within 30 days.

# **\\**SI) GOLDER

# MEMORANDUM

Project No. 153140604.0003

**DATE** June 21, 2022

TO Project File Golder Associates

- CC Amanda Derhake, Jeff Ingram
- **FROM** Annie Muehlfarth

EMAIL ann.muehlfarth@wsp.com

# DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCL4A – DETECTION MONITORING - DATA PACKAGE 60396339

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) or non-detects (U).
- 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).

# **QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST**

Company Name: Golder / WSP	_ Project Manager: <u>J. Ingram</u>
Project Name: Ameren SEC - SCL4A	_ Project Number: <u>153140604.0003</u>
Reviewer: A. Muehlfarth	Validation Date: 6/21/2022
Laboratory: Pace Analytical Services	SDG #: <u>60396339</u>
Analytical Method (type and no.): EPA 200.7 (Total Metals); SM	2320B (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	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 Ir	nformation	YES	NO	NA	COMMENTS
a)	Sampling dates noted?	х			3/29/2022 - 4/1/2022
b)	Sampling team indicated?	х			BTT/EMS/GTM
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?	х			
i)	Notations of unacceptable field conditions/performa	nces fro	om field lo	ogs or field r	otes?
			x		
j)	Does the laboratory narrative indicate deficiencies?			x	
	Note Deficiencies:				
Chain-	of-Custody (COC)	YES	NO	NA	COMMENTS
		_			
a)	Wee the COC preparty completed?	14			
	Was the COC properly completed?	x			
b)	Was the COC properly completed? Was the COC signed by both field and laboratory personnel?	×			
b) c)	Was the COC signed by both field				
,	Was the COC signed by both field and laboratory personnel?	×			
c)	Was the COC signed by both field and laboratory personnel?	×			COMMENTS
c)	Was the COC signed by both field and laboratory personnel? Were samples received in good condition? al (reference QAPP or Method)	≍ ≍ YES			COMMENTS
c)	Was the COC signed by both field and laboratory personnel? Were samples received in good condition? al (reference QAPP or Method) Were hold times met for sample pretreatment?	≍ ≍ YES			COMMENTS
c) Genera	Was the COC signed by both field and laboratory personnel? Were samples received in good condition? al (reference QAPP or Method)	≍ ≍ YES			COMMENTS
c) Genera a)	Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used?	≍ ≍ YES	П П NO		COMMENTS
c) Genera a) b)	Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used?	× × YES × × ×	□ □ ■ □		COMMENTS
c) Genera a) b) c)	Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used?	× ¥ YES	□ □ ■ □		
c) Genera a) b) c) d)	Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used?	× × YES × × ×	□ □ □ □ □		COMMENTS COMMENTS See Notes 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	
Labora	tory 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			
Duplica	ites	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	iplicate	sample n	ames)?	
		x			S-SCL4A-DUP-1 @ S-TMW-1
b)	Were field dup. precision criteria met (note RPD)?	х			Max RPD: 5.7% [<20%]
c)	Were lab duplicates analyzed (note original and dup	olicate s	samples)?	<b>&gt;</b>	
		х			
d)	Were lab dup. precision criteria met (note RPD)?	х			Max RPD: 4% [<10%]
Blind S	tandards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			x	
,	analytes included and concentrations)?	_			
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?	×			
	Recovery could not be calculated since sample contained high concentration of analyte?			×	
c)	Were MS/MSD precision criteria met?		х		See Notes

# Comments/Notes:

Calcium, sulfate, and sodium analyzed at a dilution in several samples. No qualification necessary.

# Blanks:

3112107: Magnesium (13.2J), manganese (1.3J). Associated with sample -33016. Results >RL and 10x blank, no qualification necessary.

3119073: Chloride (0.66J). Associated with sample -33016. Result >RL and 10x blank, no qualification necessary.

# **QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST**

#### Comments/Notes:

2403505: Radium-228 (0.670 ± 0.346). Associate with samples -33016, -37002. Results qualified as estimates. NDs not qualified.

S-SCL4A-FB-1 @ S-UG-3: Magnesium (15.4J). Result >RL and 10x blank, no qualification necessary.

# MS/MSD:

3108938/3108939: MSD % recovery low for calcium. Associated with sample -39002. Only 1 QC indicator out, no qualification necessary.

3111913: MS % recovery high for calcium. MS performed on unrelated sample, no qualification necessary.

3111913: MS % recovery high for sodium. MS performed on unrelated sample, no qualification necessary.

3112111/3112112: MS % recovery high for calcium. MS performed on unrelated sample, no qualification necessary.

3116410/3116411: MS % recovery high for chloride and sulfate. MS % recovery high and RPD high for fluoride.

MS/MSD performed on unrelated sample, no qualification necessary.

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# **QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST**

# Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-UG-3	Radium-228	0.975 ± 0.457	J	Detected in MB
$\searrow$				
<u> </u>				
			$\backslash$	
	0	1.		<b>`</b>
	Ann Muhl	$1 \pm -$		6/21/2022
Signature:	_ MM_ // White	NWII		Date: 6/21/2022



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

June 17, 2022

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

RE: Project: AMEREN VERIFICATION SCL4A Pace Project No.: 60402314

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on June 08, 2022. 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,

Parmi Church

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





# CERTIFICATIONS

Project: AMEREN VERIFICATION SCL4A

Pace Project No.: 60402314

#### **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 #: T104704407-21-15 Utah Certification #: KS000212019-9 Illinois Certification #: 004592 Kansas Field Laboratory Accreditation: # E-92587 Missouri SEKS Micro Certification: 10070



# SAMPLE SUMMARY

#### Project: AMEREN VERIFICATION SCL4A

Pace Project No.: 60402314

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60402314001	S-TMW-1	Water	06/06/22 15:30	06/08/22 05:26
60402314002	S-SCL4A-DUP-1	Water	06/06/22 00:00	06/08/22 05:26
60402314003	S-SCL4A-FB-1	Water	06/06/22 15:45	06/08/22 05:26



# SAMPLE ANALYTE COUNT

Project: AMEREN VERIFICATION SCL4A

Pace Project No.: 60402314

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60402314001	S-TMW-1	EPA 300.0	KB	1	PASI-K
60402314002	S-SCL4A-DUP-1	EPA 300.0	KB	1	PASI-K
60402314003	S-SCL4A-FB-1	EPA 300.0	KB	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City



#### Project: AMEREN VERIFICATION SCL4A

Pace Project No.: 60402314

Sample: S-TMW-1	Lab ID:	60402314001	Collecte	ed: 06/06/2	2 15:30	Received: 06	/08/22 05:26 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	,	Method: EPA 3 lytical Services		City					
Sulfate	50.5	mg/L	5.0	2.8	5		06/10/22 18:44	14808-79-8	M1,R1



#### Project: AMEREN VERIFICATION SCL4A

Pace Project No.: 60402314

Sample: S-SCL4A-DUP-1	Lab ID:	60402314002	Collecte	ed: 06/06/2	2 00:00	Received: 06/	08/22 05:26 Ma	trix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	,	Method: EPA 3 lytical Services		City					
Sulfate	45.7	mg/L	5.0	2.8	5		06/10/22 19:40	14808-79-8	



#### Project: AMEREN VERIFICATION SCL4A

Pace Project No.: 60402314

Sample: S-SCL4A-FB-1	Lab ID:	60402314003	Collecte	d: 06/06/22	2 15:45	Received: 06/	08/22 05:26 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	,	Method: EPA 3 lytical Services		Sity					
Sulfate	<0.55	mg/L	1.0	0.55	1		06/10/22 20:21	14808-79-8	



# **QUALITY CONTROL DATA**

OC Botoh:	701409			Anch	io Mathe	4.	EDA 200 0						
QC Batch: QC Batch Method:	791498 EPA 300.0				/sis Methoo /sis Descri		EPA 300.0 300.0 IC Ani	one					
QC Batch Method:	EPA 300.0				ratory:		Pace Analyt		as - Kansa	e City			
Associated Lab Sar	mples: 604023	14001, 60	40231400	2, 6040231			r ace Analyt		25 - Marisa	SORY			
METHOD BLANK:	3153961				Matrix: W	ater							
Associated Lab Sar	nples: 604023	14001, 60	40231400	02, 6040231									
Parar	neter	ι	Jnits	Blar Res		Reporting Limit	MDI	_	Analyzed	Qı	alifiers		
Sulfate			mg/L		<0.55	1.			6/10/22 18:				
LABORATORY CO	NTROL SAMPLE	: 31539	62										
				Spike	LC		LCS	% R		Qualifian			
Parar	neter		Jnits mg/L	Conc.	Res 5	5.0	% Rec 100	Limi	ts (  90-110	Qualifiers	_		
Sullate		I	llg/∟		5	5.0	100	) :	90-110				
MATRIX SPIKE & M	ATRIX SPIKE D	UPLICATE	: 3153			3153964	1						
		60402	2314001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Paramete	r Uı		Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Sulfate	m	g/L	50.5	25	250	70.2	427	79	151	80-120	144	15	E,M1, R1
MATRIX SPIKE & N	ATRIX SPIKE D	UPLICATE	: 3153	966		3153967	7						
				MS	MSD					_			
Paramete	r Ui		2318001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate		g/L	52.0	25	25	74.2	74.4	89	90	80-120	0		
MATRIX SPIKE & N	ATRIX SPIKE D	UPLICATE	: 3153	969		3153970	)						
				MS	MSD								
Paramete	r Uı		2319001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate		g/L	43.4	50	50	90.1	89.4	94	92	80-120	1	15	
SAMPLE DUPLICA	TE: 3153965												
				604023		Dup			Max	0 11			
Parar	neter	ι	Jnits	Res	ult	Result	RPD	)	RPD	Qualif	iers		

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 VERIFICATION SCL4A

Pace Project No.: 60402314

Parameter	Units	60402318001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	52.0	50.1	4		15
SAMPLE DUPLICATE: 3153971						
Parameter	Units	60402319001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	43.4	43.1	1		15

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

# **REPORT OF LABORATORY ANALYSIS**

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# QUALIFIERS

Project: AMEREN VERIFICATION SCL4A

Pace Project No.: 60402314

#### 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.

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.
- M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
- R1 RPD value was outside control limits.



# QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN VERIFICATION SCL4A

Pace Project No.: 60402314

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60402314001	S-TMW-1	EPA 300.0	791498		
60402314002	S-SCL4A-DUP-1	EPA 300.0	791498		
60402314003	S-SCL4A-FB-1	EPA 300.0	791498		

			WO#:60402314
Pace	DC#_Title: ENV-FI	RM-LENE-0009_Sampl	
ANALYTICAL SERVICES	Revision: 2	Effective Date: 01/12/202	60402314
Client Name:	Golder		
Courier: FedEx 🗆 UPS			Pace 🗆 Xroads 🗗 Client 🗆 Other 🗆
Tracking #:		Pace Shipping Label Used	?Yes 🗆 No 🖉
Custody Seal on Cooler/Box	Present: Yes / No I	□ Seals intact: Yes A	No 🗆
Packing Material: Bubb	le Wrap 🗆 🤺 Bubble B		· · · · · ·
		pe of Ice: Wet Blue Non	Date and initials of person
Cooler Temperature (°C):	As-read <u>(, C</u> Corr,	Factor <u> </u>	ed O. ( examining contents: 06-0820
Temperature should be above free	ezing to 6°C		
Chain of Custody present:		Yes No N/A	
Chain of Custody relinquished	:	Yes No N/A	
Samples arrived within holding		ØYes □No □N/A	
Short Hold Time analyses (<		□Yes QNo □N/A	
Rush Turn Around Time req		□Yes ZNo □N/A	
Sufficient volume:		ØYes □No □N/A	
Correct containers used:		ØYes □No □N/A	
Pace containers used:		ØYes □No □N/A	
Containers intact:	/1006 poils fragen in 49br		
Unpreserved 5035A / TX1005		1	
Filtered volume received for d			
Sample labels match COC: Da			
Samples contain multiple phas			List sample IDs, volumes, let #'s of preservative and the
Containers requiring pH prese (HNO₃, H₂SO₄, HCl<2; NaOH>9 S		∐Yes ∐No ØN/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Exceptions: VOA, Micro, O&G, k	(S TPH, OK-DRO)	LOT#:	
Cyanide water sample checks	:	Yes No	
Lead acetate strip turns dark? Potassium iodide test strip turi			
Trip Blank present:	\-		
Headspace in VOA vials ( >6n			
Samples from USDA Regulate			
Additional labels attached to 5		e field? Yes No N/A	Field Data Required? Y / N
Client Notification/ Resolutio		Date/Time:	
Person Contacted: Comments/ Resolution:			
Project Manager Review:		Date	X:

Pace Analytical

# CHAIN-OF-CUSTODY / Analytical Request Document

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

	Required Client Information:	Required Project Information:	:uc			21	RIVUICE INTURNATION.	ation.							-		_
Company:	Golder Associates	Report To: Jeffrey Ingram	E			A	Attention:										
Address:	13515 Barrett Parkway Dr., Ste 260	Copy To: Eric Schnieder, Ryan Feldman, Brendan Talbert	er, Ryan	Feldman, E	3rendan T		Company Name:	e: Golder Associates Inc	ssociates	2LI	RE	REGULATORY AGENCY	Y AGENCY				24 ( 14 (
	Ballwin, MO 63021					A	Address:					NPDES	E GROUI	GROUND WATER	ų	DRINKING WATER	VATER
Email To:	jeffrey ingram@golder.com	Purchase Order No :				σ. «X	Pace Quote Reference:					UST	L RCRA		0 L	OTHER	
Phone: 6	636-724-9191 Fax 636-724-9323	Project Name: Ameren	- Verifica	Ameren - Verification Sampling	Į.	SCLYA M	Pace Project Manager:	Jamie Church	ų		S	Site Location					
quested	Requested Due Date/TAT: Standard	Project Number: 153140603	603			<u>a</u>	ace Profile #:	9285, line 1				STATE:					
									-		Requested Analysis Filtered (Y/N)	Ilysis Filter	(N/N) pa				
S &	Section D Valid Matrix Codes Required Client Information MATRIX CODE	(fiel of		COLLECTED	<u>e</u>			Preservatives	1 N /A	z	z z z	z z z	z z				
	ŝ	동 문 문 문 은 은 은 은 은 은 은 은 은 은 은 은 은 은 은 은	COMPOSITE START		COMPOSITE END/GRAB	соггестіои	SA							(N/Y) ən			
# WBT	SAMPLE IU (A-Z, 0-9 / -) Sample IDS MUST BE UNIQUE	MATRIX CODE (G	T T		AATE TIMF	ر TA 9MƏT ƏJ9MAS	H OF CONTAINEI Unpreserved #2SO4	N <sup>gS</sup> 2 <sup>S</sup> O <sup>3</sup> N <sup>g</sup> OH HCI HNO <sup>3</sup>	Methanol Other Analysis Tes	Soron Soron Sulfate	SOI			Residual Chlorii	(OC)	GOU 022/ C	JC /
, -	<-5014A-MS-1	G	-		R	-	-							E			
	5-50L4A-M5P.1		F		1530	0	Ì Ì Ì			2							
	5-5124A-DUP-	V WT G	1		1	_	1			)							
4	5-50L44 - FB-	-/ WT G			1545	15	j j			2		-					
5	S-TANJ-1	WT G		+	1530	õ	-					_					
9		MT G	/		_								_				
~		WT G		_			-		-								
80		_															
on (		D LM	t														
2 7		-															
12		-															
	ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	ED BY / AF	FILIATION		DATE	TIME	AC	ACCEPTED BY / AFFILIATION	3Y / AFFIL	IATION	DATE	TIME		SAMP	SAMPLE CONDITIONS	SNC
		そうち	2	Colde	6	<b>こじ-し-9</b>	(15)	BURCH	tla	NUM	NUMBUD	67-	1151				
		angela	W.	AUMANUM	0 6-7	L	1151		3	.7	.,	CZ :20	xro	7.0	7	7	5
																1	ta.
age			S	SAMPLER NAME AND SIGNATURE	AME AND S	IGNATURE	1	14.						0. u	(N/A uo pa	N) Coole Ody	s Intae N)
13			_	PRIN	PRINT Name of SAMPLEK:	SAMPLEK:	(DIA)	phi A	hais	TAR I	DATE Stand		5	dwe		lsu bele (Y)	əlqm

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

F-ALL-Q-020rev.08, 12-Oct-2007



# MEMORANDUM

Project No. 153140604.0003

**DATE** June 21, 2022

TO Project File Golder Associates

- **CC** Amanda Derhake, Jeff Ingram
- **FROM** Annie Muehlfarth

EMAIL ann.muehlfarth@wsp.com

# DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCL4A – VERIFICATION SAMPLING - DATA PACKAGE 60402314

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

■ When matrix spike/matrix spike duplicate (MS/MSD) criterion was not met, the associated sample result was qualified as an estimate (J, J+ for estimates biased high, and J- for estimates biased low).

# **QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST**

Company Name: Golder / WSP	_ Project Manager: _J. In	gram
Project Name: Ameren SEC - SCL4A VS	_ Project Number: 15314	10604.003
Reviewer: A. Muehlfarth	Validation Date: 6/21/20	
Laboratory: <u>Pace Analytical Services</u> Analytical Method (type and no.): <u>EPA (300.0 (Anions)</u>	SDG #: <u>60402314</u>	
Matrix: Air Soil/Sed. Water Wast	□	
Sample Names S-TMW-1, 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 I	nformation	YES	NO	NA	COMMENTS
a)	Sampling dates noted?	х			6/6/2022
b)	Sampling team indicated?	х			
c)	Sample location noted?	х			
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)?	х			pH, Sp.Cond, ORP, Temp, DO, Turb
h)	Field Calibration within control limits?	X			
i)	Notations of unacceptable field conditions/performa	nces fr	om field lo	ogs or field n	otes?
			X		
j)	Does the laboratory narrative indicate deficiencies?			X	
	Note Deficiencies:				
Chain-	of-Custody (COC)	YES	NO	NA	COMMENTS
	Wee the COC even entry commisted?			_	
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			
,				—	
Genera	al (reference QAPP or Method)	YES	NO	NA	COMMENTS
a)	Were hold times met for sample pretreatment?	х			
b)	Were hold times met for sample analysis?	х			
c)	Were the correct preservatives used?	х			
d)	Was the correct method used?	х			
e)	Were appropriate reporting limits achieved?	X			
f)	Were any sample dilutions noted?	х			See Notes
g)	Were any matrix problems noted?	х			See Notes

# **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)?		х		S-SCL4A-FB-1 @ S-TMW-1
c)	Were analytes detected in the equipment blank(s)?			x	
d)	Were analytes detected in the trip blank(s)?			x	
Labora	tory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	х			
b)	Were the proper analytes included in the LCS?	x			
c)	Was the LCS accuracy criteria met?	Х			
Duplic	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	iplicate	sample n	ames)?	
		x			S-SCL4A-DUP-1 @ S-TMW-1
b)	Were field dup. precision criteria met (note RPD)?	x			Max RPD: 10.0% [<20%]
c)	Were lab duplicates analyzed (note original and dup	olicate s	samples)?	2	
		х			
d)	Were lab dup. precision criteria met (note RPD)?	x			Max RPD: 4% [<15%]
Blind S	Standards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			×	
	analytes included and concentrations)?				
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?		×		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 analyzed at a dilution, no qualification necessary.

### MS/MSD:

3153963/3153964: MS % recovery low, MSD % recovery high, and RPD high for sulfate. Associated with sample -001. Result qualified as an estimate.

# **QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST**

# Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-TMW-1	Sulfate	50.5	J	MS/MSD recoveries and RPD outside of control limits
			$\square$	
	0	+ **		
L	- (I M.I	11 H.	1	6/21/2022
Signature:	Ann Much	(forl) -		Date: 6/21/2022



November 22, 2022

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

RE: Project: AMEREN SEC SCL4A Pace Project No.: 60413641

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory between October 20, 2022 and October 21, 2022. 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,

Parmi Church

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

Enclosures

cc: Mark Haddock, Golder Associates Lisa Meyer, Ameren Grant Morey, WSP Golder Ann Muehlfarth, WSP Golder Eric Schneider, WSP Golder





## CERTIFICATIONS

Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

#### Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219 Missouri Inorganic Drinking Water Certification #: 10090 Arkansas Drinking Water Arkansas Certification #: 22-031-0 Illinois Certification #: 2000302021-3 Iowa Certification #: 118 Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Nevada Certification #: KS000212023-1 Oklahoma Certification #: 2022-057 Florida: Cert E871149 SEKS WET Texas Certification #: T104704407-21-15 Utah Certification #: KS000212022-12 Illinois Certification #: 004592 Kansas Field Laboratory Accreditation: # E-92587 Missouri SEKS Micro Certification: 10070



## SAMPLE SUMMARY

Project: AMEREN SEC SCL4A Pace Project No.: 60413641

Lab ID **Date Collected Date Received** Sample ID Matrix 10/20/22 13:03 60413641001 S-TMW-1 Water 10/21/22 17:48 60413641002 S-TMW-2 Water 10/20/22 11:46 10/21/22 17:48 60413641003 S-TMW-3 Water 10/20/22 10:46 10/21/22 17:48 60413641004 S-SCL4A-DUP-1 10/20/22 00:00 Water 10/21/22 17:48 60413641005 S-SCL4A-FB-1 Water 10/20/22 13:13 10/21/22 17:48 60413477022 S-UG-3 Water 10/21/22 09:27 10/21/22 17:48 60413477005 S-BMW-1S Water 10/18/22 15:35 10/20/22 04:13 60413477004 S-BMW-3S Water 10/18/22 14:06 10/20/22 04:13



# SAMPLE ANALYTE COUNT

Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60413641001	S-TMW-1	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
0413641002	S-TMW-2	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
0413641003	S-TMW-3	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
0413641004	S-SCL4A-DUP-1	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
0413641005	S-SCL4A-FB-1	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
0413477022	S-UG-3	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
0413477005	S-BMW-1S	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
0413477004	S-BMW-3S	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

Sample: S-TMW-1	Lab ID:	60413641001	Collected	d: 10/20/22	2 13:03	Received: 10/	/21/22 17:48 M	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	od: EP	A 200.7			
	Pace Anal	ytical Services	- Kansas Ci	ty					
Boron	72.7J	ug/L	100	4.2	1	11/01/22 10:08	11/10/22 14:50	7440-42-8	В
Calcium	95000	ug/L	200	33.7	1	11/01/22 10:08	11/10/22 14:50	7440-70-2	
Iron	12.0J	ug/L	50.0	5.6	1	11/01/22 10:08	11/10/22 14:50	7439-89-6	
Magnesium	16600	ug/L	50.0	27.1	1	11/01/22 10:08	11/10/22 14:50	7439-95-4	
Manganese	395	ug/L	5.0	0.24	1	11/01/22 10:08	11/10/22 14:50	7439-96-5	
Potassium	4400	ug/L	500	87.6	1	11/01/22 10:08	11/10/22 14:50	7440-09-7	
Sodium	2820	ug/L	500	73.2	1	11/01/22 10:08	11/10/22 14:50	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	320B						
	Pace Anal	ytical Services	- Kansas Ci	ty					
Alkalinity, Total as CaCO3	270	mg/L	20.0	4.6	1		10/27/22 17:23		
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
	Pace Anal	ytical Services	- Kansas Ci	ty					
Total Dissolved Solids	407	mg/L	5.0	5.0	1		10/27/22 16:15		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	ytical Services	- Kansas Ci	ty					
Chloride	2.7	mg/L	1.0	0.53	1		11/07/22 21:44	16887-00-6	
Fluoride	0.42	mg/L	0.20	0.12	1		11/07/22 21:44	16984-48-8	
Sulfate	53.5	mg/L	5.0	2.8	5		11/07/22 22:31	14808-79-8	



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

Sample: S-TMW-2	Lab ID:	60413641002	Collecte	d: 10/20/22	2 11:46	Received: 10/	/21/22 17:48 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
	Pace Ana	ytical Services	- Kansas C	ity					
Boron	83.7J	ug/L	100	4.2	1	11/01/22 10:08	11/10/22 14:58	7440-42-8	
Calcium	118000	ug/L	200	33.7	1	11/01/22 10:08	11/10/22 14:58	7440-70-2	
Iron	1920	ug/L	50.0	5.6	1	11/01/22 10:08	11/10/22 14:58	7439-89-6	
Magnesium	21400	ug/L	50.0	27.1	1	11/01/22 10:08	11/10/22 14:58	7439-95-4	
Manganese	446	ug/L	5.0	0.24	1	11/01/22 10:08	11/10/22 14:58	7439-96-5	
Potassium	4760	ug/L	500	87.6	1	11/01/22 10:08	11/10/22 14:58	7440-09-7	
Sodium	3540	ug/L	500	73.2	1	11/01/22 10:08	11/10/22 14:58	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Ana	ytical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	365	mg/L	20.0	4.6	1		10/28/22 14:27		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Ana	ytical Services	- Kansas C	ity					
Total Dissolved Solids	<10.0	mg/L	10.0	10.0	1		10/27/22 16:15		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Ana	ytical Services	- Kansas C	ity					
Chloride	3.3	mg/L	1.0	0.53	1		11/08/22 16:18	16887-00-6	В
Fluoride	<0.12	mg/L	0.20	0.12	1		11/08/22 16:18	16984-48-8	
Sulfate	35.8	0		2.8	5				
		mg/L mg/L	0.20 5.0	-	-				



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

Sample: S-TMW-3	Lab ID:	60413641003	Collecte	d: 10/20/22	2 10:46	Received: 10/	21/22 17:48 M	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
	Pace Anal	ytical Services	- Kansas C	ity					
Boron	90.5J	ug/L	100	4.2	1	11/01/22 10:08	11/10/22 15:04	7440-42-8	
Calcium	136000	ug/L	200	33.7	1	11/01/22 10:08	11/10/22 15:04	7440-70-2	
Iron	1640	ug/L	50.0	5.6	1	11/01/22 10:08	11/10/22 15:04	7439-89-6	
Magnesium	25200	ug/L	50.0	27.1	1	11/01/22 10:08	11/10/22 15:04	7439-95-4	
Manganese	663	ug/L	5.0	0.24	1	11/01/22 10:08	11/10/22 15:04	7439-96-5	
Potassium	6230	ug/L	500	87.6	1	11/01/22 10:08	11/10/22 15:04	7440-09-7	
Sodium	4490	ug/L	500	73.2	1	11/01/22 10:08	11/10/22 15:04	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Anal	ytical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	415	mg/L	20.0	4.6	1		10/28/22 14:41		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Anal	ytical Services	- Kansas C	ity					
Total Dissolved Solids	838	mg/L	10.0	10.0	1		10/27/22 16:15		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	ytical Services	- Kansas C	ity					
Chloride	2.6	mg/L	1.0	0.53	1		11/07/22 22:47	16887-00-6	
Fluoride	<0.12	mg/L	0.20	0.12	1		11/07/22 22:47	16984-48-8	
Sulfate	44.9	mg/L	5.0	2.8	5		11/07/22 23:03	14808-79-8	



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

Lab ID:	60413641004	Collected: 10/20/22 00:00			Received: 10/21/22 17:48 Matrix: Water				
Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7				
Pace Anal	vtical Services	- Kansas C	ity						
89.7J	ug/L	100	4.2	1	11/01/22 10:08	11/10/22 15:06	7440-42-8		
137000	ug/L	200	33.7	1	11/01/22 10:08	11/10/22 15:06	7440-70-2		
1630	ug/L	50.0	5.6	1	11/01/22 10:08	11/10/22 15:06	7439-89-6		
25700	ug/L	50.0	27.1	1	11/01/22 10:08	11/10/22 15:06	7439-95-4		
673	ug/L	5.0	0.24	1	11/01/22 10:08	11/10/22 15:06	7439-96-5		
6240	ug/L	500	87.6	1	11/01/22 10:08	11/10/22 15:06	7440-09-7		
4420	ug/L	500	73.2	1	11/01/22 10:08	11/10/22 15:06	7440-23-5		
Analytical	Method: SM 23	20B							
Pace Anal	vtical Services	- Kansas C	ity						
419	mg/L	20.0	4.6	1		10/28/22 14:47			
Analytical	Method: SM 25	40C							
Pace Analy	vtical Services	- Kansas C	ity						
409	mg/L	10.0	10.0	1		10/27/22 16:15			
Analytical	Method: EPA 3	00.0							
Pace Anal	vtical Services	- Kansas C	ity						
2.7	mg/L	1.0	0.53	1		11/07/22 23:19	16887-00-6		
	0	-		1		11/07/22 23:19	16984-48-8		
44.6	0	5.0	2.8	5					
	Results Analytical Pace Analy 89.7J 137000 1630 25700 673 6240 4420 Analytical Pace Analy 419 Analytical Pace Analy 409 Analytical Pace Analy 2.7 0.34	Analytical Method: EPA 2 Pace Analytical Services 89.7J ug/L 137000 ug/L 1630 ug/L 25700 ug/L 673 ug/L 6240 ug/L 4420 ug/L Analytical Method: SM 23 Pace Analytical Services 419 mg/L Analytical Method: SM 25 Pace Analytical Services 409 mg/L Analytical Method: EPA 3 Pace Analytical Services 2.7 mg/L 0.34 mg/L	ResultsUnitsPQLAnalytical Method: EPA 200.7Prepara Pace Analytical Services - Kansas C $89.7J$ ug/L100 $137000$ ug/L200 $1630$ ug/L50.0 $25700$ ug/L50.0 $673$ ug/L500 $4420$ ug/L500Analytical Method: SM 2320BPace Analytical Services - Kansas C $419$ mg/L20.0Analytical Method: SM 2540CPace Analytical Services - Kansas C $409$ mg/L10.0Analytical Method: EPA 300.0Pace Analytical Services - Kansas C $409$ mg/L10.0Analytical Method: EPA 300.0Pace Analytical Services - Kansas C $409$ mg/L10.0Analytical Method: EPA 300.0Pace Analytical Services - Kansas C $2.7$ mg/L1.0 $0.34$ mg/L0.20	ResultsUnitsPQLMDLAnalytical Method: EPA 200.7Preparation Meth Pace Analytical Services - Kansas City $89.7J$ ug/L1004.2 $137000$ ug/L20033.7 $1630$ ug/L50.05.6 $25700$ ug/L50.027.1 $673$ ug/L50087.6 $4420$ ug/L50087.6 $4420$ ug/L50073.2Analytical Method: SM 2320BPace Analytical Services - Kansas City $419$ mg/L20.04.6Analytical Method: SM 2540CPace Analytical Services - Kansas City $409$ mg/L10.010.0Analytical Method: EPA 300.0Pace Analytical Services - Kansas City $409$ mg/L1.00.53 $0.34$ mg/L0.200.12	Results         Units         PQL         MDL         DF           Analytical Method: EPA 200.7         Preparation Method: EPA 200.7         100         4.2         1           137000         ug/L         200         33.7         1         1630         10.0         1.1         10.0         1.2         1         1         10.0         1.2         1 </td <td>Results         Units         PQL         MDL         DF         Prepared           Analytical Method: EPA 200.7         Preparation Method: EPA 200.7         Pace Analytical Services - Kansas City         11/01/22 10:08           137000         ug/L         200         33.7         1         11/01/22 10:08           137000         ug/L         200         33.7         1         11/01/22 10:08           1630         ug/L         50.0         27.1         1         11/01/22 10:08           25700         ug/L         50.0         27.1         1         11/01/22 10:08           673         ug/L         50.0         27.1         1         11/01/22 10:08           6240         ug/L         500         87.6         1         11/01/22 10:08           4420         ug/L         500         73.2         1         11/01/22 10:08           Analytical Method: SM 2320B         Pace Analytical Services - Kansas City         1         11/01/22 10:08           419         mg/L         20.0         4.6         1           Analytical Method: SM 2540C         Pace Analytical Services - Kansas City         1         1           409         mg/L         10.0         10.0         1      &lt;</td> <td>Results         Units         PQL         MDL         DF         Prepared         Analyzed           Analytical Method: EPA 200.7         Preparation Method: EPA 200.7         Pace Analytical Services - Kansas City         11/01/22 10:08         11/10/22 15:06           89.7 J         ug/L         100         4.2         1         11/01/22 10:08         11/10/22 15:06           137000         ug/L         200         33.7         1         11/01/22 10:08         11/10/22 15:06           1630         ug/L         50.0         5.6         1         11/01/22 10:08         11/10/22 15:06           25700         ug/L         50.0         27.1         1         11/01/22 10:08         11/10/22 15:06           673         ug/L         5.0         0.24         1         11/01/22 10:08         11/10/22 15:06           6240         ug/L         500         87.6         1         11/01/22 10:08         11/10/22 15:06           Analytical Method: SM 2320B         Pace Analytical Services - Kansas City         1         10/28/22 14:47           Analytical Method: SM 2540C         Pace Analytical Services - Kansas City         1         10/27/22 16:15           Analytical Method: EPA 300.0         Pace Analytical Services - Kansas City         1         10/27/22</td> <td>Results         Units         PQL         MDL         DF         Prepared         Analyzed         CAS No.           Analytical Method: EPA 200.7         Preparation Method: EPA 200.7         Pace Analytical Services - Kansas City         11/01/22 10:08         11/10/22 15:06         7440-42-8           137000         ug/L         200         33.7         1         11/01/22 10:08         11/10/22 15:06         7440-42-8           137000         ug/L         50.0         5.6         1         11/01/22 10:08         11/10/22 15:06         7440-70-2           1630         ug/L         50.0         5.6         1         11/01/22 10:08         11/10/22 15:06         7439-89-6           25700         ug/L         50.0         27.1         1         11/01/22 10:08         11/10/22 15:06         7439-95-4           673         ug/L         5.0         0.24         1         11/01/22 10:08         11/10/22 15:06         7440-09-7           4420         ug/L         500         73.2         1         11/01/22 10:08         11/10/22 15:06         7440-23-5           Analytical Method: SM 2320B         Pace Analytical Services - Kansas City         1         10/28/22 14:47           Analytical Method: SM 2540C         Pace Analytical Services - Kansas City</td>	Results         Units         PQL         MDL         DF         Prepared           Analytical Method: EPA 200.7         Preparation Method: EPA 200.7         Pace Analytical Services - Kansas City         11/01/22 10:08           137000         ug/L         200         33.7         1         11/01/22 10:08           137000         ug/L         200         33.7         1         11/01/22 10:08           1630         ug/L         50.0         27.1         1         11/01/22 10:08           25700         ug/L         50.0         27.1         1         11/01/22 10:08           673         ug/L         50.0         27.1         1         11/01/22 10:08           6240         ug/L         500         87.6         1         11/01/22 10:08           4420         ug/L         500         73.2         1         11/01/22 10:08           Analytical Method: SM 2320B         Pace Analytical Services - Kansas City         1         11/01/22 10:08           419         mg/L         20.0         4.6         1           Analytical Method: SM 2540C         Pace Analytical Services - Kansas City         1         1           409         mg/L         10.0         10.0         1      <	Results         Units         PQL         MDL         DF         Prepared         Analyzed           Analytical Method: EPA 200.7         Preparation Method: EPA 200.7         Pace Analytical Services - Kansas City         11/01/22 10:08         11/10/22 15:06           89.7 J         ug/L         100         4.2         1         11/01/22 10:08         11/10/22 15:06           137000         ug/L         200         33.7         1         11/01/22 10:08         11/10/22 15:06           1630         ug/L         50.0         5.6         1         11/01/22 10:08         11/10/22 15:06           25700         ug/L         50.0         27.1         1         11/01/22 10:08         11/10/22 15:06           673         ug/L         5.0         0.24         1         11/01/22 10:08         11/10/22 15:06           6240         ug/L         500         87.6         1         11/01/22 10:08         11/10/22 15:06           Analytical Method: SM 2320B         Pace Analytical Services - Kansas City         1         10/28/22 14:47           Analytical Method: SM 2540C         Pace Analytical Services - Kansas City         1         10/27/22 16:15           Analytical Method: EPA 300.0         Pace Analytical Services - Kansas City         1         10/27/22	Results         Units         PQL         MDL         DF         Prepared         Analyzed         CAS No.           Analytical Method: EPA 200.7         Preparation Method: EPA 200.7         Pace Analytical Services - Kansas City         11/01/22 10:08         11/10/22 15:06         7440-42-8           137000         ug/L         200         33.7         1         11/01/22 10:08         11/10/22 15:06         7440-42-8           137000         ug/L         50.0         5.6         1         11/01/22 10:08         11/10/22 15:06         7440-70-2           1630         ug/L         50.0         5.6         1         11/01/22 10:08         11/10/22 15:06         7439-89-6           25700         ug/L         50.0         27.1         1         11/01/22 10:08         11/10/22 15:06         7439-95-4           673         ug/L         5.0         0.24         1         11/01/22 10:08         11/10/22 15:06         7440-09-7           4420         ug/L         500         73.2         1         11/01/22 10:08         11/10/22 15:06         7440-23-5           Analytical Method: SM 2320B         Pace Analytical Services - Kansas City         1         10/28/22 14:47           Analytical Method: SM 2540C         Pace Analytical Services - Kansas City	



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

Sample: S-SCL4A-FB-1	Lab ID:	60413641005	Collected	d: 10/20/22	2 13:13	Received: 10/	/21/22 17:48 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	<b>,</b>	Method: EPA 2			od: EP/	A 200.7			
	Pace Anal	ytical Services	- Kansas C	ity					
Boron	<4.2	ug/L	100	4.2	1	11/01/22 10:08	11/10/22 15:14	7440-42-8	
Calcium	<33.7	ug/L	200	33.7	1	11/01/22 10:08	11/10/22 15:14	7440-70-2	
Iron	10.5J	ug/L	50.0	5.6	1	11/01/22 10:08	11/10/22 15:14	7439-89-6	В
Magnesium	<27.1	ug/L	50.0	27.1	1	11/01/22 10:08	11/10/22 15:14	7439-95-4	
Manganese	<0.24	ug/L	5.0	0.24	1	11/01/22 10:08	11/10/22 15:14	7439-96-5	
Potassium	<87.6	ug/L	500	87.6	1	11/01/22 10:08	11/10/22 15:14	7440-09-7	
Sodium	<73.2	ug/L	500	73.2	1	11/01/22 10:08	11/10/22 15:14	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Anal	ytical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	<4.6	mg/L	20.0	4.6	1		10/28/22 14:54		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Anal	ytical Services	- Kansas C	ity					
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		10/27/22 16:16		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
-	Pace Anal	ytical Services	- Kansas C	ity					
Chloride	0.60J	mg/L	1.0	0.53	1		11/07/22 23:50	16887-00-6	
Fluoride	<0.12	mg/L	0.20	0.12	1		11/07/22 23:50	16984-48-8	
Sulfate	<0.55	mg/L	1.0	0.55	1		11/07/22 23:50	14808-79-8	



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

Fluoride Sulfate

Sample: S-UG-3	Lab ID:	Lab ID: 60413477022		: 10/21/22	2 09:27	Received: 10/	21/22 17:48 Ma	atrix: 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	302	ug/L	100	4.2	1	10/28/22 16:57	11/10/22 14:02	7440-42-8			
Calcium	126000	ug/L	200	33.7	1	10/28/22 16:57	11/10/22 14:02	7440-70-2			
Iron	10.9J	ug/L	50.0	5.6	1	10/28/22 16:57	11/10/22 14:02	7439-89-6			
Magnesium	24000	ug/L	50.0	27.1	1	10/28/22 16:57	11/10/22 14:02	7439-95-4			
Manganese	744	ug/L	5.0	0.24	1	10/28/22 16:57	11/10/22 14:02	7439-96-5			
Potassium	5330	ug/L	500	87.6	1	10/28/22 16:57	11/10/22 14:02	7440-09-7			
Sodium	27600	ug/L	500	73.2	1	10/28/22 16:57	11/10/22 14:02	7440-23-5			
2320B Alkalinity	Analytical Method: SM 2320B										
	Pace Analytical Services - Kansas City										
Alkalinity, Total as CaCO3	353	mg/L	20.0	4.6	1		10/28/22 16:38				
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C								
	Pace Anal	ytical Services	- Kansas Cit	у							
Total Dissolved Solids	496	mg/L	10.0	10.0	1		10/28/22 12:17				
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0										
-	Pace Analytical Services - Kansas City										
Chloride	39.5	mg/L	5.0	2.6	5		11/07/22 16:58	16887-00-6			

39.5	mg/∟	5.0	2.0	5	11/07/22 10.30	10007-00-0
<0.12	mg/L	0.20	0.12	1	11/07/22 16:43	16984-48-8
44.1	mg/L	5.0	2.8	5	11/07/22 16:58	14808-79-8



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

Sample: S-BMW-1S	Lab ID:	60413477005	Collecte	d: 10/18/22	2 15:35	Received: 10/20/22 04:13 Matrix: Water						
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual			
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7						
	Pace Analytical Services - Kansas City											
Boron	73.0J	ug/L	100	4.2	1	10/28/22 16:57	11/10/22 13:03	7440-42-8				
Calcium	168000	ug/L	200	33.7	1	10/28/22 16:57	11/10/22 13:03	7440-70-2				
Iron	32.9J	ug/L	50.0	5.6	1	10/28/22 16:57	11/10/22 13:03	7439-89-6				
Magnesium	33400	ug/L	50.0	27.1	1	10/28/22 16:57	11/10/22 13:03	7439-95-4				
Manganese	1550	ug/L	5.0	0.24	1	10/28/22 16:57	11/10/22 13:03	7439-96-5				
Potassium	431J	ug/L	500	87.6	1	10/28/22 16:57	11/10/22 13:03	7440-09-7				
Sodium	5020	ug/L	500	73.2	1	10/28/22 16:57	11/10/22 13:03	7440-23-5				
2320B Alkalinity	Analytical	Method: SM 23	20B									
	Pace Anal	ytical Services	- Kansas C	ity								
Alkalinity, Total as CaCO3	479	mg/L	20.0	4.6	1		10/26/22 15:39					
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C									
	Pace Anal	ytical Services	- Kansas C	ity								
Total Dissolved Solids	711	mg/L	10.0	10.0	1		10/25/22 10:49					
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0									
-	Pace Anal	ytical Services	- Kansas C	ity								
Chloride	9.2	mg/L	1.0	0.53	1		11/04/22 12:42	16887-00-6				
Fluoride	0.20J	mg/L	0.20	0.12	1		11/04/22 12:42	16984-48-8				
Sulfate	61.1	mg/L	5.0	2.8	5		11/04/22 12:57	14808-79-8				



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

Sample: S-BMW-3S	Lab ID:	60413477004	Collected	: 10/18/22	2 14:06	Received: 10/	20/22 04:13 M	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepar	ation Meth	nod: EP	A 200.7			
	Pace Ana	lytical Services	<ul> <li>Kansas Cit</li> </ul>	У					
Boron	84.2J	ug/L	100	4.2	1	10/28/22 16:57	11/10/22 13:01	7440-42-8	
Calcium	131000	ug/L	200	33.7	1	10/28/22 16:57	11/10/22 13:01	7440-70-2	
Iron	20.0J	ug/L	50.0	5.6	1	10/28/22 16:57	11/10/22 13:01	7439-89-6	
Magnesium	23900	ug/L	50.0	27.1	1	10/28/22 16:57	11/10/22 13:01	7439-95-4	
Manganese	210	ug/L	5.0	0.24	1	10/28/22 16:57	11/10/22 13:01	7439-96-5	
Potassium	525	ug/L	500	87.6	1	10/28/22 16:57	11/10/22 13:01	7440-09-7	
Sodium	5490	ug/L	500	73.2	1	10/28/22 16:57	11/10/22 13:01	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Ana	lytical Services	- Kansas Cit	у					
Alkalinity, Total as CaCO3	390	mg/L	20.0	4.6	1		10/26/22 15:32		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Ana	lytical Services	- Kansas Cit	у					
Total Dissolved Solids	467	mg/L	10.0	10.0	1		10/25/22 10:48		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
-	Pace Ana	lytical Services	- Kansas Cit	у					
Chloride	11.7	mg/L	1.0	0.53	1		11/04/22 12:13	16887-00-6	
Fluoride	0.22	mg/L	0.20	0.12	1		11/04/22 12:13	16984-48-8	
Sulfate	27.8	mg/L	5.0	2.8	5		11/04/22 12:28	14808-79-8	



# **QUALITY CONTROL DATA**

Project: AMEREN SEC SCL4A

Pace Project No.:	60413641
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Potassium

Sodium

QC Batch:	815417	Analysis Meth	hod:	EPA 200.7				
QC Batch Method:	EPA 200.7	Analysis Des	cription:	200.7 Metals, Total				
		Laboratory:		Pace Analytical Ser	rvices - Kansas City	,		
Associated Lab Sam	ples: 60413477004, 60413477005							
METHOD BLANK:	3242907	Matrix:	Water					
Associated Lab Sam	ples: 60413477004, 60413477005							
		Blank	Reporting					
Param	eter Units	Result	Limit	MDL	Analyzed	Qualifiers		
Boron		<4.2	1(	00 4.2	11/10/22 12:46			
Calcium	ug/L	<33.7	20	33.7	11/10/22 12:46			
Iron	ug/L	<5.6	50	.0 5.6	11/10/22 12:46			
Magnesium	ug/L	<27.1	50	.0 27.1	11/10/22 12:46			
Manganese	ug/L	<0.24	5	.0 0.24	11/10/22 12:46			
-								

500

500

87.6

73.2

11/10/22 12:46

11/10/22 12:46

#### LABORATORY CONTROL SAMPLE: 3242908

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L		967	97	85-115	
Calcium	ug/L	10000	10400	104	85-115	
Iron	ug/L	10000	10100	101	85-115	
Magnesium	ug/L	10000	10400	104	85-115	
Manganese	ug/L	1000	1020	102	85-115	
Potassium	ug/L	10000	10000	100	85-115	
Sodium	ug/L	10000	10300	103	85-115	

<87.6

<73.2

ug/L

ug/L

MATRIX SPIKE & MATRIX SP		ATE: 3242	909 MS	MCD	3242910							
Demonster	-	0413477002	Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	0
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qua
Boron	ug/L	7150	1000	1000	8000	8170	85	102	70-130	2	20	
Calcium	ug/L	73500	10000	10000	82500	83700	90	101	70-130	1	20	
Iron	ug/L	2640	10000	10000	12700	12700	100	100	70-130	0	20	
Magnesium	ug/L	15600	10000	10000	25500	25600	99	100	70-130	0	20	
Manganese	ug/L	340	1000	1000	1340	1350	100	101	70-130	1	20	
Potassium	ug/L	6740	10000	10000	16800	17000	101	103	70-130	1	20	
Sodium	ug/L	22600	10000	10000	32200	32200	97	96	70-130	0	20	
MATRIX SPIKE SAMPLE:	32	42911										
			60413	8477013	Spike	MS		MS	% Rec			
Parameter		Units	Re	esult	Conc.	Result	%	Rec	Limits		Qualif	iers
Boron		ug/L		65.7J	1000	10	030	96	70	-130		
Calcium		ug/L		124000	10000	1280	000	41	70	-130 M	1	

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Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

MATRIX SPIKE SAMPLE:	3242911						
		60413477013	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Iron	ug/L	7820	10000	17400	96	70-130	
Magnesium	ug/L	31500	10000	40000	85	70-130	
Manganese	ug/L	523	1000	1500	97	70-130	
Potassium	ug/L	3910	10000	13900	100	70-130	
Sodium	ug/L	5600	10000	15800	102	70-130	

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Project: AMEREN SEC SCL4A

QC Batch:	815419	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
		Laboratory:	Pace Analytical Services - Kansas City

Matrix: Water

#### METHOD BLANK: 3242917

Associated Lab Samples: 60413477022

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<4.2	100	4.2	11/10/22 13:35	
Calcium	ug/L	<33.7	200	33.7	11/10/22 13:35	
Iron	ug/L	<5.6	50.0	5.6	11/10/22 13:35	
Magnesium	ug/L	<27.1	50.0	27.1	11/10/22 13:35	
Manganese	ug/L	<0.24	5.0	0.24	11/10/22 13:35	
Potassium	ug/L	<87.6	500	87.6	11/10/22 13:35	
Sodium	ug/L	<73.2	500	73.2	11/10/22 13:35	

#### LABORATORY CONTROL SAMPLE: 3242918

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L		955	95	85-115	
Calcium	ug/L	10000	10300	103	85-115	
Iron	ug/L	10000	9920	99	85-115	
Magnesium	ug/L	10000	10000	100	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	9960	100	85-115	
Sodium	ug/L	10000	9970	100	85-115	

MATRIX SPIKE & MATRIX	SPIKE DUPL	ICATE: 3242		1405	3242920							
Parameter	Units	60413477016 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L		1000	1000	1040	1030	97	95	70-130	1	20	
Calcium	ug/L	273000	10000	10000	288000	285000	151	127	70-130	1	20	M1
Iron	ug/L	16000	10000	10000	26200	26000	102	100	70-130	1	20	
Magnesium	ug/L	72700	10000	10000	84300	83800	116	111	70-130	1	20	
Manganese	ug/L	1280	1000	1000	2280	2260	100	98	70-130	1	20	
Potassium	ug/L	6000	10000	10000	16500	16200	105	102	70-130	2	20	
Sodium	ug/L	25300	10000	10000	35600	35200	104	99	70-130	1	20	

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Project: AMEREN SEC SCL4A

Pace Project No.:	60413641		
QC Batch:	815804	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60413641001

#### METHOD BLANK: 3244375

Associated Lab Samples: 60413641001

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	11.1J	100	4.2	11/10/22 14:11	
Calcium	ug/L	<33.7	200	33.7	11/10/22 14:11	
Iron	ug/L	<5.6	50.0	5.6	11/10/22 14:11	
Magnesium	ug/L	<27.1	50.0	27.1	11/10/22 14:11	
Manganese	ug/L	<0.24	5.0	0.24	11/10/22 14:11	
Potassium	ug/L	<87.6	500	87.6	11/10/22 14:11	
Sodium	ug/L	<73.2	500	73.2	11/10/22 14:11	

Matrix: Water

#### LABORATORY CONTROL SAMPLE: 3244376

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	967	97	85-115	
Calcium	ug/L	10000	10400	104	85-115	
Iron	ug/L	10000	9950	99	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	9980	100	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SF	PIKE DUPI	LICATE: 3244	377 MS	MSD	3244378							
		60413638002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Boron	ug/L	184	1000	1000	1150	1140	97	95	70-130	1	20	
Calcium	ug/L	122000	10000	10000	122000	121000	-7	-12	70-130	0	20	M1
Iron	ug/L	19.9J	10000	10000	10100	9930	100	99	70-130	1	20	
Magnesium	ug/L	25300	10000	10000	33300	33000	80	77	70-130	1	20	
Manganese	ug/L	150	1000	1000	1150	1140	100	99	70-130	1	20	
Potassium	ug/L	5290	10000	10000	15300	15100	100	98	70-130	2	20	
Sodium	ug/L	62200	10000	10000	67500	68600	53	64	70-130	2	20	M1
MATRIX SPIKE SAMPLE:		3244379										
			60413	8641001	Spike	MS		MS	% Rec			
Parameter		Units	Re	esult	Conc.	Result	%	6 Rec	Limits		Quali	fiers
Boron		ug/L		72.7J	1000	1(	040	96	70	-130		
Calcium		ug/L		95000	10000	1030	000	77	70	-130		

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#### **REPORT OF LABORATORY ANALYSIS**



Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

MATRIX SPIKE SAMPLE:	3244379						
		60413641001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Iron	ug/L		10000	10000	100	70-130	
Magnesium	ug/L	16600	10000	26300	98	70-130	
Manganese	ug/L	395	1000	1380	99	70-130	
Potassium	ug/L	4400	10000	14400	100	70-130	
Sodium	ug/L	2820	10000	13100	102	70-130	

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.



Project:	AMEREN SEC SCL4A

QC Batch:	815805		Analysis Meth	nod:	EPA 200.7			
QC Batch Method:	EPA 200.7		Analysis Desc	cription:	200.7 Metals, Total			
			Laboratory:		Pace Analytical Se	rvices - Kansas City	/	
Associated Lab Sam	nples: 60413641	002, 6041364100	3, 60413641004, 60	0413641005	-			
METHOD BLANK:	3244380		Matrix:	Water	5 g <u>MDL</u> <u>Analyzed</u> <u>Qualifiers</u> 100 4.2 11/10/22 14:54 200 33.7 11/10/22 14:54			
Associated Lab Sam	nples: 60413641	002, 6041364100	3, 60413641004, 60	0413641005				
			Blank	Reporting				
Param	neter	Units	Result	Limit	MDL	Analyzed	Qualifiers	
Boron		ug/L		10	0 4.2	11/10/22 14:54		
Calcium		ug/L	<33.7	20	0 33.7	11/10/22 14:54		
Iron		ug/L	7.8J	50.	0 5.6	11/10/22 14:54		
Magnesium		ug/L	<27.1	50.	0 27.1	11/10/22 14:54		
Manganese		ug/L	<0.24	5.	0 0.24	11/10/22 14:54		
Potassium		ug/L	<87.6	50	0 87.6	11/10/22 14:54		
Sodium		ug/L	<73.2	50	0 73.2	11/10/22 14:54		

#### LABORATORY CONTROL SAMPLE: 3244381

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	964	96	85-115	
Calcium	ug/L	10000	10300	103	85-115	
Iron	ug/L	10000	10000	100	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1020	102	85-115	
Potassium	ug/L	10000	9970	100	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX	SPIKE DUPLI	CATE: 3244	382 MS	MSD	3244383							
Parameter	e Units	60413641002 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	83.7J	1000	1000	1040	1030	96	95	70-130	1	20	
Calcium	ug/L	118000	10000	10000	129000	127000	105	91	70-130	1	20	
Iron	ug/L	1920	10000	10000	11900	11700	100	98	70-130	2	20	
Magnesium	ug/L	21400	10000	10000	31600	31400	102	100	70-130	0	20	
Manganese	ug/L	446	1000	1000	1450	1430	101	99	70-130	1	20	
Potassium	ug/L	4760	10000	10000	15000	14700	102	99	70-130	2	20	
Sodium	ug/L	3540	10000	10000	14100	13700	106	101	70-130	3	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**



Project:	AMEREN SEC	SCL4A								
Pace Project No.: 0	60413641									
QC Batch:	814616		Analysis M	lethod:	SM 2	2320B				
QC Batch Method:	SM 2320B		Analysis D	escription:	2320	B Alkalin	ity			
			Laboratory	r:	Pace	Analytic	al Sei	rvices - Kar	ed Qualifiers	ity
Associated Lab Samp	oles: 604134	77004, 60413477005								
METHOD BLANK: 3	3239748		Matri	x: Water						
Associated Lab Samp	oles: 604134	77004, 60413477005								
			Blank	Reportin	g					
Parame	eter	Units	Result	Limit		MDL		Analyz	ed	Qualifiers
Alkalinity, Total as Ca	CO3	mg/L	<4.	6	20.0		4.6	10/26/22	14:59	
LABORATORY CON	TROL SAMPLE	3239749								
			Spike	LCS		CS		6 Rec		
Parame	eter	Units	Conc.	Result	% F	Rec	L	_imits	Qua	alifiers
Alkalinity, Total as Ca	CO3	mg/L	500	495		99		90-110		
SAMPLE DUPLICATI	E: 3239750									
Dama		11-2-	60413477001			000		Max		Qualifian
Parame		Units	Result	Result		RPD		RPD		Qualifiers
Alkalinity, Total as Ca	CO3	mg/L	24	1	234		3		10	
SAMPLE DUPLICATI	E: 3239751									
Derer		Linito	60413480006					Max		Qualifiara
Parame		Units	Result	Result		RPD		RPD		Qualifiers
Alkalinity, Total as Ca	CO3	mg/L	39:	3	398		1		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.



Project: AMEREN SEC SC Pace Project No.: 60413641	L4A						
QC Batch: 815002		Analysis M	ethod:	SM 2320B			
QC Batch Method: SM 2320B		Analysis De	·	2320B Alkalin			
Associated Lab Samples: 604136410	001	Laboratory		Pace Analytic	al Services - Kar	nsas C	ity
METHOD BLANK: 3241292		Matrix	: Water				
Associated Lab Samples: 604136410	001						
Parameter	Units	Blank Result	Reporting Limit	MDL	Analyz	zed	Qualifiers
Alkalinity, Total as CaCO3	mg/L				4.6 10/27/22		
	<u>g</u> / _						
LABORATORY CONTROL SAMPLE:	3241293						
		Spike	LCS	LCS	% Rec		
Parameter	Units	Conc.	Result	% Rec	Limits	Qua	alifiers
Alkalinity, Total as CaCO3	mg/L	500	486	97	90-110		
SAMPLE DUPLICATE: 3241294							
Parameter	Units	60413477006 Result	Dup Result	RPD	Max RPD		Qualifiers
Alkalinity, Total as CaCO3	mg/L				0	10	
SAMPLE DUPLICATE: 3241295							
		60413480003	Dup		Max		
Parameter	Units	Result	Result	RPD	RPD		Qualifiers
Alkalinity, Total as CaCO3	mg/L	610	) 61	3	0	10	
SAMPLE DUPLICATE: 3241296							
Parameter	Units	60413797001 Result	Dup Result	RPD	Max RPD		Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND				10	
SAMPLE DUPLICATE: 3241297							
		60413477016	Dup		Max		
Parameter	Units	Result	Result	RPD	RPD		Qualifiers
Alkalinity, Total as CaCO3	mg/L	462	2 47		3		

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.



Project: AMEREN SEC S	CL4A						
Pace Project No.: 60413641							
QC Batch: 815255		Analysis Me		SM 2320B			
QC Batch Method: SM 2320B		Analysis De		2320B Alkalini	<b>,</b>		
		Laboratory:			al Services - Kar	sas Cit	у
Associated Lab Samples: 6041347	7022, 60413641002	2, 60413641003,	60413641004,	60413641005			
METHOD BLANK: 3242335		Matrix	: Water				
Associated Lab Samples: 6041347	7022, 60413641002		60413641004,	60413641005			
5		Blank	Reporting				0 11
Parameter	Units	Result	Limit	MDL	Analyz		Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	5 20.0	0	4.6 10/28/22	13:56	
LABORATORY CONTROL SAMPLE:	3242336						
	0272000	Spike	LCS	LCS	% Rec		
Parameter	Units	Conc.	Result	% Rec	Limits	Qual	ifiers
Alkalinity, Total as CaCO3	mg/L	500	489	98	90-110		
SAMPLE DUPLICATE: 3242337							
_		60414043001	Dup		Max		
Parameter	Units	Result	Result	RPD	RPD		Qualifiers
Alkalinity, Total as CaCO3	mg/L	501	50	7	1	10	
SAMPLE DUPLICATE: 3242338							
		60413641002	Dup		Max		
Parameter	Units	Result	Result	RPD	RPD		Qualifiers
Alkalinity, Total as CaCO3	mg/L	365	37	1	1	10	
SAMPLE DUPLICATE: 3242339			_				
Deremeter	L laita	60413642002	Dup	RPD	Max RPD		Qualifiara
Parameter	Units	_ Result	Result				Qualifiers
Alkalinity, Total as CaCO3	mg/L	453	5 45·	4	0	10	
SAMPLE DUPLICATE: 3242340							
		60413642005	Dup		Max		
Parameter	Units	Result	Result	RPD	RPD		Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	<4.0	6		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.



Project:	AMEREN SEC SC	CL4A							
Pace Project No.:	60413641								
QC Batch:	814499		Analysis M	ethod:	SM 2540C				
QC Batch Method:	SM 2540C		Analysis De	escription:	2540C Total	Dissolv	ved Solids		
			Laboratory	:	Pace Analytic	al Ser	vices - Kar	nsas Ci	ity
Associated Lab Sam	ples: 60413477	004, 60413477005							
METHOD BLANK:	3239207		Matrix	x: Water					
Associated Lab Sam	ples: 60413477	004, 60413477005							
_			Blank	Reporting					
Param	eter	Units	Result	Limit	MDL		Analyz	zed	Qualifiers
Total Dissolved Solid	ls	mg/L	<5.0	) :	5.0	5.0	10/25/22	10:47	
LABORATORY CON	ITROL SAMPLE:	3239208							
			Spike	LCS	LCS		Rec		
Param	eter	Units	Conc.	Result	% Rec	L	imits	Qua	alifiers
Total Dissolved Solid	ls	mg/L	1000	884	88		80-120		
SAMPLE DUPLICAT	E: 3239209								
_			60413307001	Dup			Max		0 11/1
Param		Units	Result	Result	RPD		RPD		Qualifiers
Total Dissolved Solid	ls	mg/L	2630	) 27	20	3		10	
SAMPLE DUPLICAT	E: 3239210								
_			60413477004				Max		0
Param		Units	Result	Result	RPD		RPD		Qualifiers
Total Dissolved Solid	ls	mg/L	467	7 4	67	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.



Project:	AMER	EN SEC SC	CL4A						
Pace Project No.:	60413	641							
QC Batch:	8149	96		Analysis M	ethod:	SM 2540C			
QC Batch Method:	SM 2	540C		Analysis D	escription:	2540C Total D	issolved Solids		
				Laboratory	:	Pace Analytica	I Services - Ka	nsas Ci	ity
Associated Lab Sar	nples:	60413641	001, 604136410	02, 60413641003,	60413641004,	60413641005			
METHOD BLANK:	32412	73		Matri	x: Water				
Associated Lab Sar	nples:	60413641	001, 604136410	02, 60413641003,	60413641004,	60413641005			
				Blank	Reporting				
Parar	neter		Units	Result	Limit	MDL	Analy	zed	Qualifiers
Total Dissolved Soli	ds		mg/L		5	.0	5.0 10/27/22	16:14	
			-						
LABORATORY CO	NTROL	SAMPLE:	3241274						
				Spike	LCS	LCS	% Rec		
Parar	neter		Units	Conc.	Result	% Rec	Limits	Qua	alifiers
Total Dissolved Soli	ds		mg/L	1000	985	98	80-120		
SAMPLE DUPLICA	TE: 32	41275							
				60413477016	Dup		Max		
Parar	neter		Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Soli	ds		mg/L	1330	131	0	2	10	
SAMPLE DUPLICA	TE: 32	41276							
				60413641002			Max		
Parar	neter		Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Soli	ds		mg/L	<10.0	50 50	3		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.



Project:	AMEREN SEC S	CL4A						
Pace Project No.:	60413641							
QC Batch:	815260		Analysis M	Method:	SM 2540C			
QC Batch Method:	SM 2540C		Analysis [	Description:	2540C Total I	Dissolved Solids	6	
			Laborator	y:	Pace Analytic	cal Services - Ka	ansas City	y
Associated Lab Sam	nples: 6041347	7022			·			
METHOD BLANK:	3242365		Mati	rix: Water				
Associated Lab Sam	ples: 6041347	7022						
			Blank	Reportin	g			
Param	neter	Units	Result	Limit	MDL	Analy	/zed	Qualifiers
Total Dissolved Solid	ls	mg/L	<5	.0	5.0	5.0 10/28/22	2 12:15	
LABORATORY CON	ITROL SAMPLE:	3242366						
			Spike	LCS	LCS	% Rec		
Param	neter	Units	Conc.	Result	% Rec	Limits	Quali	fiers
Total Dissolved Solid	ds	mg/L	1000	984	98	80-120	)	
SAMPLE DUPLICAT	E: 3242367							
			6041156800			Max		
Param	neter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Solid	ds	mg/L	87	76	879	0	10 H1	
SAMPLE DUPLICAT	E: 3242368							
			6041363800	- 1		Max		
Param	neter	Units	Result	Result	RPD	RPD	· · · · ·	Qualifiers
Total Dissolved Solid	ds	mg/L	64	19	638	2	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.



QC Batch: 81640	)2	Analysi	s Method	1: 1	PA 300.0						
QC Batch Method: EPA 3	800.0	-	s Descrip		300.0 IC Ani	ons					
		Laborat			Pace Analyti	cal Sei	rvices - Kar	isas City			
Associated Lab Samples:	60413477004, 60413477005										
METHOD BLANK: 324698	7	М	latrix: Wa	ater							
Associated Lab Samples:	60413477004, 60413477005										
Parameter	Units	Blank Result		Reporting Limit	MDL		Analyz	ed (	Qualifiers		
Chloride	mg/L	<	0.53	1.	 )	0.53	11/04/22	08:54			
Fluoride	mg/L		0.12	0.2		0.12	11/04/22				
Sulfate	mg/L	<	0.55	1.	)	0.55	11/04/22	08:54			
METHOD BLANK: 325018	7	М	latrix: Wa	ater							
Associated Lab Samples:	60413477004, 60413477005										
		Blank	F	Reporting							
Parameter	Units	Result		Limit	MDL		Analyz	ed (	Qualifiers		
Chloride	mg/L	0	.61J	1.	)	0.53	11/07/22	15:06			
Fluoride	mg/L	<	0.12	0.2	)	0.12	11/07/22	15:06			
Sulfate	mg/L	<	0.55	1.	)	0.55	11/07/22	15:06			
LABORATORY CONTROL S	SAMPLE: 3246988										
		Spike	LC Res		LCS % Rec		6 Rec	Qualifiers			
LABORATORY CONTROL S Parameter Chlorida	Units	Conc.	LC Res	ult	% Rec	L	_imits	Qualifiers			
Parameter	Units mg/L	Conc. 5		ult	% Rec 92	L	_imits 90-110	Qualifiers	<u>.                                    </u>		
Parameter Chloride Fluoride	Units	Conc.		ult	% Rec		_imits	Qualifiers	·		
Parameter Chloride Fluoride Sulfate	Units mg/L mg/L mg/L	Conc. 5 2.5		ult 4.6 2.5	% Rec 92 99		Limits 90-110 90-110	Qualifiers	;		
Parameter Chloride Fluoride Sulfate	Units mg/L mg/L mg/L	Conc. 5 2.5		ult 4.6 2.5 5.2	% Rec 92 99		Limits 90-110 90-110	Qualifiers	;		
Parameter Chloride Fluoride Sulfate	Units mg/L mg/L mg/L	Conc. 5 2.5 5	Res	ult 4.6 2.5 5.2 S	% Rec 92 99 104	L	Limits 90-110 90-110 90-110	Qualifiers			
Parameter Chloride Fluoride Sulfate LABORATORY CONTROL S Parameter	GAMPLE: 3250188	Conc. 5 2.5 5 Spike	LC	ult 4.6 2.5 5.2 S	% Rec 92 99 104 LCS	L	imits 90-110 90-110 90-110 90-110				
Parameter Chloride Fluoride Sulfate LABORATORY CONTROL S Parameter Chloride	Units mg/L mg/L mg/L SAMPLE: 3250188 Units mg/L	Conc. 5 2.5 5 Spike Conc.	LC	ult	% Rec 92 99 104 LCS % Rec	2 L	imits 90-110 90-110 90-110 6 Rec imits				
Parameter Chloride Fluoride Sulfate LABORATORY CONTROL S Parameter Chloride Fluoride	GAMPLE: 3250188	Conc. 5 2.5 5 Spike Conc. 5	LC	ult 4.6 2.5 5.2 S ult 4.7	% Rec 92 99 104 LCS % Rec 93	2 22 22	imits 90-110 90-110 90-110 6 Rec imits 90-110				
Parameter Chloride Fluoride Sulfate LABORATORY CONTROL S	Units       mg/L       mg/L       mg/L       SAMPLE:     3250188       Units       mg/L       mg/L       mg/L	Conc. 5 2.5 5 Spike Conc. 5 2.5 5	LC	ult 4.6 2.5 5.2 S ult 4.7 2.5	% Rec 92 99 104 LCS % Rec 93 99 102	2 22 22	imits 90-110 90-110 90-110 6 Rec imits 90-110 90-110				
Parameter Chloride Fluoride Sulfate LABORATORY CONTROL S Parameter Chloride Fluoride Sulfate	Units mg/L mg/L mg/L SAMPLE: 3250188 Units mg/L mg/L mg/L mg/L mg/L	Conc. 5 2.5 5 Spike Conc. 5 2.5 5 89 MS	LC Res 	ult 4.6 2.5 5.2 S ult 4.7 2.5 5.1 3246990	% Rec 92 99 104 LCS % Rec 93 99 102	L	Limits 90-110 90-110 90-110 6 Rec Limits 90-110 90-110 90-110	Qualifiers			
Parameter Chloride Fluoride Sulfate LABORATORY CONTROL S Parameter Chloride Fluoride Sulfate	Units mg/L mg/L mg/L SAMPLE: 3250188 Units mg/L mg/L mg/L mg/L SPIKE DUPLICATE: 324698 60413480003	Conc. 5 2.5 5 Spike Conc. 5 2.5 5 39 MS Spike	LC Res	ult 4.6 2.5 5.2 S ult 4.7 2.5 5.1	% Rec 92 99 104 LCS % Rec 93 99 102	2 22 22	Limits 90-110 90-110 90-110 6 Rec Limits 90-110 90-110 90-110 90-110	Qualifiers		Max RPD	Qual
Parameter Chloride Fluoride Sulfate LABORATORY CONTROL S Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX S Parameter	Units mg/L mg/L mg/L SAMPLE: 3250188 Units mg/L mg/L mg/L mg/L SPIKE DUPLICATE: 324698 60413480003 Units Result	Conc. 5 2.5 5 Spike Conc. 5 2.5 5 39 MS Spike Spike Conc.	Res LC Res MSD Spike Conc.	ult 4.6 2.5 5.2 S ult 4.7 2.5 5.1 3246990 MS Result	% Rec         92           99         104           LCS         % Rec           % Rec         93           99         102           MSD         Result	MS % Rea	_imits 90-110 90-110 90-110 6 Rec _imits 90-110 90-110 90-110 90-110 90-110 c Ke	Qualifiers		RPD	Qual
Parameter Chloride Fluoride Sulfate LABORATORY CONTROL S Parameter Chloride Fluoride Sulfate MATRIX SPIKE & MATRIX S	Units mg/L mg/L mg/L SAMPLE: 3250188 Units mg/L mg/L mg/L mg/L SPIKE DUPLICATE: 324698 60413480003 Units Result	Conc. 5 2.5 5 Spike Conc. 5 2.5 5 39 MS Spike	Res LC Res MSD Spike	ult 4.6 2.5 5.2 S ult 4.7 2.5 5.1 3246990 MS	% Rec 92 99 104 LCS % Rec 93 99 102 MSD	MS % Re	_imits 90-110 90-110 90-110 6 Rec _imits 90-110 90-110 90-110 90-110 90-110 90-110 90-110	Qualifiers	     	RPD 15	Qual

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**



Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

SAMPLE DUPLICATE: 3246991						
		60413480003	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Chloride	mg/L	86.4	85.8	1	15	
Fluoride	mg/L	0.41	0.48	15	15	
Sulfate	mg/L	285	279	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.



Project:	AMEREN SEC SC	L4A										
Pace Project No .:	60413641											
QC Batch:	816676		Anal	ysis Metho	d: E	PA 300.0						
QC Batch Method:	EPA 300.0			, ysis Descri		00.0 IC Ani	ons					
				oratory:		ace Analvti	cal Servio	ces - Kansas	s Citv			
Associated Lab Sar	mples: 604134770	022, 604136410		,		•						
METHOD BLANK:	3248347			Matrix: W	ater							
Associated Lab Sar	mples: 604134770	022, 604136410	01, 6041364	41003, 604	13641004, 6	041364100	)5					
			Bla		Reporting							
Parar	neter	Units	Res	sult	Limit	MDL	-	Analyzed	Qı	ualifiers		
Chloride		mg/L		<0.53	1.0		0.53 1	1/07/22 09:	09			
Fluoride		mg/L		<0.12	0.20	1	0.12 1	1/07/22 09:	09			
Sulfate		mg/L		<0.55	1.0	1	0.55 1	1/07/22 09:	09			
LABORATORY CO	NTROL SAMPLE:	3248348										
			Spike			LCS	% F					
Parar	neter	Units	Conc.	Res	sult	% Rec	Lim	nits (	Qualifiers	_		
Chloride		mg/L		5	4.7	94	ļ	90-110				
Fluoride		mg/L	2	2.5	2.7	107		90-110				
Sulfate		mg/L		5	4.9	99	)	90-110				
MATRIX SPIKE & N	ATRIX SPIKE DUP	LICATE: 3248			3248351							
			MS	MSD					04 D			
Paramete	r Units	60413810035 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L		50	50	79.3	78.1	92	2 89	80-120	2		
Fluoride	mg/L	ND	2.5	2.5	2.7	2.8	108		80-120	2		
Sulfate	mg/L	50.5	50	50	102	98.8	102	97	80-120	3	15	
SAMPLE DUPLICA	TF 3248349											
			604138	10035	Dup			Max				
		Units	Res	sult	Result	RPD	1	RPD	Qualif	iers		
Parar	neter											
Parar	neter	mg/L		33.6	41.6	i	21	15	5 D6			
		mg/L mg/L		33.6 ND	41.6 <0.12 65.6	!	21	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**



QC Batch: 816964		Analysis Me	ethod:	EPA 300	.0			
QC Batch Method: EPA 300.0		Analysis De		300.0 IC	Anions	6		
		Laboratory:	:	Pace An	alytical	Services - Ka	insas City	
Associated Lab Samples: 604136410	02							
METHOD BLANK: 3249328		Matrix	k: Water					
Associated Lab Samples: 604136410	02							
		Blank	Reportin	-				
Parameter	Units	Result	Limit	I	MDL	Analy	zed	Qualifiers
Chloride	mg/L	0.60J	J	1.0	0.	53 11/08/22	13:08	
Fluoride	mg/L	<0.12	2	0.20	0.	12 11/08/22	13:08	
Sulfate	mg/L	<0.55	5	1.0	0.	55 11/08/22	2 13:08	
METHOD BLANK: 3251681		Matrix	k: Water					
Associated Lab Samples: 604136410	02							
		Blank	Reportin	g				
Parameter	Units	Result	Limit	-	MDL	Analy	zed	Qualifiers
Chloride	mg/L		3	1.0	0.	53 11/09/22	2 08:54	
Fluoride	mg/L	<0.12		0.20		12 11/09/22		
Sulfate	mg/L	<0.55		1.0	0.	55 11/09/22		
IETHOD BLANK: 3252685		Matrix	k: Water					
Associated Lab Samples: 604136410	02							
_		Blank	Reportin	-				
Parameter	Units	Result	Limit		MDL	Analy	zed	Qualifiers
Chloride	mg/L	<0.53		1.0		53 11/10/22		
Fluoride	mg/L	<0.12		0.20		12 11/10/22		
Sulfate	mg/L	<0.55	5	1.0	0.	55 11/10/22	2 08:54	
LABORATORY CONTROL SAMPLE:	3249329							
		Spike	LCS	LCS		% Rec		
Parameter	Units	Conc	Result	% Rec		Limits	Qualif	iers
Chloride	mg/L	5	4.7		94	90-110		
Fluoride	mg/L	2.5	2.6		105	90-110		
Sulfate	mg/L	5	4.9		98	90-110		
LABORATORY CONTROL SAMPLE:	3251682							
_		Spike	LCS	LCS		% Rec	-	
Parameter	Units	Conc	Result	% Rec		Limits	Qualif	iers
Chloride	mg/L	5	4.7		93	90-110		
Fluoride	mg/L	2.5	2.7		107	90-110		
Sulfate	mg/L	5	5.0		99	90-110		

#### **REPORT OF LABORATORY ANALYSIS**



#### Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

LABORATORY CONTROL SAMPLE:	3252686					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	5	4.6	93	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE & MATRIX SP	IKE DUPL	ICATE: 3249	331		3249332							
			MS	MSD								
		60413638002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	59.2	25	25	86.7	87.5	110	113	80-120	1	15	
Fluoride	mg/L	<0.12	2.5	2.5	2.8	2.9	112	115	80-120	3	15	
Sulfate	mg/L	47.3	25	25	75.9	76.2	114	116	80-120	0	15	

MATRIX SPIKE & MATRIX SP		CATE: 3249	333		3249334							
Parameter	6 Units	0413641002 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	8.1	8.3	96	101	80-120	3	15	
Fluoride	mg/L	<0.12	2.5	2.5	2.9	3.0	112	118	80-120	5	15	
Sulfate	mg/L	35.8	25	25	63.5	63.9	111	112	80-120	1	15	

#### SAMPLE DUPLICATE: 3249330

Parameter	Units	60413638002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	59.2	59.6	1	15	
Fluoride	mg/L	<0.12	<0.12		15	
Sulfate	mg/L	47.3	47.6	1	15	

#### SAMPLE DUPLICATE: 3249335

Parameter	Units	60413641002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	3.3	3.2	1	15	
Fluoride	mg/L	<0.12	0.43		15	
Sulfate	mg/L	35.8	35.7	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**



#### QUALIFIERS

#### Project: AMEREN SEC SCL4A

Pace Project No.: 60413641

#### 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.

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.
- E Analyte concentration exceeded the calibration range. The reported result is estimated.
- H1 Analysis conducted outside the EPA method holding time.
- M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



#### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SEC SCL4A Pace Project No.: 60413641

60413477005S-BMW-1SEPA 200.7815417EPA 200.781545360413477022S-UG-3EPA 200.7815419EPA 200.781586560413641003S-TMW-2EPA 200.7815805EPA 200.781580560413641003S-TMW-3EPA 200.7815805EPA 200.781580560413641004S-SCL4A-DUP-1EPA 200.7815805EPA 200.781580560413641005S-SCL4A-FB-1EPA 200.7815805EPA 200.781580560413641004S-SCL4A-FB-1EPA 200.7815805EPA 200.781580560413477004S-BMW-3SSM 2320B814616S60413641003S-TMW-2SM 2320B815255SS60413641004S-SCL4A-FB-1SM 2320B815255SS60413641003S-TMW-3SM 2320B815255SS60413641003S-TMW-3SM 2320B815255SS60413641004S-SCL4A-FB-1SM 2320B815255SS60413641005S-SCL4A-FB-1SM 2320B815255SS60413641004S-SCL4A-FB-1SM 2540C814499SS60413641005S-TMW-1SM 2540C814499SS60413641004S-SCL4A-FB-1SM 2540C814996SS60413641005S-TMW-1SM 2540C814996SS60413641005S-TMW-1SM 2540C814996SS60413641004S-SCL4A-FB-1SM 2540C <td< th=""><th>.ab ID</th><th>Sample ID</th><th>QC Batch Method</th><th>QC Batch</th><th>Analytical Method</th><th>Analytical Batch</th></td<>	.ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60413477022       S-UG-3       EPA 200.7       815419       EPA 200.7       815456         60413641001       S-TMW-1       EPA 200.7       815804       EPA 200.7       815805         60413641002       S-TMW-2       EPA 200.7       815805       EPA 200.7       815805         60413641003       S-TMW-3       EPA 200.7       815805       EPA 200.7       815805         60413641004       S-SCL4A-DUP-1       EPA 200.7       815805       EPA 200.7       815805         60413641005       S-SCL4A-FB-1       EPA 200.7       815805       EPA 200.7       815805         60413641005       S-SCL4A-FB-1       EPA 200.7       815805       EPA 200.7       815805         60413477004       S-BMW-3S       SM 2320B       814616       560413477004       S-BMW-1S       SM 2320B       815255         60413641001       S-TMW-1       SM 2320B       815255       560413641004       S-SCL4A-DUP-1       SM 2320B       815255       560413641004       S-SCL4A-DUP-1       SM 2320B       815255       560413641004       S-SCL4A-DUP-1       SM 2320B       815255       560413641004       S-SCL4A-FB-1       SM 2320B       815255       560413641004       S-SCL4A-FB-1       SM 2540C       814499       560413641004       S-SCL4A-	0413477004	S-BMW-3S	EPA 200.7	815417	EPA 200.7	815453
60413641001         S-TMW-1         EPA 200.7         815804         EPA 200.7         815805         E041347704         S-BMW-3S         SM 2320B         814616         S-SCH4A-FB-1         SM 2320B         814616         S-TMW-2         SM 2320B         815255         SM 2340C         814499         SM 2540C         8144996         SM 2540C         8144996 <td>0413477005</td> <td>S-BMW-1S</td> <td>EPA 200.7</td> <td>815417</td> <td>EPA 200.7</td> <td>815453</td>	0413477005	S-BMW-1S	EPA 200.7	815417	EPA 200.7	815453
60413641002       S-TMW-2       EPA 200.7       815805       EPA 200.7       815805         60413641003       S-TMW-3       EPA 200.7       815805       EPA 200.7       815805         60413641004       S-SCL4A-DUP-1       EPA 200.7       815805       EPA 200.7       815805         60413641005       S-SCL4A-FB-1       EPA 200.7       815805       EPA 200.7       815885         60413477004       S-BMW-3S       SM 2320B       814616       60413477005       S-BMW-1S       SM 2320B       815255         60413641001       S-TMW-2       SM 2320B       815255       60413641002       S-TMW-1       SM 2320B       815255         60413641002       S-TMW-2       SM 2320B       815255       60413641003       S-TMW-3       SM 2320B       815255         60413641003       S-TMW-3       SM 2320B       815255       60413641004       S-SCL4A-DUP-1       SM 2320B       815255         60413641004       S-SCL4A-FB-1       SM 2320B       815255       60413641005       S-SCL4A-FB-1       SM 2320B       815255         60413641005       S-SCL4A-FB-1       SM 2300B       815255       60413641005       S-SCL4A-FB-1       SM 2300B       815255         60413641005       S-BMW-1S       SM 2540	0413477022	S-UG-3	EPA 200.7	815419	EPA 200.7	815455
60413641003       S-TMW-3       EPA 200.7       815805       EPA 200.7       815805         60413641004       S-SCL4A-DUP-1       EPA 200.7       815805       EPA 200.7       815805         60413641005       S-SCL4A-FB-1       EPA 200.7       815805       EPA 200.7       815805         60413477004       S-BMW-3S       SM 2320B       814616       5444444       5444444       5444444       5444444       5444444       5444444       5444444       5444444       54444444       54444444       544444444       544444444       544444444444       54444444444444       5444444444444444444444444444444444444	0413641001	S-TMW-1	EPA 200.7	815804	EPA 200.7	815888
60413641004       S-SCL4A-DUP-1       EPA 200.7       815805       EPA 200.7       815885         60413641005       S-SCL4A-FB-1       EPA 200.7       815805       EPA 200.7       815885         60413477004       S-BMW-3S       SM 2320B       814616       814616       815805       EPA 200.7       815885         60413477005       S-BMW-1S       SM 2320B       814616       815255       815805       EPA 200.7       815885         60413641001       S-TMW-1       SM 2320B       815255       50613641002       S-TMW-2       SM 2320B       815255       50613641003       S-TMW-3       SM 2320B       815255       50613641005       S-SCL4A-FB-1       SM 2320B       815255       50613641003       S-TMW-3       SM 2320B       815255       50613641003       S-TMW-3       SM 2540C       814499       50613641001       S-TMW-1       SM 2540C       814499       50613641001       S-TMW-2       SM 2540C       814996       50613641003	0413641002	S-TMW-2	EPA 200.7	815805	EPA 200.7	815889
60413641005       S-SCL4A-FB-1       EPA 200.7       815805       EPA 200.7       815885         60413477004       S-BMW-3S       SM 2320B       814616       814616       814616         60413477022       S-UG-3       SM 2320B       815255       815255       814616       815255         60413641001       S-TMW-1       SM 2320B       815255       815255       815255       815255       815255         60413641003       S-TMW-3       SM 2320B       815255       815255       815255       815255       815255       815255       815255       814161       815255       8141499       815240C       814499       815240C       814499       815240C       814996       815240C       814996       815240C       814996       815240C       814996       814996       814996       814996       814996       814996       814996       814996       814996       814996       814996       814996       814996       814996	0413641003	S-TMW-3	EPA 200.7	815805	EPA 200.7	815889
60413477004 60413477025S-BMW-3S S-BMW+1SSM 2320B81461660413477026S-UG-3SM 2320B81525560413641001S-TMW-1SM 2320B81525560413641002 60413641003S-TMW-2 	0413641004	S-SCL4A-DUP-1	EPA 200.7	815805	EPA 200.7	815889
60413477005         S-BMW-1S         SM 2320B         814616           60413477022         S-UG-3         SM 2320B         815255           60413641001         S-TMW-1         SM 2320B         815255           60413641002         S-TMW-2         SM 2320B         815255           60413641003         S-TMW-3         SM 2320B         815255           60413641004         S-SCL4A-DUP-1         SM 2320B         815255           60413641005         S-SCL4A-FB-1         SM 2320B         815255           60413477004         S-BMW-3S         SM 2320B         815255           60413477024         S-BMW-3S         SM 2320B         815255           60413477025         S-BMW-1S         SM 2320B         815255           60413477024         S-BMW-3S         SM 2540C         814499           60413477022         S-UG-3         SM 2540C         814996           60413641001         S-TMW-1         SM 2540C         814996           60413641002         S-TMW-2         SM 2540C         814996           60413641003         S-TMW-3         SM 2540C         814996           60413641004         S-SCL4A-DUP-1         SM 2540C         814996           60413641004         S-SCL4	0413641005	S-SCL4A-FB-1	EPA 200.7	815805	EPA 200.7	815889
60413477022       S-UG-3       SM 2320B       815255         60413641001       S-TMW-1       SM 2320B       815002         60413641002       S-TMW-2       SM 2320B       815255         60413641003       S-TMW-3       SM 2320B       815255         60413641004       S-SCL4A-DUP-1       SM 2320B       815255         60413641005       S-SCL4A-FB-1       SM 2320B       815255         60413477004       S-BMW-3S       SM 2540C       814499         60413477022       S-UG-3       SM 2540C       814299         60413641001       S-TMW-1       SM 2540C       814996         60413641002       S-TMW-2       SM 2540C       814996         60413641002       S-TMW-3       SM 2540C       814996         60413641003       S-TMW-3       SM 2540C       814996         60413641004       S-SCL4A-DUP-1       SM 2540C       814996         60413641003       S-TMW-3       SM 2540C       814996         60413641004       S-SCL4A-DUP-1       SM 2540C       814996         60413641005       S-SCL4A-FB-1       SM 2540C       814996         60413641004       S-SCL4A-FB-1       SM 2540C       814996	0413477004	S-BMW-3S	SM 2320B	814616		
60413641001S-TMW-1SM 2320B81500260413641002 60413641003S-TMW-2 S-TMW-3SM 2320B81525560413641004 60413641005S-SCL4A-DUP-1 S-SCL4A-FB-1SM 2320B81525560413477004 60413477005S-BMW-3S S-BMW-1SSM 2540C81449960413477022S-UG-3SM 2540C81449960413641001 60413641002S-TMW-1SM 2540C81499660413641002 60413641002S-TMW-1SM 2540C81499660413641003 60413641004S-TMW-3SM 2540C81499660413641004 60413641004S-SCL4A-FB-1SM 2540C81499660413641004 60413641004S-SCL4A-FB-1SM 2540C81499660413641004 60413641004S-SCL4A-FB-1SM 2540C81499660413641004 60413641004S-SCL4A-FB-1SM 2540C81499660413641004 60413641004S-SCL4A-FB-1SM 2540C814996	0413477005	S-BMW-1S	SM 2320B	814616		
60413641002       S-TMW-2       SM 2320B       815255         60413641003       S-TMW-3       SM 2320B       815255         60413641005       S-SCL4A-DUP-1       SM 2320B       815255         60413641005       S-SCL4A-FB-1       SM 2320B       815255         60413641005       S-BMW-3S       SM 2540C       814499         60413477005       S-BMW-1S       SM 2540C       814499         60413641001       S-TMW-1       SM 2540C       815260         60413641001       S-TMW-1       SM 2540C       814996         60413641002       S-TMW-2       SM 2540C       814996         60413641003       S-TMW-3       SM 2540C       814996         60413641004       S-TMW-2       SM 2540C       814996         60413641004       S-TMW-3       SM 2540C       814996         60413641004       S-TMW-3       SM 2540C       814996         60413641004       S-SCL4A-DUP-1       SM 2540C       814996         60413641004       S-SCL4A-FB-1       SM 2540C       814996         60413641004       S-SCL4A-FB-1       SM 2540C       814996         60413641004       S-SCL4A-FB-1       SM 2540C       814996         60413641004 <td< td=""><td>0413477022</td><td>S-UG-3</td><td>SM 2320B</td><td>815255</td><td></td><td></td></td<>	0413477022	S-UG-3	SM 2320B	815255		
60413641003       S-TMW-3       SM 2320B       815255         60413641004       S-SCL4A-DUP-1       SM 2320B       815255         60413641005       S-SCL4A-FB-1       SM 2320B       815255         60413477004       S-BMW-3S       SM 2540C       814499         60413477005       S-BMW-1S       SM 2540C       814499         60413477022       S-UG-3       SM 2540C       815260         60413641001       S-TMW-1       SM 2540C       814996         60413641002       S-TMW-2       SM 2540C       814996         60413641003       S-TMW-3       SM 2540C       814996         60413641004       S-SCL4A-DUP-1       SM 2540C       814996         60413641004       S-SCL4A-DUP-1       SM 2540C       814996         60413641004       S-SCL4A-FB-1       SM 2540C       814996	0413641001	S-TMW-1	SM 2320B	815002		
60413641004       S-SCL4A-DUP-1       SM 2320B       815255         60413641005       S-SCL4A-FB-1       SM 2320B       815255         60413477004       S-BMW-3S       SM 2540C       814499         60413477005       S-UG-3       SM 2540C       814499         60413477022       S-UG-3       SM 2540C       815260         60413641001       S-TMW-1       SM 2540C       814996         60413641002       S-TMW-2       SM 2540C       814996         60413641003       S-TMW-3       SM 2540C       814996         60413641004       S-SCL4A-DUP-1       SM 2540C       814996         60413641004       S-SCL4A-FB-1       SM 2540C       814996         60413641004       S-SCL4A-FB-1       SM 2540C       814996	0413641002	S-TMW-2	SM 2320B	815255		
60413641005       S-SCL4A-FB-1       SM 2320B       815255         60413477004       S-BMW-3S       SM 2540C       814499         60413477025       S-UG-3       SM 2540C       815260         60413477026       S-UG-3       SM 2540C       815260         60413477027       S-UG-3       SM 2540C       815260         60413641001       S-TMW-1       SM 2540C       814996         60413641002       S-TMW-2       SM 2540C       814996         60413641003       S-TMW-3       SM 2540C       814996         60413641004       S-SCL4A-DUP-1       SM 2540C       814996         60413641005       S-SCL4A-FB-1       SM 2540C       814996	0413641003	S-TMW-3	SM 2320B	815255		
60413477004       S-BMW-3S       SM 2540C       814499         60413477005       S-BMW-1S       SM 2540C       814499         60413477022       S-UG-3       SM 2540C       815260         60413641001       S-TMW-1       SM 2540C       814996         60413641002       S-TMW-2       SM 2540C       814996         60413641003       S-TMW-3       SM 2540C       814996         60413641004       S-SCL4A-DUP-1       SM 2540C       814996         60413641005       S-SCL4A-FB-1       SM 2540C       814996	0413641004	S-SCL4A-DUP-1	SM 2320B	815255		
60413477005S-BMW-1SSM 2540C81449960413477022S-UG-3SM 2540C81526060413641001S-TMW-1SM 2540C81499660413641002S-TMW-2SM 2540C81499660413641003S-TMW-3SM 2540C81499660413641004S-SCL4A-DUP-1SM 2540C81499660413641005S-SCL4A-FB-1SM 2540C814996	0413641005	S-SCL4A-FB-1	SM 2320B	815255		
60413477022S-UG-3SM 2540C81526060413641001S-TMW-1SM 2540C81499660413641002S-TMW-2SM 2540C81499660413641003S-TMW-3SM 2540C81499660413641004S-SCL4A-DUP-1SM 2540C81499660413641005S-SCL4A-FB-1SM 2540C814996	0413477004	S-BMW-3S	SM 2540C	814499		
60413641001S-TMW-1SM 2540C81499660413641002S-TMW-2SM 2540C81499660413641003S-TMW-3SM 2540C81499660413641004S-SCL4A-DUP-1SM 2540C81499660413641005S-SCL4A-FB-1SM 2540C814996	0413477005	S-BMW-1S	SM 2540C	814499		
60413641002S-TMW-2SM 2540C81499660413641003S-TMW-3SM 2540C81499660413641004S-SCL4A-DUP-1SM 2540C81499660413641005S-SCL4A-FB-1SM 2540C814996	0413477022	S-UG-3	SM 2540C	815260		
60413641003S-TMW-3SM 2540C81499660413641004S-SCL4A-DUP-1SM 2540C81499660413641005S-SCL4A-FB-1SM 2540C814996	0413641001	S-TMW-1	SM 2540C	814996		
60413641004S-SCL4A-DUP-1SM 2540C81499660413641005S-SCL4A-FB-1SM 2540C814996	0413641002	S-TMW-2	SM 2540C	814996		
60413641005         S-SCL4A-FB-1         SM 2540C         814996	0413641003	S-TMW-3	SM 2540C	814996		
	0413641004	S-SCL4A-DUP-1	SM 2540C	814996		
<b>60412477004 C DMM/ 2C EDA 200.0 946402</b>	0413641005	S-SCL4A-FB-1	SM 2540C	814996		
60413477004 S-BWW-55 EFA 300.0 810402	0413477004	S-BMW-3S	EPA 300.0	816402		
<b>60413477005 S-BMW-1S</b> EPA 300.0 816402	0413477005	S-BMW-1S	EPA 300.0	816402		
60413477022 S-UG-3 EPA 300.0 816676	0413477022	S-UG-3	EPA 300.0	816676		
<b>60413641001 S-TMW-1</b> EPA 300.0 816676	0413641001	S-TMW-1	EPA 300.0	816676		
<b>60413641002 S-TMW-2</b> EPA 300.0 816964	0413641002	S-TMW-2	EPA 300.0	816964		
60413641003 S-TMW-3 EPA 300.0 816676	0413641003	S-TMW-3	EPA 300.0	816676		
60413641004 S-SCL4A-DUP-1 EPA 300.0 816676	0413641004	S-SCL4A-DUP-1	EPA 300.0	816676		
60413641005 S-SCL4A-FB-1 EPA 300.0 816676	0413641005	S-SCL4A-FB-1	EPA 300.0	816676		

0	DC#_Title: ENV-FRI	M.I.ENE-0000 San	WO#:60413641
Pace AMAUTICAL SERVICES			
Client Name:	10 (	ffective Date: 01/12/	202: 50413641
Client Name:	<u>SP Golder</u>		
Courier: FedEx UPS   Tracking #:			Pace 🗆 Xroads 🕱 Client 🗆 Other 🗆
Custody Seal on Cooler/Box I		Pace Shipping Label Us	
	Present: Yes≯⊡ No ⊡ Wrap ⊡ Bubble Bag	Seals intact: Yes	
-	01	s ⊔ Foam □ of ice: (Wet) Blue N	None 🖅 Other 🗆
Cooler Temperature (°C): A	I.A/O.4/14.4/ s-read 14.8/0.3/Corr. Fa	7	La/0,4/14,4/ Date and initials of person
Temperature should be above freez		Correction	cted 14.8/0.1/0.6 examining contents: 201
Chain of Custody present:		Tes No N/A	5-46-3 on COC# 8
Chain of Custody relinquished:		Yes No N/A	
Samples arrived within holding t	ime:	¥ÜYes ⊡No ⊡N/A	
Short Hold Time analyses (<72	2hr):		
Rush Turn Around Time reque	sted:		
Sufficient volume:			
Correct containers used:			
Pace containers used:			
Containers intact:			
Jnpreserved 5035A / TX1005/10	06 soils frozen in 48hrs?		
iltered volume received for disso			
Sample labels match COC: Date			
amples contain multiple phases	1 -		
Containers requiring pH preserva	tion in compliance?		List sample IDs, volumes, lot #'s of preservative and the
HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfic	le, NaOH>10 Cyanide)		date/time added.
Exceptions: VOA, Micro, O&G, KS T Cyanide water sample checks:	PH, OK-DRO) LOTA	#: 610600	
ead acetate strip turns dark? (Re		□Yes □No	
otassium iodide test strip turns b	lue/purple? (Preserve)	□Yes □No	
rip Blank present:		□Yes XNo □N/A	
eadspace in VOA vials ( >6mm):		□Yes ⊉No □N/A	
amples from USDA Regulated A	rea: State:	□Yes XNo □N/A	
dditional labels attached to 5035/	A / TX1005 vials in the field	? □Yes ℤNo □N/A	
ient Notification/ Resolution:	Copy COC to		Field Data Required? Y / N
erson Contacted:	Date/1	-ime:	
omments/ Resolution:			
-			
oject Manager Review:		Date	

Qualtrax Document ID: 30468

Pace Analytical

# CHAIN-OF-CUSTODY / Analytical Request Document

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

ednirea Uli	Required Client Information:	Required Project Information:	ormation:				Invoice Information:	nation						Page:	-	of 1
Company:	WSP Golder	Report To: Jeffrey Ingram	Ingram				Attention:									
Address:	701 Emerson Road, Suite 250	Copy To: Eric Schneider	hneider				Company Name:	ame: WSP Golder	iolder		2	REGULATORY AGENCY	Y AGENCY			
	Creve Coeur, Missouri, 63141						Address:					NPDES	GROU	GROUND WATER		DRINKING WATER
Email To:	jeffrev ingram@golder.com	Purchase Order No :	COC #11	-			Pace Quole				<u> </u>	UST		J	- L.	OTHER
Phone 636	636-724-9191 Fax: 636-724-9323	Project Name: An	Ameren Sioux Energy Center	x Energy		SCL4A	Pace Project	Jamie Church	rich			Site Location			の日本に	No. of the second s
equested <b>C</b>	Requested Due Date/TAT: Standard	Project Number: 153140604, 0003	3140604. (	003			Pace Profile #	9285				STATE:	OW			
										Å	quested An	Requested Analysis Filtered (Y/N)	ed (Y/N)			
Sec Req	Section D Valid Matrix Codes Required Client Information <u>MATRIX</u> <u>COD</u>	odes CODE to left)		COLLI	COLLECTED			Preservatives	sə	Z 1 N /A	z z z					
U.	RAINING WATER WATER WATER WATER WATER PODUCT SOLUSOLID OL (A-Z, C-9 / ,-) Samula IDs M 13T RF I. INICIJIE	것 2 옷 및 도 유 가 한 성 codes		COMPOSITE START	COMPOSITE END/GRAB					alsteM nAtsO I				MVY) əninotd	E S	lhæ 1 hog
# M∃TI		MATRIX CC	DATE	TIME	DATE	₩ M MPLE TEI	H⁵2O⁴ ∩ubreservi # OF CON1	NªOH HCI HNO <sup>3</sup>	Nethanol Methanol Other		Alkalinity Plkalinity Chloride/F			O leubiceЯ	Расе Расе	Pace Project No / Lah I D
-	S-TMW-1	WT G		/	8C-00-0	1303	- (1)	-	E	P	200					
2	S-TMW-2	WT G		/		146	31	1		3	111					
e	S-TMW-3	WT G		1	7	046	ي ا			7	17					
4	S-UG-3	WT G		/	100-10-0	7690	F	西		N	141			C	Conto.	Conto anstar this COC
ŝ	S-SCL4A-DUP-1	WT G			10-20-01	ļ	5			5	111					
9	S-SCL4A-FB-1	WT G			-	313	– ح	_		7	140					
7	S-SCL4A-MS-1	WT G			_	цЬ	- 1	_		2	22			2	ollecte	-UMI-SOP
80	S-SCL4A-MSD-1	WT G			4	140	- e	-		2	1			E.	ler Les	@ 5-7MW
6	S-BMW-1S	WT G	_													
10	S-BMW-3S	ΜT	-													
12 13		WT G WT G	$\downarrow$													
	ADDITIONAL COMMENTS	RELINO	RELINQUISHED BY / AFFILIATION	AFFILIATIO	z	DATE	TIME		ACCEPTED BY / AFFILIATION	BY / AFFI	NOITAL	DATE	TIME		SAMPLE 0	SAMPLE CONDITIONS
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				SAMPI FR NAMF		AND SIGNATURE								_		
age 33						PRINT Name of SAMPLER	(grav	1 10	orey		DATE Signed	1-1-1		⊃° ni qme	ceived or ce (Y/N) Custody	(Y/N) (Y/N) (Y/N)
					DOLLANCIA	DE of SAMOLED.	N.	11/1			Daubic I.	1 1 1 1 4	5		-	-

Model         Model <th< th=""><th>Molecular         Molecular         <t< th=""><th>45M</th><th>NSP Gobler</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>T</th><th>Profile #</th><th>÷.,</th><th>9285</th><th>12</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<></th></th<>	Molecular         Molecular <t< th=""><th>45M</th><th>NSP Gobler</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>T</th><th>Profile #</th><th>÷.,</th><th>9285</th><th>12</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>	45M	NSP Gobler								T	Profile #	÷.,	9285	12							
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Class     Class     Class       Class     Class     Class     Class       VWCHU     422 clear soli al     Class     Class       VWCHU     100ml Unor	Class     Class     Participation       Class     Class     Participation     Participation       Class     Class     Plastic     Plastic       Class     Class     Plastic     Plastic       Class     Class     Plastic     Plastic       Accid     10, HXO     Plastic     Plastic       Accid     250mL     Blastic     Plastic       Accid     10, HXO     Plastic     Plastic       Accid </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>~</td> <td></td> <td></td> <td></td> <td>~</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>										~				~							
Glass         Plastic	Class     Class     Plant       Class     Class     Plastic       Class     Class     Plastic       Class     Class     Plastic       VWFWU     420 clear soli al     Plastic       VWFWU     500mL HDRS amber glass     PP2V       Aciu     11 LHSI and Plastic     Plastic       Aciu     1250mL HDRS amber glass     PP2V       SolomL HDR										1	3			1 C							
Class         Plastic         Plastic         Plastic           WGFU         402 clear soli] ar         BP1C         11. MAOH flastic         P           WGFU         402 clear soli] ar         BP1C         11. MAOH flastic         P           WGFU         402 clear soli] ar         BP1C         11. MAOH flastic         P           WGFU         402 clear soli] ar         BP1C         11. MAOH flastic         P           WGFU         402 clear soli] ar         BP1C         11. MAOH flastic         P           WGFU         402 clear soli] ar         BP1C         11. MAOH flastic         P           WGFU         402 clear soli] ar         BP1C         11. MAOH flastic         P           MGFU         402 clear soli ar         BP1S         11. MAOH flastic         P           AGU         100mL unores amber glass         BP2V         500mL H2SO4 amber glass         BP2V         500mL H2SO4 plastic         C           AG11         11. Na Thiosultifie clear/amber glass         BP2V         500mL H2SO4 amber glass         BP2V         500mL H2SO4 amber glass         BP2V         500mL H2SO4 plastic         C           AG3U         500mL H2SO4 amber glass         BP2V         500mL H2SO4 amber glass         BP2V         500mL H2SO4 amber gl	Class     Plastic       Class     Plastic       Class     Plastic       VickU     Boz clear soli ar       VickU     Internores amber glass       Boz     Boont HNO3 plastic       Acial     Internores amber glass       Boont Unpres amber glass     <										-				-							1
Glass         File         File <t< td=""><td>Class     Class     Platt     1     1       Class     Class     Class     Platt     1     1       WGFU     822 clear soil Jar     BP1C     11. MACP lastic     SP51       WGFU     402 clear soil Jar     BP17     11. MACP lastic     SP51       WGFU     402 clear soil Jar     BP17     11. MACP lastic     SP51       WGFU     402 clear soil Jar     BP17     11. MACP lastic     SP51       WGFU     402 clear soil Jar     BP17     11. HXO3 plastic     SP51       VGFU     202 clear soil Jar     BP17     11. HXO3 plastic     SP51       VGFU     402 clear soil Jar     BP17     11. HXO3 plastic     SP51       VGFU     403 class     BP28     500mL HXO3 plastic     C       AG11     11. HXI missuifist clear/amber glass     BP27     500mL HXO3 plastic     M       AG11     11. HXI missuifist clear/amber glass     BP28     500mL HXO3 plastic     M       AG21     500mL HXO3 amber glass     BP37     500mL HXO3 plastic     M       AG31     125mL unpres amber glass     BP37     250mL HXO3 plastic     M       AG31     125mL unpres amber glass     BP31     250mL HXO3 plastic     M       AG31     125mL unpres amber glass     BP32</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td>1</td><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Class     Class     Platt     1     1       Class     Class     Class     Platt     1     1       WGFU     822 clear soil Jar     BP1C     11. MACP lastic     SP51       WGFU     402 clear soil Jar     BP17     11. MACP lastic     SP51       WGFU     402 clear soil Jar     BP17     11. MACP lastic     SP51       WGFU     402 clear soil Jar     BP17     11. MACP lastic     SP51       WGFU     402 clear soil Jar     BP17     11. HXO3 plastic     SP51       VGFU     202 clear soil Jar     BP17     11. HXO3 plastic     SP51       VGFU     402 clear soil Jar     BP17     11. HXO3 plastic     SP51       VGFU     403 class     BP28     500mL HXO3 plastic     C       AG11     11. HXI missuifist clear/amber glass     BP27     500mL HXO3 plastic     M       AG11     11. HXI missuifist clear/amber glass     BP28     500mL HXO3 plastic     M       AG21     500mL HXO3 amber glass     BP37     500mL HXO3 plastic     M       AG31     125mL unpres amber glass     BP37     250mL HXO3 plastic     M       AG31     125mL unpres amber glass     BP31     250mL HXO3 plastic     M       AG31     125mL unpres amber glass     BP32										1	1			2							
Glass         Particle         Particle <t< td=""><td>Glass         File         File         File         File           Class         Class         Plastic         Plastic         Plastic         Plastic           WGFU         882 clear soil ar         BP1C         11. MOCH plastic         Plastic         Plastic           WGFU         882 clear soil ar         BP1C         11. MOCH plastic         Plastic         Plastic           WGFU         362 clear soil ar         BP1S         11. HNO3 plastic         Plastic         Plastic           WGFU         402 clear soil ar         BP1S         11. HNO3 plastic         Plastic         Plastic           WGFU         403 clip         11. HNO3 plastic         Plastic         Plastic         Plastic           AG11         11. HNO3 amber glass         BP2C         500mL MO13 plastic         Plastic         Plastic           AG11         11. HNO3 amber glass         BP2U         500mL MO13 plastic         R           AG31         11. Iter unpres amber glass         BP2U         500mL MO14 plastic         N           AG31         11. Iter unpres amber glass         BP3U         250mL MO14 plastic         N           AG31         100mL unpres amber glass         BP3U         250mL MO14 plastic         N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>F</td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Glass         File         File         File         File           Class         Class         Plastic         Plastic         Plastic         Plastic           WGFU         882 clear soil ar         BP1C         11. MOCH plastic         Plastic         Plastic           WGFU         882 clear soil ar         BP1C         11. MOCH plastic         Plastic         Plastic           WGFU         362 clear soil ar         BP1S         11. HNO3 plastic         Plastic         Plastic           WGFU         402 clear soil ar         BP1S         11. HNO3 plastic         Plastic         Plastic           WGFU         403 clip         11. HNO3 plastic         Plastic         Plastic         Plastic           AG11         11. HNO3 amber glass         BP2C         500mL MO13 plastic         Plastic         Plastic           AG11         11. HNO3 amber glass         BP2U         500mL MO13 plastic         R           AG31         11. Iter unpres amber glass         BP2U         500mL MO14 plastic         N           AG31         11. Iter unpres amber glass         BP3U         250mL MO14 plastic         N           AG31         100mL unpres amber glass         BP3U         250mL MO14 plastic         N										F				-							
Image: Control of the state of the	Glass     Particle     Particle     Particle     Particle       VGKU     882 clear sol] ar     871     11 MOOH plastic     875       VGKU     882 clear sol] ar     871     11 HSOA plastic     875       VGCU     882 clear sol] ar     871     11 HSOA plastic     875       VGCU     402 unores and anther wide     871     11 HSOA plastic     875       VGSU     202 clear sol] ar     871     11 HSOA plastic     875       VGSU     202 clear sol] ar     871     11 HSOA plastic     875       VGSU     202 clear sol] ar     871     11 HSOA plastic     875       AG1H     11 HSOA plastic     872     500mL WOOH plastic     875       AG1U     11 HSOA anther glass     872     500mL WOOH plastic     7       AG3U     500mL HNO3 plastic     0     0     0     0       AG3U     500mL HOOB anther glass     872     500mL WOOH plastic     0       AG3U     500mL HNO3 plastic     0     0     0     0								$\square$	-	-	-			1-							
Image: Constraint of the second se	Act     Act     Act     Act     Act       Act     Act     BP1C     11. HNO3 plastic     1       WGFU     802 clear soli]ar     BP1C     11. HNO3 plastic     1       WGFU     402 clear soli]ar     BP1C     11. HNO3 plastic     1       WGFU     402 clear soli]ar     BP1C     11. HNO3 plastic     1       MGFU     402 clear soli]ar     BP1C     11. HNO3 plastic     1       JGFU     402 upreserved amber wide     BP1C     11. HNO3 plastic     1       JGFU     402 upreserved amber wide     BP1C     11. HNO3 plastic     7       Act     402 upreserved amber wide     BP1C     11. HNO3 plastic     7       Act     402 upreserved amber wide     BP1C     11. LNO3 plastic     7       Act     11. LNO3 amber glass     BP2C     500mL NO3 amber glass     8       Act     11. LNO3 amber glass     BP2C     500mL UNOH. Anot plastic     7       Act     11. LNO3 amber glass     BP2C     500mL UNOH. Anot plastic     7       Act     11. LNO3 amber glass     BP2C     500mL UNOH. Anot plastic     7       Act     11. LNO3 amber glass     BP2C     500mL UNOH. Anot plastic     7       Act     11. LNO1. Infine unprese amber glass     BP2C     500m											-		_								
Glass       Plastic       Plastic       Plastic       Plastic         WGKU       482 clear soli] ar       BP1G       11. HNO3 plastic       57         WGKU       482 clear soli] ar       BP1G       11. HNO3 plastic       57         WGKU       482 clear soli] ar       BP1G       11. HNO3 plastic       57         WGKU       482 clear soli] ar       BP1G       11. HNO3 plastic       57         WG2U       222 clear soli] ar       BP1G       11. HNO3 plastic       57         UGTU       422 unpreserved amber wide       BP1G       11. HNO3 plastic       57         JGFU       422 unpreserved plastic       ZPC       26       27         AG11       11. HO3 mber glass       BP2S       500mL HNO3 plastic       8         AG11       11. Ho1 mores amber glass       BP2S       500mL HNO3 plastic       0         AG11       11. Ho1 mores amber glass       BP2S       500mL HNO3 plastic       0       0         AG22       500mL H2SO4 amber glass       BP2S       500mL HNO3 plastic       0       0         AG23       500mL H2SO4 amber glass       BP2S       250mL HNO3 plastic       0       0         AG23       500mL HNO3 plastic       125mL unpres amber glass	Algorithm     Algorithm     Algorithm     Algorithm     Algorithm     Algorithm       Algorithm     Algorithm     Algorithm     Algorithm     Algorithm     A			1		-																
Glass       Plastic	Alternation     Alternation     Alternation       Alternation     Alternation									$\vdash$								L				
Glass     Plastic       MGKU     802 clear soll jar       WGFU     802 clear soll jar       WGFU     402 clear soll jar       WG2U     202 clear soll jar       WG1H     11 HNO3 plastic       SP51     11 HNO3 plastic       JGFU     11 HNO3 plastic       AG1U     100mL unores amber glass       BP1X     11 HNO3 plastic       AG1U     111ter unpres amber glass       BP2X     500mL MO13 plastic       AG1U     111ter unpres amber glass       BP2X     500mL NO3 plastic       AG3U     100mL unpres amber glass       BP2X     500mL NO3 plastic       AG3U     100mL unpres amber glass       BP3X     250mL NO3 plastic       AG3U     100mL unpres amber glass       BP3X     250mL NO3 plastic       AG3U     100mL unpres amber glass       BP3X     250mL NO3 plastic       AG3U     100mL unpres amber glass       BP3X     250mL NO3 plastic       AG3U     100mL unpres amber glass       BP3X     250mL NO3 plastic       AG3U     100mL unpres amber glass </td <td>Glass     Plastic       Giss     Glass       Grou     WGKU       Boz clear soil ar     BPTC       WGKU     8oz clear soil ar       WGZU     2oz clear soil ar       WGSU     100mL unores amber glass       BP1C     11. H203 amber glass       BP2C     500mL NNO3 plastic       AG1U     11. HAC3 amber glass       BP2C     500mL NNO3 plastic       AG3U     500mL HNO3 amber glass       BP3C     500mL NNO3 plastic       AG3U     125mL unpres amber glass       BP3C     250mL NNO3 plastic       AG3U     125mL unpres amber glass       BP3C     250mL NNO3 plastic       AG3U     125mL unpres amber glass       BP3C     250mL NO3 plastic       AG3U     100mL unpres amber glass       BP4U     125mL unpr</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><math>\vdash</math></td> <td>╞</td> <td></td>	Glass     Plastic       Giss     Glass       Grou     WGKU       Boz clear soil ar     BPTC       WGKU     8oz clear soil ar       WGZU     2oz clear soil ar       WGSU     100mL unores amber glass       BP1C     11. H203 amber glass       BP2C     500mL NNO3 plastic       AG1U     11. HAC3 amber glass       BP2C     500mL NNO3 plastic       AG3U     500mL HNO3 amber glass       BP3C     500mL NNO3 plastic       AG3U     125mL unpres amber glass       BP3C     250mL NNO3 plastic       AG3U     125mL unpres amber glass       BP3C     250mL NNO3 plastic       AG3U     125mL unpres amber glass       BP3C     250mL NO3 plastic       AG3U     100mL unpres amber glass       BP4U     125mL unpr										$\vdash$	╞										
Glass     Plastic     Plastic       MGKU     BPTC     TL NAOH plastic       WGFU     4oz clear soil jar     BPTO     1L HNO3 plastic     SP51       WG2U     2oz clear soil jar     BPTO     1L HNO3 plastic     SP51       UG2U     4oz urpressored amber wide     BPTO     1L HNO3 plastic     SP51       JGFU     4oz urpressored amber wide     BPTO     1L LNO3 plastic     SP51       AG1H     1L HZ0 amber glass     BP22     500mL NAOH plastic     R       AG1U     11L HZ0 amber glass     BP21     500mL NAOH plastic     R       AG1U     11L HZ0 amber glass     BP21     500mL NAO3 plastic     N       AG1U     11L In Thiosuffate clear/amber glass     BP21     500mL NAO3 plastic     N       AG1U     11Ler unpres amber glass     BP21     500mL UNO3 plastic     N       AG2S     500mL HZSO4 amber glass     BP32     250mL NAO3 plastic     N       AG3U     250mL unpres amber glass     BP32     250mL NO3 plastic     N       AG3U     100mL unpres amber glass     BP33     250mL NO3 plastic     N       AG3U     125mL unpreserved plastic     N     N     N       AG3U     125mL unpreserved plastic     N	Glass     Plastic       MGKU     8oz clear soil jar       WGKU     2oz clear soil jar       WGKU     2oz clear soil jar       UGFU     4oz clear soil jar       UGFU     14. NOOH unores amber glass       BP12     11. H2OS amber glass       AG11     11. H2OS amber glass       BP22     500mL HNO3 plastic       AG11     11. H2SO4 amber glass       BP21     10. Uu unpreserved plastic       AG11     11. H2SO4 amber glass       BP22     500mL HNO3 plastic       AG11     11. H2SO4 amber glass       BP22     500mL HNO3 plastic       AG33     250mL HNO3 plastic       AG33     250mL NO3 plastic       AG30     250mL NO3 plastic       AG33     250mL NO3 plastic       AG30     250mL NO3 plastic       AG31     11. BP204 amber glass       BP32     500mL NO3 plastic       AG33     250mL NO3 plastic       AG30     125mL unpres amber glass       BP33     250mL NO3 plastic				_																	
Glas       Plastic       WGFU     Boz clear soil jar     BP1K     1L HNOG plastic     SP51       WGFU     2oz clear soil jar     BP1K     1L HNOG plastic     SP51       WGFU     2oz clear soil jar     BP1K     1L HNOG plastic     SP51       UGFU     4oz inpreserved amber wide     BP1K     1L HNOG plastic     SP51       JGFU     4oz unpreserved amber wide     BP1K     1L HNOG plastic     SP51       AG1H     1L H2C0 amber glass     BP2C     500mL HNOG plastic     AF       AG1U     11L H2C0 amber glass     BP2C     500mL HNOG plastic     R       AG1U     11L H2C0 amber glass     BP2C     500mL HNOG plastic     R       AG1U     11L H2C0 amber glass     BP2C     500mL HNOG plastic     R       AG1U     11lifer unpres amber glass     BP2C     500mL HNOG plastic     N       AG1U     11lifer unpres amber glass     BP2C     500mL H2C04 plastic     N       AG2D     500mL HNOG plastic     C     C     N       AG3D     500mL HNOG plastic     N     N     N       AG3D     500mL HNOG plastic     N     N     N       AG3D     500mL HNOG plastic     N     N     N       AG3D     500mL H	Glass         Plastic				_					-		-	_					_				-
80z clear soil jar       BP1C       1L NAOH plastic       1         40z clear soil jar       BP1N       1L HNO3 plastic       SP51         202 clear soil jar       BP1S       1L H2SO4 plastic       SP51         202 unpreserved amber wide       BP1U       1L unpreserved plastic       ZPLC         100mL unores amber glass       BP2V       500mL NAOH plastic       R         11L HCI amber glass       BP2N       500mL NAOH plastic       R         11L H2SO4 amber glass       BP2V       500mL NAOH plastic       N         11L H2SO4 amber glass       BP2V       500mL NAOH plastic       N         11L H2SO4 amber glass       BP2V       500mL UNO3 plastic       N         11liter unpres amber glass       BP2V       500mL NAOH plastic       N         500mL HNO3 amber glass       BP2Z       500mL NAOH plastic       N         500mL Unpres amber glass       BP3Z       250mL NO3 plastic       N         500mL unpres amber glass       BP3Z       250mL NO3 plastic       N         100mL unpres amber glass       BP3Z       250mL NO3 plastic       N         100mL unpres amber glass       BP3Z       250mL NO3 plastic       N         125mL unpres amber glass       BP3Z       250mL NO3 plastic       N	WGKU       Boz clear soli jar       BP1C       1L NAOH plastic       SP51         WGFU       4oz clear soli jar       BP1N       1L HNO3 plastic       SP51         WGFU       4oz clear soli jar       BP1S       1L HNO3 plastic       SP51         JGFU       4oz clear soli jar       BP1Z       1L unpreserved plastic       ZPLC         JGFU       10mL unores amber glass       BP1Z       1L unpreserved plastic       Z         AG0U       10mL unores amber glass       BP1Z       1L unaOH, Zh Acetate       Z         AG1H       1L HCI amber glass       BP2C       500mL NO3 plastic       Z         AG1       1L Liz       Thiosulfate clear/amber glass       BP2Z       500mL HZSO4 plastic       R         AG1       1L Na Thiosulfate clear/amber glass       BP2Z       500mL HNO3 plastic       N       N         AG1       11ter unpres amber glass       BP2Z       500mL HNO3 plastic       N       N         AG2S       500mL HZSO4 amber glass       BP3Z       250mL NO3 plastic       N       N         AG3U       500mL HZSO4 amber glass       BP3Z       250mL NO3 plastic       N       N         AG3U       500mL unpres amber glass       BP3Z       250mL NO3 plastic       N       N <th></th> <th>Glass</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>_</th> <th></th> <th></th> <th>  "</th> <th>lastic</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Σ</th> <th>l</th> <th></th>		Glass						_			"	lastic							Σ	l	
WGFU       402 clear soil jar       BP1N       11. HN03 plastic       SP51         WG2U       202 clear soil jar       11. H2SO4 plastic       SP51         JGFU       400mL unores amber glass       BP1Z       11. LH2SO4 plastic       ZPLC         AG0U       100mL unores amber glass       BP1Z       11. LMOH, Zr Acetate       Z         AG1H       11. HCl amber glass       BP2C       500mL NO3 plastic       Z         AG1T       11. LH2SO4 amber glass       BP2V       500mL HN03 plastic       Z         AG1U       11iter unpres amber glass       BP2V       500mL HN03 plastic       U         AG1U       11iter unpres amber glass       BP2V       500mL HN03 plastic       M         AG2N       500mL HN03 amber glass       BP2V       500mL NaOH, Zn Acetate       W         AG2N       500mL Unpreserved plastic       S       S       M         AG2N       500mL Unpreserved plastic       S       S       M         AG2N       500mL UNO3 plastic       M       M       M         AG2U       250mL unpreserved plastic       SL       S       M         AG2U       250mL unpreserved plastic       M       M       M         AG2U       250mL unpreserved plasti	WGFU     402 clear soil jar     BPTN     11 LHNO3 plastic     SP5T       JGFU     402 clear soil jar     BP15     1 LH2SO4 plastic     SP5T       JGFU     402 unpreserved amber wide     BP12     1 LH2SO4 plastic     ZPLC       JGFU     1LHC1 amber glass     BP12     1 LNOH, Zh Acettate     ZPLC       AG0U     100mL unores amber glass     BP12     1 LNOH, Zh Acettate     Z       AG1H     1LHC1 amber glass     BP2C     500mL NAOH plastic     R       AG1U     11ter unpres amber glass     BP2D     500mL HNO3 plastic     U       AG1U     11ter unpres amber glass     BP2D     500mL HNO3 plastic     N       AG2U     500mL HNO3 amber glass     BP2Z     500mL NaOH, Zh Acetate     N       AG30     500mL HNO3 amber glass     BP2U     500mL NaOH, Zh Acetate     N       AG20     500mL unpres amber glass     BP2U     500mL NaOH, Zh Acetate     N       AG20     500mL unpreserved plastic     R     N     A       AG20     500mL unpreserved plastic     N     N     A       AG20     500mL unpreserved plastic     N     N     A       AG30     250mL unpreserved plastic     N     N     N       AG30     250mL unpreserved plastic     N     N	ar vial	WGKU	8oz	clear so	ll ar				P1C	11	VAOH	plastic				_		Wipe/	Swab		
WG2U       Zoz ctear soli lar       BPTS       1L HZSO4 plastic       ZPLC         JGFU       402 unpreserved amber wide       BP1U       1L unpreserved plastic       ZPLC         JGFU       100mL unores amber glass       BP2Z       500mL NAOH plastic       R         AG1H       1L HCl amber glass       BP2U       500mL UnOS plastic       R         AG1       1L HZSO4 amber glass       BP2U       500mL UnOS plastic       N         AG1U       11iter unpres amber glass       BP2U       500mL UnOS plastic       U         AG1U       11iter unpres amber glass       BP2U       500mL UnOS plastic       U         AG1U       11iter unpres amber glass       BP2U       500mL NaOH plastic       U         AG2N       500mL HNO3 amber glass       BP2U       500mL NaOH plastic       N         AG2N       500mL H2SO4 amber glass       BP2U       500mL NO3 plastic       N         AG2U       500mL unpres amber glass       BP3C       250mL NO3 plastic       N         AG3U       500mL unpres amber glass       BP3C       250mL NO3 plastic       N         AG3U       125mL unpres amber glass       BP3Z       250mL NO3 plastic       N         AG3U       100mL unpres amber glass       BP3Z	WG-ZU     Zoz clear soll ar     BPTS     1L H2SO4 plastic     ZPLC       AG0     100mL unoreserved amber wide     BP1U     1L unpreserved plastic     ZPLC       AG1H     1L HCI amber glass     BP2C     500mL NAOH plastic     Z       AG1     1L HCI amber glass     BP2C     500mL NAOH plastic     Z       AG1     1L HCI amber glass     BP2C     500mL NAOH plastic     Z       AG1     1L IL Na Thiosulfate clear/amber glass     BP2C     500mL NAOH plastic     Z       AG1U     11iter unpres amber glass     BP2U     500mL NAOH plastic     U       AG1U     11iter unpres     AG2N     500mL HNO3 amber glass     BP2U     500mL NAOH plastic       AG2N     500mL HNO3 amber glass     BP2U     500mL NAOH plastic     N       AG2U     500mL unpres amber glass     BP3U     250mL NO3 plastic     M       AG3U     100mL unpres amber glass     BP3U     250mL NO3 plastic     M       AG3U     100mL unpres amber glass     BP3U     250mL NO3 plastic     M       AG3U     100mL unpres amber glass     BP3U     250mL NO3 plastic     M       AG3U     100mL unpres amber glass     BP3U     250mL NO3 plastic     M       AG3U     100mL unpres amber glass     BP3U     125mL unpreserved plastic			407	clear so							SONT	plastic				222		Imoz L	Collto	orm Na	hiosult
OGU       Total uppreserved plass       BP1Z       1L unpreserved plastic       Arr         AG1H       11 HCl amber glass       BP1Z       1L NaOH, Zh Acetate       C         AG1H       11 HCl amber glass       BP2N       500mL HN03 plastic       U         AG1U       11 HCl amber glass       BP2N       500mL HN03 plastic       U         AG1U       11 HCl amber glass       BP2U       500mL HN03 plastic       U         AG1U       11 iter unpres amber glass       BP2U       500mL NaOH, Zn Acetate       R         AG2N       500mL HN03 amber glass       BP2U       500mL NaOH, Zn Acetate       W         AG3S       250mL HN03 amber glass       BP3Z       250mL NaOH plastic       U         AG3U       500mL upres amber glass       BP3Z       250mL Nn03 plastic       MT         AG3U       250mL upres amber glass       BP3U       250mL Nn03 plastic       MT         S       AG3U       125mL upres amber glass       BP3Z       250mL upreserved plastic       NL         AG3U       250mL upreserved plastic       MT       S       MT       MT       MT         S       AG3U       100mL upres amber glass       BP3Z       250mL NO3 plastic       MT       MT         AG3	NGU     ACUIPTESERVEGT and Constrained and constrain	Vial		207	clear so	II Jar	in a dur	000		212		12504	Plastic						Ziploc	Bag		
AG1H       It. HCI amber glass       BP2C       FOUND FLACT Provided       PC         AG1S       1L H2SO4 amber glass       BP2C       500mL HNO3 plastic       U         AG11       1L H2SO4 amber glass       BP2D       500mL H2SO4 plastic       U         AG11       1L H2SO4 amber glass       BP2D       500mL UnO3 plastic       U         AG10       1liter unpres amber glass       BP2U       500mL unpreserved plastic       U         AG2N       500mL HNO3 amber glass       BP2U       500mL unoth resource of plastic       U         AG2S       500mL HNO3 amber glass       BP2U       250mL NO3 plastic       MT         AG30       250mL unpres amber glass       BP3U       250mL unoth Plastic       MT         AG30       250mL unpres amber glass       BP3U       250mL unpreserved plastic       NT         AG30       250mL unpres amber glass       BP3U       250mL unoth NO3 plastic       NT         AG30       250mL unpres amber glass       BP3U       250mL unpreserved plastic       NT         AG40       125mL unpres amber glass       BP3U       250mL unpreserved plastic       NT         AG40       125mL unpres amber glass       BP3U       250mL unoth assic       NT         AG50       100mL unp	AGH       1L HCI amber glass       BP2C       500mL NA, Dr Martine       North Martine         AG15       1L H2SO4 amber glass       BP2C       500mL NO3 plastic       N       N         AG15       1L H2SO4 amber glass       BP2C       500mL NO3 plastic       N       N         AG10       1liter unpres amber glass       BP2C       500mL Unpreserved plastic       N       N         AG10       1liter unpres amber glass       BP2C       500mL Unpreserved plastic       N       N         AG2N       500mL HNO3 amber glass       BP2C       500mL Unpreserved plastic       N       N         AG2S       500mL HNO3 amber glass       BP2C       500mL NaOH, ZA Acetate       N       N         AG3U       500mL unpres amber glass       BP3C       250mL NO3 plastic       N       N         AG3U       250mL unpres amber glass       BP3U       250mL NO3 plastic       N       N         AG3U       250mL unpres amber glass       BP3U       250mL NO3 plastic       N       N         AG3U       100mL unpres amber glass       BP3U       250mL NO3 plastic       N       N         AG4U       125mL unpres amber glass       BP3Z       250mL NO3 plastic       N       N         AG4U	er vial	AGOLI	1001	uriprese	es am	niuei w	200					Zn Are	IdSUC			Łι			(er erettor		
AG1S1L H2SO4 amber glassBP2N500mL HNO3 plasticUAG1T1L Na Thiosulfate clear/amber glassBP2S500mL HNO3 plasticUAG1U1litter unpress amber glassBP2V500mL NO3 plasticUAG1U1litter unpress amber glassBP2V500mL NO3 plasticUAG2N500mL HNO3 amber glassBP2Z500mL NaOH, Zn AcetateWAG2N500mL HNO3 amber glassBP3C250mL NO3 plasticMAG2U500mL unpress amber glassBP3N250mL NO3 plasticMAG3U250mL unpress amber glassBP3N250mL NO3 plasticNLAG3U250mL unpress amber glassBP3N250mL NO3 plasticNLAG3U250mL unpress amber glassBP3N250mL NAOH, Zn AcetateWTAG3U100mL unpres amber glassBP3N250mL NAOH, Zn AcetateWPAG4U125mL unpress amber glassBP3U125mL unpresserved plasticOLAG5U100mL unpres amber glassBP3U250mL NAOH, Zn AcetateWPAG5U100mL unpres amber glassBP3U125mL HNO3 plasticDWAG5U100mL unpres amber glassBP4U125mL HNO3 plasticDWBP4N160Z unpresserved plasticDWBP4N160Z unpresserved plastic	AG1S       1L H2SO4 amber glass       BP2N       500mL HNO3 plastic       U         AG1T       1L Na Thiosulfate clear/amber glass       BP2U       500mL HNO3 plastic       U         AG1U       1 liter unpres amber glass       BP2U       500mL unpreserved plastic       U         AG2N       500mL HNO3 amber glass       BP2U       500mL unpreserved plastic       U         AG2N       500mL HNO3 amber glass       BP2Z       500mL NaOH, Zn Acetate       MT         AG3S       250mL HNO3 amber glass       BP3Z       250mL NnO3 plastic       NT         AG3U       250mL unpres amber glass       BP3U       250mL NnO3 plastic       NAL         AG3U       250mL unpres amber glass       BP3U       250mL unpreserved plastic       NAL         AG3U       125mL unpres amber glass       BP3U       250mL unpreserved plastic       NAL         AG4U       125mL unpres amber glass       BP3Z       250mL unpreserved plastic       NAL         AG4U       125mL unpres amber glass       BP3Z       250mL unpreserved plastic       NML         AG4U       125mL unpreserved plastic       NAL       NAL       NAL         AG4U       125mL unpreserved plastic       NMP       NM         AG4U       100mL unpres amber glass	ber vial	AG1H	11	ICI amb	er alas	200			P2C	500		NOH pla	stic					Terrar	Socie Kit		
AG1T       1L Na Thiosulfate clear/amber glass       BP2S       500mL H2SO4 plastic         AG1U       11iter unpres amber glass       BP2U       500mL unpreserved plastic         AG1U       11iter unpres       500mL HNO3 amber glass       BP2U       500mL unpreserved plastic         Ial       AG2N       500mL HNO3 amber glass       BP2Z       500mL unpreserved plastic       MT         AG2S       500mL H2SO4 amber glass       BP3C       250mL NO3 plastic       MT         AG2U       500mL unpres amber glass       BP3F       250mL NO3 plastic       NT         AG2U       500mL unpres amber glass       BP3U       250mL unpreserved plastic       NT         S       AG3U       250mL unpreserved plastic       NT       NAL         AG3U       125mL unpres amber glass       BP3U       250mL NaOH, Zh Acetate       WP         AG4U       125mL unpres amber glass       BP3U       250mL NaOH, Zh Acetate       WP         AG4U       125mL unpres amber glass       BP3U       250mL NaOH, Zh Acetate       WP         AG4U       125mL unpres amber glass       BP3U       250mL NaOH, Zh Acetate       WP         AG4U       125mL unpreserved plastic       DV       BP4U       125mL HNO3 plastic       DV         BP4N </td <td>AG1T       1L Na Thiosulfate clear/amber glass       BP2S       500mL H2SO4 plastic         AG1U       1liter unpres amber glass       BP2U       500mL unpreserved plastic         AG2N       500mL HNO3 amber glass       BP2U       500mL unpreserved plastic         AG2S       500mL HNO3 amber glass       BP2U       500mL unpreserved plastic         AG2S       500mL H2SO4 amber glass       BP3C       250mL NO3 plastic         AG3S       250mL unpreserved glass       BP3F       250mL NO3 plastic         AG3U       500mL unpres amber glass       BP3U       250mL NO3 plastic       SL         AG3U       250mL unpres amber glass       BP3U       250mL HNO3 plastic       NAL         AG3U       250mL unpres amber glass       BP3U       250mL HNO3 plastic       NAL         AG4U       125mL unpres amber glass       BP3U       250mL NO3 plastic       NAL         AG4U       125mL unpreserved plastic       NAL       BP4U       125mL unpreserved plastic       NP         BP4U       125mL unpreserved plastic       NAL       BP4U       125mL unpreserved plastic       NP         BP4N       125mL unpreserved plastic       NPU       16oz unpreserved plastic       NP</td> <td>eserved</td> <td>AG1S</td> <td>11</td> <td>12SO4 a</td> <td>amber o</td> <td>glass</td> <td></td> <td></td> <td>P2N</td> <td>500</td> <td>H H H</td> <td>103 pla</td> <td>stic</td> <td></td> <td></td> <td>:</td> <td></td> <td>Summ</td> <td>a Can</td> <td></td> <td></td>	AG1T       1L Na Thiosulfate clear/amber glass       BP2S       500mL H2SO4 plastic         AG1U       1liter unpres amber glass       BP2U       500mL unpreserved plastic         AG2N       500mL HNO3 amber glass       BP2U       500mL unpreserved plastic         AG2S       500mL HNO3 amber glass       BP2U       500mL unpreserved plastic         AG2S       500mL H2SO4 amber glass       BP3C       250mL NO3 plastic         AG3S       250mL unpreserved glass       BP3F       250mL NO3 plastic         AG3U       500mL unpres amber glass       BP3U       250mL NO3 plastic       SL         AG3U       250mL unpres amber glass       BP3U       250mL HNO3 plastic       NAL         AG3U       250mL unpres amber glass       BP3U       250mL HNO3 plastic       NAL         AG4U       125mL unpres amber glass       BP3U       250mL NO3 plastic       NAL         AG4U       125mL unpreserved plastic       NAL       BP4U       125mL unpreserved plastic       NP         BP4U       125mL unpreserved plastic       NAL       BP4U       125mL unpreserved plastic       NP         BP4N       125mL unpreserved plastic       NPU       16oz unpreserved plastic       NP	eserved	AG1S	11	12SO4 a	amber o	glass			P2N	500	H H H	103 pla	stic			:		Summ	a Can		
AG1U       Iliter unpres amber glass       BP2U       500mL unpreserved plastic         vial       AC2N       500mL HNO3 amber glass       BP2Z       500mL NaOH, Zn Acetate         AC2S       500mL H2SO4 amber glass       BP3Z       250mL NaOH plastic       WT         AC3S       500mL unpres       BP3F       250mL NuO3 plastic       MT         AC3U       500mL unpres amber glass       BP3F       250mL HNO3 plastic       MT         AC3U       500mL unpres amber glass       BP3N       250mL HNO3 plastic       MT         Ss       AG3U       250mL unpres amber glass       BP3N       250mL HNO3 plastic       MT         Ss       AG3U       125mL unpres amber glass       BP3N       250mL HNO3 plastic       MT         Ss       AG3U       125mL unpres amber glass       BP3S       250mL HNO3 plastic       MT         Ss       AG5U       100mL unpres amber glass       BP3S       250mL HNO3 plastic       MT         AG5U       AG5U       100mL unpres amber glass       BP4U       125mL HNO3 plastic       MP         N       AG5U       100mL unpresserved plastic       DU       MP       MP	AG1U       Iliter unpres amber glass       BP2U       500mL unpreserved plastic         vial       AC2N       500mL HNO3 amber glass       BP2Z       500mL NaOH, Zn Acetate         AC2S       500mL H2SO4 amber glass       BP3C       250mL NaOH plastic       WT         AC3S       500mL unpres amber glass       BP3F       250mL NuO3 plastic       MT         AC3U       500mL unpres amber glass       BP3F       250mL HNO3 plastic       MT         AC3U       500mL unpres amber glass       BP3N       250mL HNO3 plastic       MT         Ss       AG3U       250mL unpres amber glass       BP3N       250mL HNO3 plastic       MT         AG3U       125mL unpres amber glass       BP3N       250mL HNO3 plastic       MT       MT         Ss       AG3U       125mL unpres amber glass       BP3N       250mL HNO3 plastic       MT       ML         AG4U       125mL unpres amber glass       BP3Z       250mL HNO3 plastic       MT       MT         AG5U       AG5U       100mL unpres amber glass       BP3Z       250mL NO3 plastic       MT       MT         AG5U       100mL unpres amber glass       BP3Z       250mL NaOH, Zn Acetate       WP       MT         AG5U       AG5U       100mL unpres amber gl	1	AG1T	1L N	la Thios	ulfate (	clear/an	nber gla:		P2S	500	mL H2	SO4 pl	astic								
AG2N       500mL HNO3 amber glass       BP2Z       500mL NaOH, Zn Acetate         AG2S       500mL H2SO4 amber glass       BP3C       250mL NaOH plastic       MT         AG3S       250mL H2SO4 amber glass       BP3F       250mL NuO3 plastic       MT         AG3S       250mL unpres amber glass       BP3F       250mL HNO3 plastic       MT         AG2U       500mL unpres amber glass       BP3N       250mL HNO3 plastic       MT         AG3U       250mL unpres amber glass       BP3U       250mL unpreserved plastic       NAL         AG3U       250mL unpres amber glass       BP3U       250mL unpreserved plastic       NAL         AG4U       125mL unpres amber glass       BP3Z       250mL NOOH, Zn Acetate       NPL         AG5U       100mL unpres amber glass       BP3Z       250mL Noreserved plastic       DU         BA4U       125mL unpreserved plastic       DN       MP       MP	AG2N       500mL HNO3 amber glass       BP2Z       500mL NaOH, Zn Acetate         AG2S       500mL H2SO4 amber glass       BP3C       250mL NaOH plastic         AG3S       250mL H2SO4 amber glass       BP3F       250mL HNO3 plastic       MT         AG3U       500mL unpres amber glass       BP3F       250mL HNO3 plastic       MT         AG2U       500mL unpres amber glass       BP3N       250mL HNO3 plastic       MT         AG2U       500mL unpres amber glass       BP3N       250mL uno7 plastic       NAL         AG3U       250mL unpres amber glass       BP3U       250mL uno7 plastic       NAL         AG3U       125mL unpres amber glass       BP3U       250mL NO3 plastic       OL         AG4U       125mL unpres amber glass       BP3Z       250mL NO3 plastic       OL         AG4U       125mL unpres amber glass       BP3Z       250mL NO3 plastic       DN         BP4U       125mL unpreserved plastic       DN       DN       DN         BP4U       125mL unpreserved plastic       DN       DN       DN         BP4U       125mL HNO3 plastic       DN       DN       DN	ar vial	AG1U	1lite	r unpres	ambe	r glass		B	P2U	500	mL un	preserv	ed plas	stic		_					
AG2S         500mL H2SO4 amber glass         BP3C         250mL NaOH plastic         AC           AG3S         250mL H2SO4 amber glass         BP3F         250mL HNO3 plastic - field filtered         WT           AG3U         500mL unpres amber glass         BP3N         250mL HNO3 plastic - field filtered         WT           AG2U         500mL unpres amber glass         BP3N         250mL HNO3 plastic         SL           AG2U         500mL unpres amber glass         BP3U         250mL HNO3 plastic         NAL           AG3U         250mL unpres amber glass         BP3U         250mL HNO3 plastic         NAL           AG4U         125mL unpres amber glass         BP3U         250mL NaOH, Zn Acetate         WPU           AG5U         100mL unpres amber glass         BP3Z         250mL NaOH, Zn Acetate         WP	AG2S       500mL H2SO4 amber glass       BP3C       250mL NaOH plastic         AG3S       250mL H2SO4 amber glass       BP3F       250mL NNO3 plastic - field filtered       WT         AG2U       500mL unpres amber glass       BP3N       250mL HNO3 plastic - field filtered       WT         AG2U       500mL unpres amber glass       BP3N       250mL HNO3 plastic - field filtered       WT         AG2U       500mL unpres amber glass       BP3U       250mL HNO3 plastic       NAL         AG3U       250mL unpres amber glass       BP3U       250mL HNO3 plastic       NAL         AG4U       125mL unpres amber glass       BP3U       250mL HNO3 plastic       NAL         AG5U       100mL unpres amber glass       BP3Z       250mL NaOH, Zn Acetate       WP         BP4U       125mL unpreserved plastic       DW       NP       NP         BP4U       125mL NaOH, Zn Acetate       WP       NP         MPIN       125mL HNO3 plastic       DW       NP	clear vial	AG2N	500r	IN HNC	03 amb	er glass	s	В	P2Z	500	mL Na	IOH, Zn	Aceta	e E					Mod	tei v	
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100mL unpres amber glass     BP3Z     250mL NaOH, Zn Acetate     WP       BP4U     125mL unpreserved plastic     DW       BP4N     125mL HNO3 plastic     DW       BP4S     125mL H2SO4 plastic     WP       WPDU     16oz unpresserved plstic     MP	AG5U     100mL unpres amber glass     BP3Z     250mL NaOH, Zn Acetate     WP       BP4U     125mL unpreserved plastic     DW       BP4N     125mL HNO3 plastic       BP4S     125mL H2SO4 plastic       WPDU     16oz unpresserved platic		AG4U	1221	nL unpr	es amt	oer glas	ŝ	n	P3S	250	H7 ML H2	SO4 pl	astic			5		J			
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Pace Analytical Services, LLC

Qualtrax Document ID: 30422

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# CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Company:	WSP Golder	Report To: Jeffrey Ingram	ш			Attention:	on:					Γ			1			
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-	S-TMW-1	WT G								_		1			-			
2	S-TMW-2	WT G	/															
3	S-TMW-3	WT G	/							-								
4	S-UG-3	WT G	/															
5	S-SCL4A-DUP-1	WT G																
9	S-SCL4A-FB-1	WT G	-															
~	S-SCL4A-MS-1	WT G																
80	S-SCL4A-MSD-1	WT G																
6	S-BMW-1S	WT G		C-8-01		Cl.					1	11						
9	S-BMW-3S	WT G	_	10-15-22	201406	3					1	1						
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\*Important Nole: 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**

Project No. 153140604

DATE January 10, 2023

TO Project File WSP USA Inc.

- CC Amanda Derhake, Jeff Ingram
- **FROM** Rahel Pommerenke

EMAIL rahel.pommerenke@wsp.com

# DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCL4A – DETECTION MONITORING – DATA PACKAGE 60413641

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) or non-detects (U).
- 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 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: WSP USA Inc.	_ Project Manager: _ <sup>J. Ingram</sup>		
Project Name: Ameren SEC - SCL4A	Project Number: 153140604		
Reviewer: R.Pommerenke	Validation Date: 1/10/2023		
Laboratory: <u>Pace Analytical Services</u> Analytical Method (type and no.): <u>EPA 200.7 (Total Metals); SM2</u> Matrix: Air Soil/Sed. Water Waste Sample Names S-TMW-1, S-TMW-2, S-TMW-3, S-SCL4A-DUP-1, S	]		

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

Field Ir	nformation	YES	NO	NA	COMMENTS
a)	Sampling dates noted?	X			10/18/2022, 10/20/2022 - 10/21/2022
b) Sampling team indicated?					PCS/GTM/SMA
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/performa	nces fro	om field lo	ogs or field no	tes?
			X		
j)	Does the laboratory narrative indicate deficiencies?			х	
	Note Deficiencies:				
Chain-	of-Custody (COC)	YES	NO	NA	COMMENTS
<b>Chain-</b> a)	of-Custody (COC) Was the COC properly completed?	YES ×	NO	NA	COMMENTS
	Was the COC properly completed? Was the COC signed by both field		_		
a)	Was the COC properly completed? Was the COC signed by both field and laboratory personnel?	×	_		COMMENTS See notes.
a)	Was the COC properly completed? Was the COC signed by both field	x			
a) b) c)	Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	× 			See notes.
a) b) c)	Was the COC properly completed? Was the COC signed by both field and laboratory personnel?	×	X		
a) b) c)	Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	× 			See notes.
a) b) c) Genera	Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	× × ×	□ × NO		See notes.
a) b) c) Genera a)	Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	× × ¥ YES	□ × NO		See notes.
a) b) c) Genera a) b)	Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis?	× × × YES ×	□ × NO		See notes.
a) b) c) <b>Genera</b> a) b) c)	Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used?	× × YES × ×	□ × NO		See notes.
a) b) c) <b>Genera</b> a) b) c) d)	Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used?	× × ¥ ¥ × × ×	□ × NO		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)?	х			See notes.
c)	Were analytes detected in the equipment blank(s)?			x	
d)	Were analytes detected in the trip blank(s)?			х	
Labora	tory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	х			
b)	Were the proper analytes included in the LCS?	х			
c)	Was the LCS accuracy criteria met?	X			
Duplica	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	uplicate	sample n	ames)?	
		X			S-SCL4A-DUP-1 @ S-TMW-3
b)	Were field dup. precision criteria met (note RPD)?		x		See notes.
c)	Were lab duplicates analyzed (note original and dup	olicate	samples)?	?	
		X			
d)	Were lab dup. precision criteria met (note RPD)?		X		See notes.
Blind S	tandards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			×	
	analytes included and concentrations)?				
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?		×		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			Max RPD (12%) < 15%

#### Comments/Notes:

COC:

COC No 12 containing S-BMW-1S and S-BMW-3S was not signed by laboratory personnel. No qualification necessary.

#### Dilutions:

Chloride and Sulfate analyzed at a dilution. No qualification necessary.

#### **QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST**

Comments/Notes:

Blanks

MB3244375: Boron (11.1J). Associated with 60413641001.

Result < RL: reported as ND at RL.

MB3244380: Iron (7.8J). Associated with 60413641002 through -005.

Results > 10 x blank and > RL: no qualification necessary. Results < RL reported as ND at RL.

MB3250187: Chloride (0.61J). Associated with 60413477004 and -005.

Result > 10 x blank and > RL: no qualification necessary.

MB3249328: Chloride (0.60J). Associated with 60413641002.

Result < 10 x blank but > RL: qualified as estimate.

S-SCL4A-FB-1 @ S-TMW-1: Iron (10.5J), Chloride (0.60J).

Result < 10 x blank but > RL: qualified as estimate. Result < RL: reported as ND at RL.

Duplicates:

S-SCL4A-DUP-1 @ S-TMW-3: RPD limit (20%) exceeded for Total Dissolved Solids (68.8%). Fluoride ND in parent, detect in DUP.

Sample Duplicate 3241296: Alkalinity detected in DUP but ND in parent sample. Performed on unrelated sample: no qualification necessary.

Sample Duplicate 3241276: Total Dissolved Solids detected in DUP but ND in parent sample. Associated with 60413641002.

Sample Duplicate 3248349: RPD limit (15%) exceeded for Chloride (21%) and Sulfate (26%). Performed on unrelated sample: no qualification necessary.

Sample Duplicate 3249335: Fluoride detected in DUP but ND in parent sample. Associated with 60413641002.

MS/MSD:

3242911: MS % recovery low for Calcium. Performed on unrelated sample: no qualification necessary.

3242919/3242920: MS % recovery high for calcium. Performed on unrelated sample: no qualification necessary.

3244377/3244378: MS/MSD % recovery low (<10%) for calcium. MS/MSD % recovery low for sodium.

Performed on unrelated sample: no qualification necessary.

3246989/3246990: MS % recovery high for Sulfate. Performed on unrelated sample: no qualification necessary.

#### **QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST**

#### **Data Qualification:**

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-SCL4A-DUP-1	Fluoride	0.34	J	Detected in dup, ND in parent sample.
"	Total Dissolved Solids	409	J	DUP RPD exceeds control limits.
S-SCL4A-FB-1	Iron	50.0	U	Detected in MB, result < RL.
S-TMW-1	Boron	100	U	Detected in MB, result < RL.
"	Chloride	2.7	J	Detected in FB, 10 x blank > result > RL.
"	Iron	50.0	U	Detected in FB, result < RL.
S-TMW-2	Chloride	3.3	J	Detected in MB, 10x blank > result > RL.
"	Total Dissolved Solids	10.0	UJ	Detected in lab DUP but ND in parent sampl
S-TMW-3	Fluoride	0.12	UJ	Detected in DUP/lab duplicate, but ND in parent samp
"	Total Dissolved Solids	838	J	DUP RPD exceeds control limits
<u> </u>				
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Signature: \_\_\_\_\_Ralul Rahm -

Date: \_\_\_\_\_\_

APPENDIX B

Alternative Source Demonstration -March/April 2022 Sampling Event

# **SOLDER**

#### 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 USA Inc.

701 Emerson Road, Suite 250, Creve Coeur, Missouri, 63141

+1 314 984 8800

153140604

November 11, 2022

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	3.3	CCR Rule Groundwater Monitoring	3				
4.0	REVIE	W OF THE STATISTICALLY SIGNIFICANT INCREASE	5				
5.0	EVIDE	INCE OF SSI FROM ALTERNATIVE SOURCE	5				
5.0	<b>EVIDE</b> 5.1	CCR Indicators	-				
5.0			6				
5.0	5.1	CCR Indicators	6				
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- Figure 3 Time Series Plot for Sulfate Concentrations South of the SCL4A
- Figure 4 Pre-CCR Sulfate Plots Downgradient Monitoring Wells

# **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 USA 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 (SSI) 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 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.

# 3.0 SITE DESCRIPTION AND BACKGROUND

Ameren owns and operates the SEC in St. Charles County, Missouri, located approximately 12 miles westnorthwest 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 1,100 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  $1 \times 10^{-7}$  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 for CCR Rule sampling events.

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. After at least four (4) sampling events, approximately every two years, these UPLs are updated to incorporate recent data, described in greater detail in Section 4.0. 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. This SSI was determined to be from an alternative source, as described in the ASD for the April 2021 sampling event, which can be found in the 2021 Annual Report for the SCL4A.
- In November 2021, one (1) initial exceedance was identified, fluoride at TMW-1. Verification sampling did not confirm the initial exceedance and no SSIs were identified for the November 2021 event.
- In March-April 2022, one (1) initial exceedance was identified, sulfate at TMW-1. Verification sampling results confirmed this SSI at TMW-1. The results from the March/April detection monitoring event are summarized in Table 1.

# 4.0 REVIEW OF THE STATISTICALLY SIGNIFICANT INCREASE

The March 2022 SSI for sulfate occurred at monitoring well TMW-1. TMW-1 is screened in the upper portion of the alluvial aquifer just below the average seasonal low for groundwater. As shown in **Figure 1**, TMW-1 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-date 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-1 was 46.3 milligrams per liter (mg/L) based on the results from the initial eight (8) baseline sampling events that ranged from 23.2 to 38.0 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 dataset was expanded to include the next four (4) sampling events, and the UPL changed from 46.3 to 50.29 mg/L. In August 2021, the baseline data set was further expanded to include the subsequent four (4) or more sampling events, and the UPL changed from 50.29 to 49.87 mg/L. During the March/April 2022 detection monitoring event, a concentration of 64.9 mg/L was reported for sulfate in TMW-1, which was confirmed in June 2022 by a verification result of 50.5 J mg/L, which slightly exceeds the current UPL of 49.7 mg/L.

#### Table 2: Review of Statistically Significant Increase

Constituent	Well ID	UPL Based on Baseline Events	August 2019 Updated UPL	June 2021 Updated UPL	Baseline Sampling Event Range	Detection Monitoring Sampling Range (November 2017 - November 2021)	March 2022 Result	June 2022 Result
Sulfate (mg/L)	TMW-1	46.3	50.29	49.87	23.2 - 38.0	33.8 - 47.7	64.9	50.5 J

Notes:

- 1) mg/L milligrams per liter.
- 2) UPL upper prediction limit.
- 3) UPLs calculated using Sanitas<sup>™</sup> software.
- 4) UWL Utility Waste Landfill.
- 5) J result is an estimated value.

# 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-1.
- 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).

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.	<ul> <li>Boron</li> <li>Molybdenum</li> <li>Lithium</li> <li>Sulfate</li> </ul>
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.	<ul> <li>Bromide</li> <li>Potassium</li> <li>Sodium</li> <li>Fluoride</li> </ul>
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.	<ul> <li>Sulfate</li> <li>Fluoride</li> <li>Calcium</li> <li>Boron</li> <li>Bromide</li> <li>Chloride</li> </ul>

Table 3: Types of CCR and Typical Indicator Parameters

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-1, as well as background wells BMW-1S and BMW-3S and nearby wells TMW-2 and TMW-3. If the SSI at TMW-1 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-1 does not have boron impacts, and therefore, a source other than CCR is likely the cause of the SSI at TMW-1.

## 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, along with boron values. Given that boron concentrations are not indicative of CCR impacts, it follows that the elevated sulfate values in well TMW-1 are from an alternative source.

As displayed on **Figure 3**, during baseline sampling at TMW-1, sulfate ranged from 23.2 to 38.0 mg/L. During the subsequent sampling events, sulfate concentrations at TMW-1 have ranged from 33.8 to 64.9 mg/L. The time series plot on **Figure 3** shows the high degree of variability in sulfate concentrations at the TMW wells south of the SCL4A since the onset of baseline monitoring. This figure provides further evidence that the limited number of data points used to calculate the intrawell UPL for sulfate at TMW-1 do not accurately reflect the natural geochemical variability within the groundwater. Two other compliance monitoring wells are located approximately 325 and 650 feet to the east of TMW-1 as displayed in **Figure 1**: TMW-2 and TMW-3, respectively. Sulfate concentrations in these monitoring wells ranged from 26.4 to 85.8 mg/L and UPLs for these monitoring wells are 80.98 mg/L at TMW-2 and 60.9 mg/L at TMW-3. Based on the sulfate concentration range of the nearby wells, the sulfate concentration in TMW-1 for April 2022 is within the range of historical concentrations for adjacent wells, which indicates that the SSI for sulfate in TMW-1 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-1.

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-1 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-1 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 sulfate concentration in TMW-1 in March-April 2022 is not the result of a release from the SCL4A, but instead can be attributed to pre-existing impacts and variability in the alluvial aquifer combined with the limited dataset used for the calculation of the previous sulfate UPLs in TMW-1.

## 6.0 DEMONSTRATION THAT SSI WAS NOT CAUSED BY SCL4A IMPACT

Based on the information presented in Section 5, above, the SSI reported for the March-April 2022 monitoring event at TMW-1 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 sixteen (16) samples have been used thus far to calculate the intrawell UPLs in TMW-1. 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 may not have 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. Documented construction of SCL4A with these components act to limit the potential that the SSI reported for sulfate in TMW-1 during April 2022 is a result of influence from the SCL4A. The SSI observed in TMW-1 is not caused by impacts from the SCL4A, but is a result of natural variability and pre-existing impacts within the alluvial aquifer at the site.

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November 11, 2022

# Tables

# Table 1March/April 2022 Detection Monitoring ResultsSCL4A - Landfill Cell 4ASioux Energy Center, St. Charles County, MO

		BACKGR	OUND			GROL	JNDWATER M	ONITORING V	VELLS		
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
			М	arch-April 202	2 Detection N	Aonitoring Eve	ent				
DATE	NA	3/29/2022	3/29/2022	NA	4/1/2022	NA	3/29/2022	NA	3/29/2022	NA	3/29/2022
рН	SU	6.80	6.94	6.659-7.397	6.94	6.356-7.504	7.10	6.601-7.399	6.95	6.41-7.31	6.92
BORON, TOTAL	μg/L	68.0 J	70.7 J	1,200	184	DQR	76.8 J	104.4	84.9 J	110.6	95.6 J
CALCIUM, TOTAL	μg/L	173,000	147,000	172,812	120,000	119,842	103,000	133,759	124,000	146,661	132,000
CHLORIDE, TOTAL	mg/L	8.5	11.8	85.54	73.5	4.199	3.2	4.641	3.4	3.1	2.4
FLUORIDE, TOTAL	mg/L	0.30	0.36	0.3954	0.35	0.4537	0.36	0.4229	0.34	0.3773	0.30
SULFATE, TOTAL	mg/L	44.9	47.8	139.9	18.6	49.87	64.9	80.98	79.0	60.9	51.0
TOTAL DISSOLVED SOLIDS	mg/L	591	508	671.3	612	462.8	365	513	447	505.4	476
				June 2022 V	erification Sa	mpling Event					
DATE	NA						6/6/2022				
рН	SU										
BORON, TOTAL	μg/L										
CALCIUM, TOTAL	μg/L										
CHLORIDE, TOTAL	mg/L										
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L						50.5 J				
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.

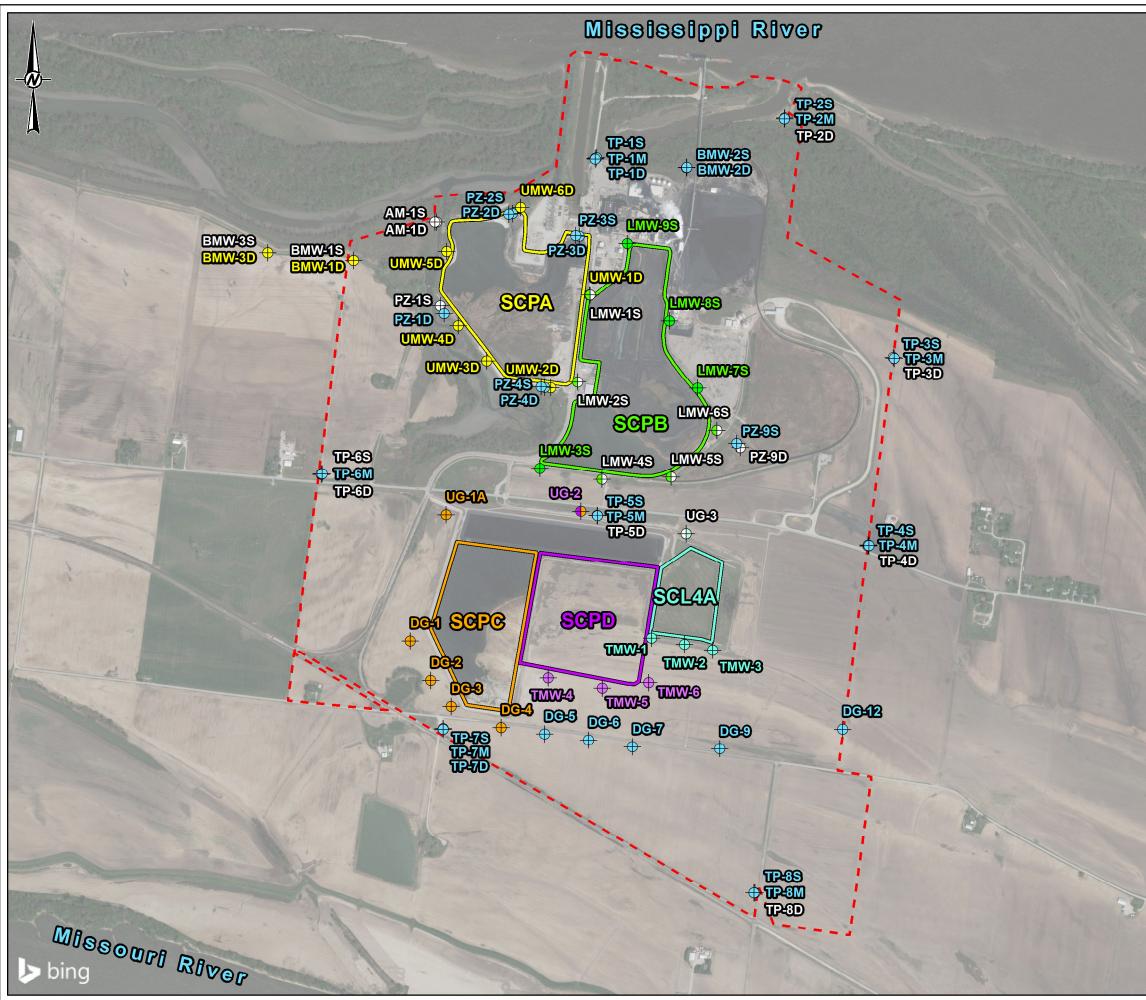
5. Values highlighted in yellow indicate a Statistically Significant Increase (SSI).

6. 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.

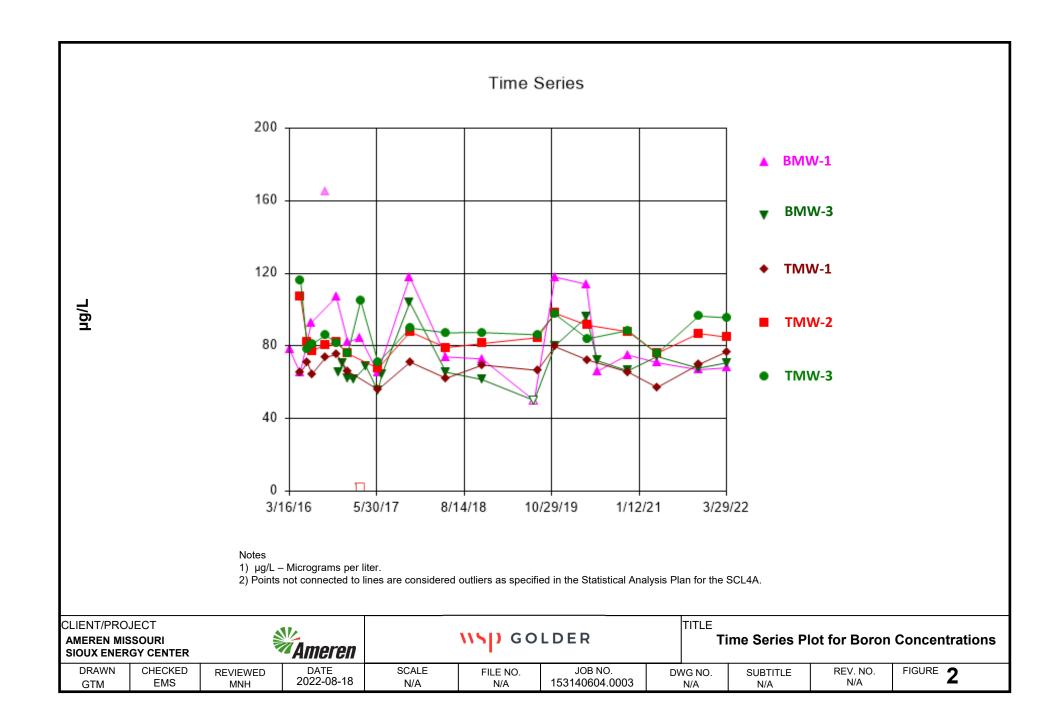
Prepared By: GTM Checked By: BTT Reviewed By: MNH

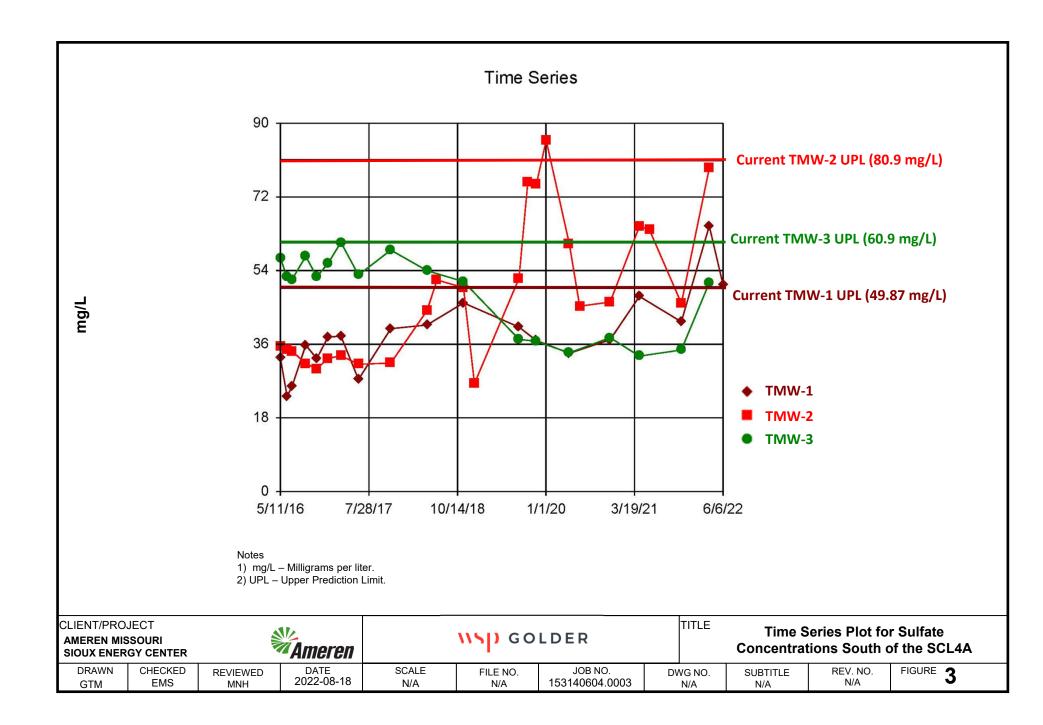
# Figures

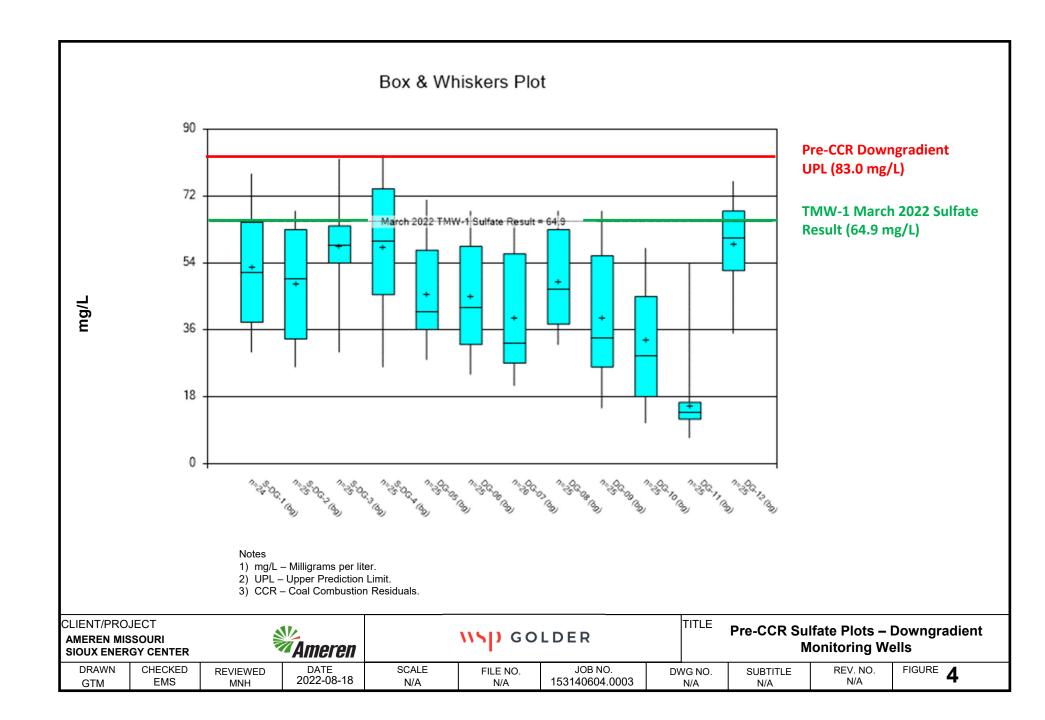


LEGEND		wanter Darreadau	
121	Sioux Energy Center Pro	perty Boundar	У
CCR	Units		
	SCPA - Unlined Bottom A	sh Surface Im	poundment
	SCPB - Lined Fly Ash Su	irface Impound	lment
Utilit	y Waste Landfill (UWI	_)	
	SCPC - WFGD Surface I	mpoundment	
	SCL4A - Dry CCR Dispos	sal Area	
	SCPD - WFGD Surface I	mpoundment	
Moni	toring Well Networks		
$\oplus$	Corrective Action Monitor	ring Well	
$\stackrel{\circ}{\Phi}$	SCPA Detection and Ass	0	toring Well
			0
<b>+</b>	SCPB and Corrective Ac	-	, weii
+	SCPB Detection Monitor	-	
<b>+</b>	SCPC Detection Monitor	ing Well	
+	SCPD and SCPC Detect	ion Monitoring	Well
<b>♦</b> ♦	SCPD Detection Monitor	ing Well	
$\Phi$	SCL4A and Corrective A	ction Monitorin	g Well
$\mathbf{\Phi}$	SCL4A Detection Monito	ring Well	
<b>+</b>	Monitoring Well Used for	Water Level E	levation
Ψ	Measurements Only		
0	1,000	2,000	3,000
		_,	-,
			Feet
2.) WFG 3.) CCR	BOUNDARIES AND LOCATIONS ARE AF D - WET FLUE GAS DESULFURIZATION - COAL COMBUSTION RESIDUALS		
2011.	NCE(S) REN MISSOURI SIOUX ENERGY CENT RDINATE SYSTEM: NAD 1983 STATE P		
SIOUX	EN MISSOURI KENERGY CENTER		<b>Ameren</b>
PROJEC GROL	⊤ JNDWATER MONITORING	PROGRAM	
PROG	RAM AND SAMPLE LOCA		
CONSUL	TANT	YYYY-MM-DD	2022-10-27
		DESIGNED	JSI
		PREPARED	ISI
	) GOLDER	REVIEWED	JSI EMS
	) GOLDER		
PROJEC	•	REVIEWED	EMS MNH

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

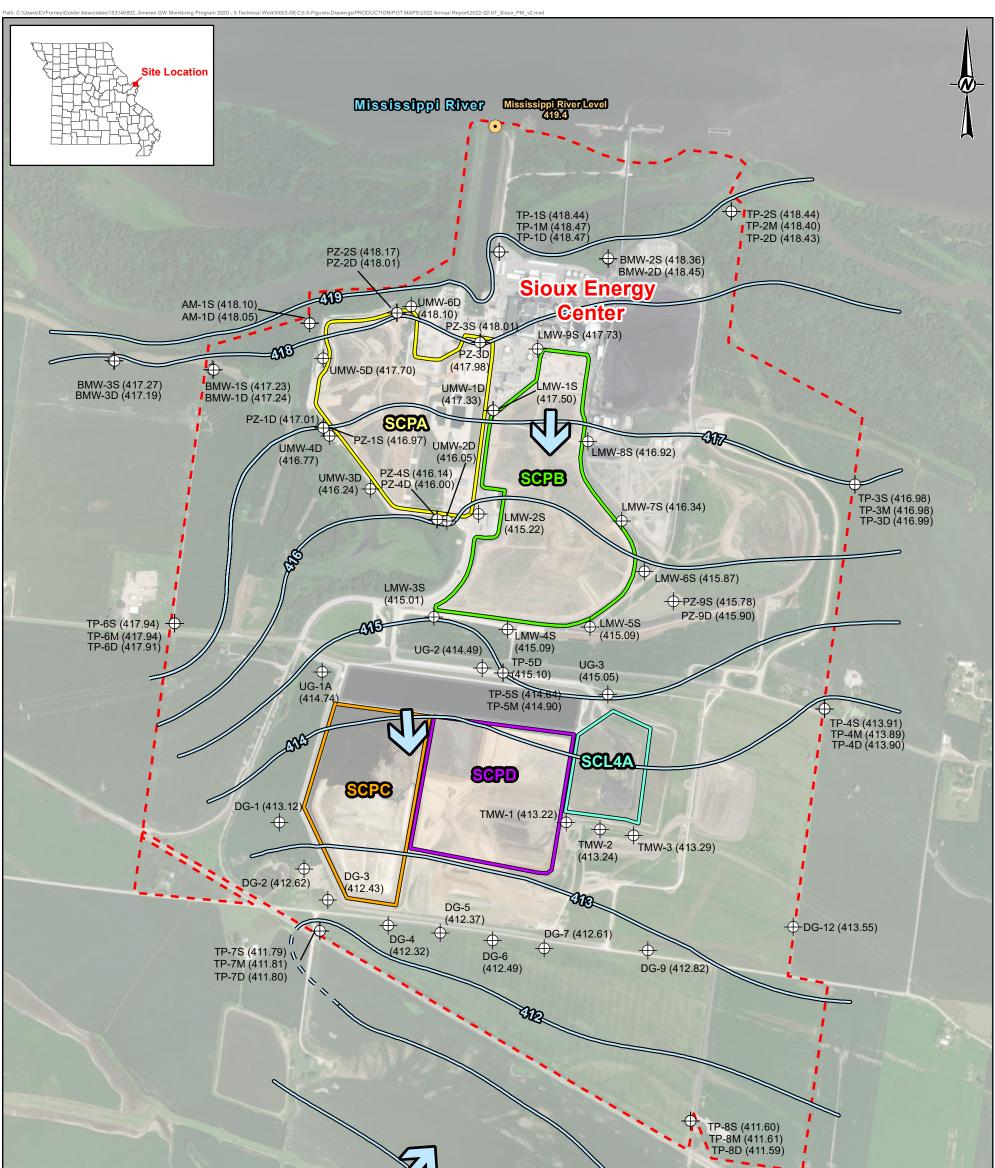




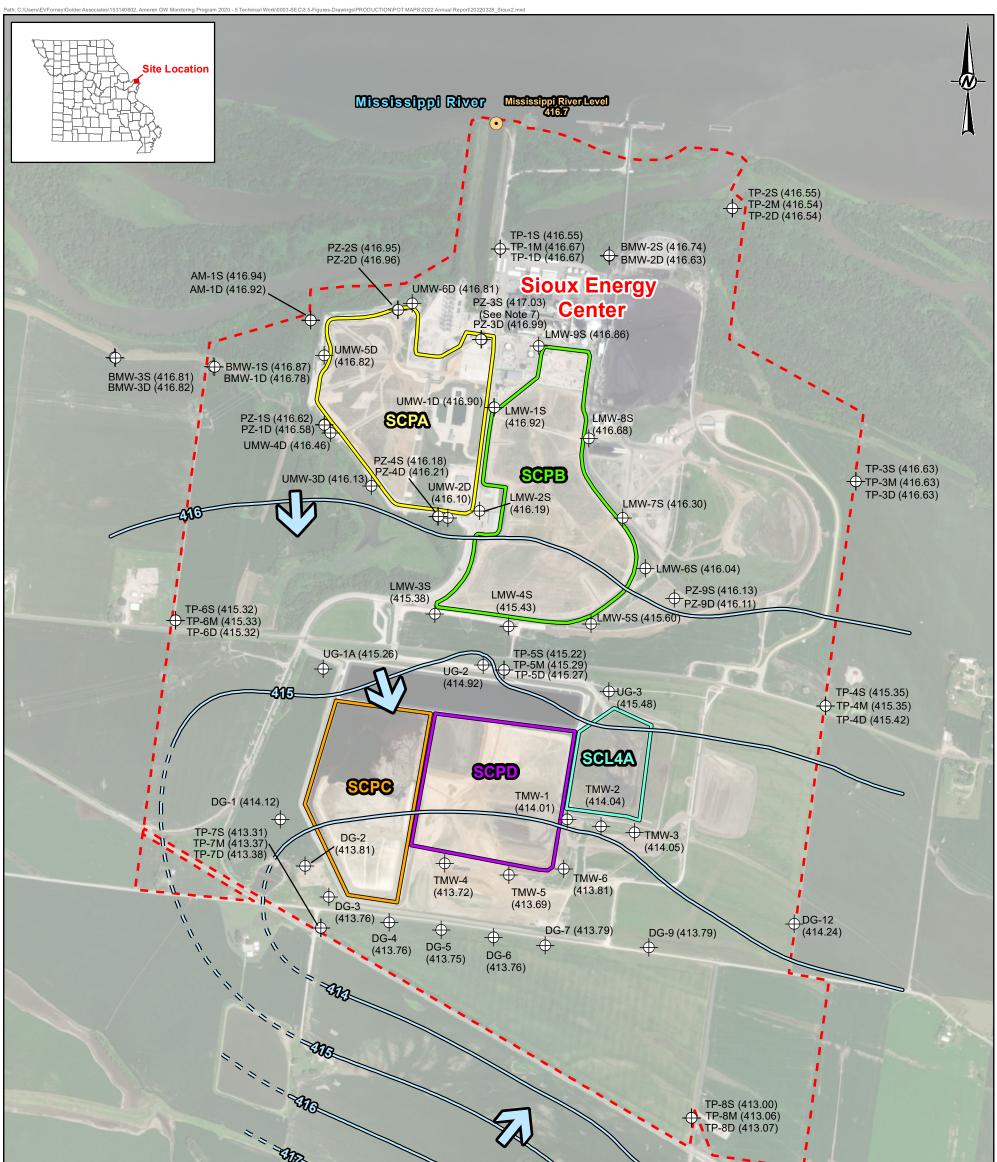


APPENDIX C

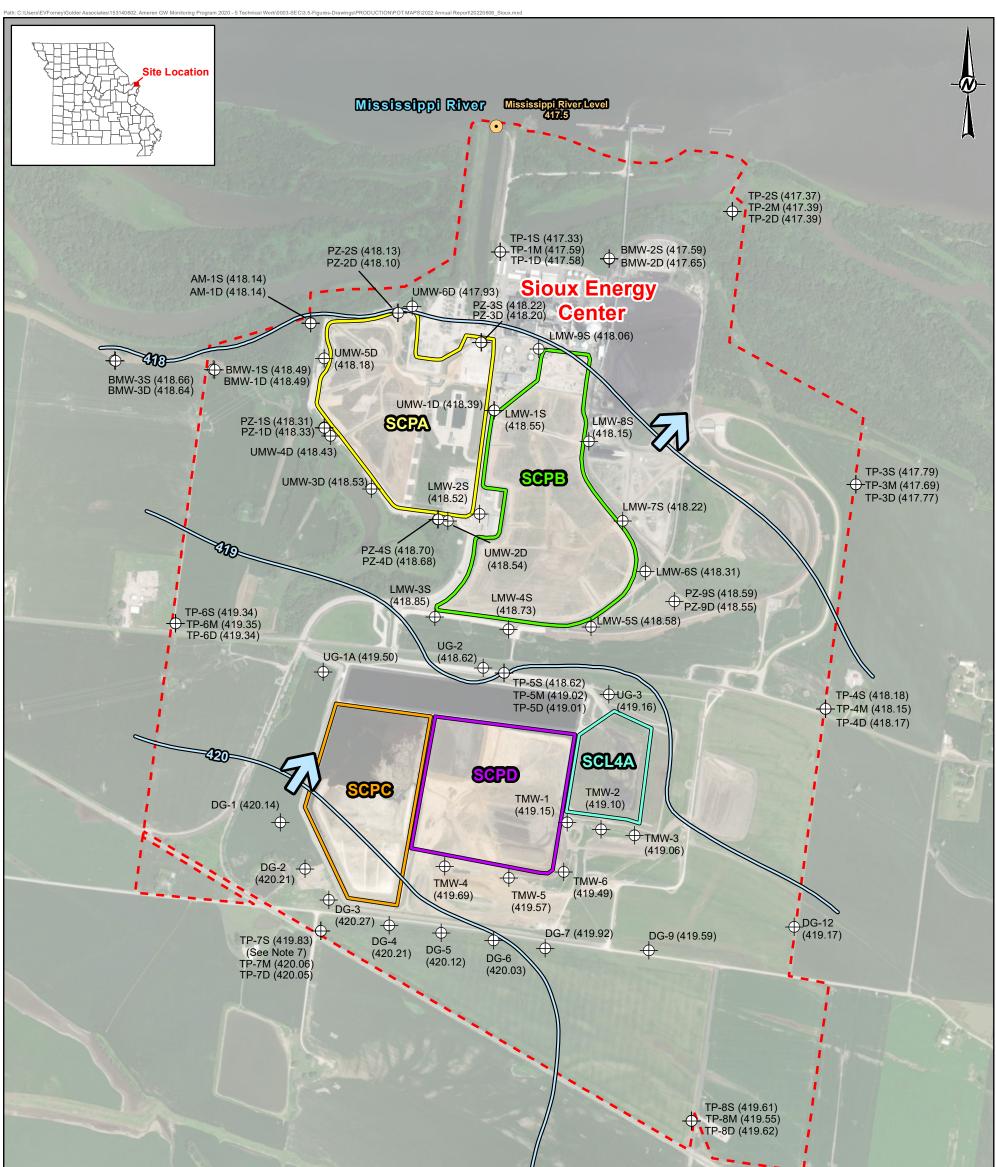
# 2022 Potentiometric Surface Maps



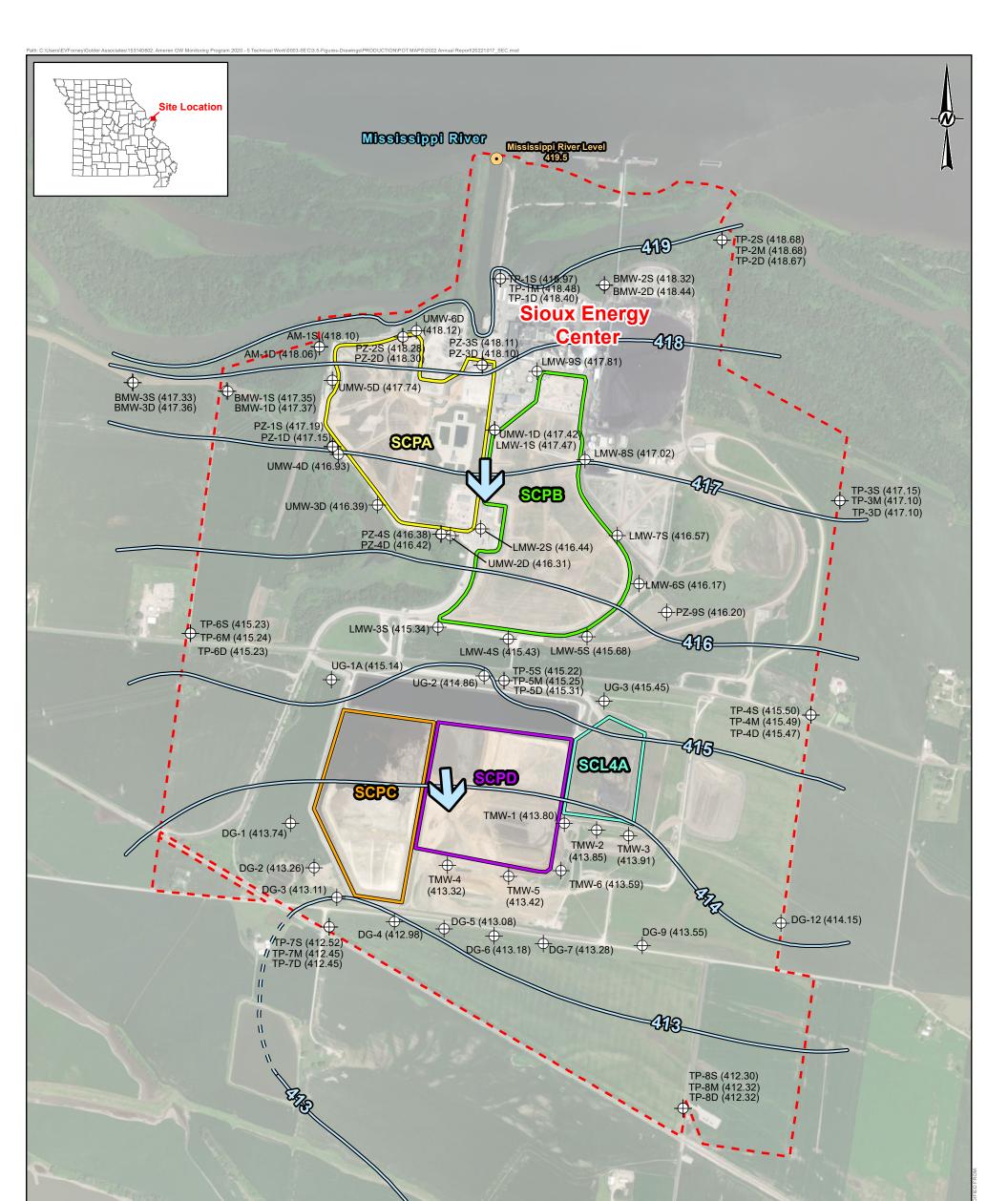
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Miss	ES DUDI RAVOR	Emated Missouri River Level 413.9 Source: Esri, Maxar, GeoEy IGN, and the GIS User Con	ye, Earthstar Geographics, CNES/Airb	ous DS, USDA, USGS, AeroGRID,
LEGEND Sioux Energy Center Property Boundary	Groundwater Elevation Contour (FT MSL)	NOTES	CLIENT AMEREN MISSOURI SIOUX ENERGY CENTER	<b>Ameren</b>
CCR Units SCPA - Bottom Ash Surface Impoundment	Groundwater Elevation Contour (FT MSL)	<ol> <li>GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.</li> <li>MISSOURI RIVER ELEVATION ESTIMATED BASED ON NEARBY UNITED STATES GEOLOGICAL SURVEY (USGS) RIVER GAUGING LOCATIONS.</li> <li>MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.</li> </ol>	PROJECT CCR GROUNDWATER MONITOR	RING PROGRAM
	Elevation Contour (FT MS	L) 6.) WFGD - WET FLU GAS DESULFURIZATION.	TITLE FEBRUARY 7, 2022 POTENTION	METRIC SURFACE MAP
SCPB - Fly Ash Surface Impoundment SCPC - WFGD Surface	Ground/Surface Water Measurement Locations	REFERENCES		
SCPC - WFGD Surface	Measurement Locations  River Gauge Location	REFERENCES 1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL ND 5 CENTRAL 2014	L CONSULTANT	YYYY-MM-DD 2022-12-27
SCPC - WFGD Surface	Measurement Locations	<ol> <li>AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.</li> <li>COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS</li> </ol>	L CONSULTANT	YYYY-MM-DD         2022-12-27           PREPARED         GTM
Impoundment SCPC - WFGD Surface Impoundment SCL4A - Dry CCR Disposal	Measurement Locations River Gauge Location Monitoring Well or	1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.		
Impoundment SCPC - WFGD Surface Impoundment SCL4A - Dry CCR Disposal Area Proposed SCPD - WFGD	Measurement Locations           •         River Gauge Location           •         Monitoring Well or Piezometer           •         Groundwater Flow	<ol> <li>AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.</li> <li>COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.</li> <li>USGS NATIONAL WATER INFORMATION SYSTEM, USGS GAUGES 06935966</li> </ol>		PREPARED GTM DESIGN JSI



Misso	THE THE NOT EXTRON	Estimated Missouri RiverLevel (18:3) Source: Esri, Maxar, GeoEye, Earthstar Ge IGN, and the GIS User Community	eographics, CNES/Airbus DS, USDA, USGS, AeroGRID,
LEGEND		NOTES	
Sioux Energy Center Property Boundary CCR Units SCPA - Bottom Ash Surface Impoundment SCPB - Fly Ash Surface Impoundment SCPC - WFGD Surface Impoundment SCL4A - Dry CCR Disposal Area	Groundwater Elevation Contour (FT MSL) Groundwater Elevation Contour (FT MSL) = = Inferred Groundwater Elevation Contour (FT MSL) Ground/Surface Water Measurement Locations Niter Gauge Location Monitoring Well or Piezometer	ABOVE MEAN SEA LEVEL (F1 MSL). 3.) GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER. 4.) MISSOURI RIVER ELEVATION MEASUREMENTS OBTAINED BY GOLDER. 5.) MISSISSIPPI RIVER USCAN INTED BASED ON NEARBY UNITED 5.) MISSISSIPPI RIVER USCAN IN ROVIDED BY AMEREN MISSOURI. 6.) WFGD - WET FLUE GAS DESULFURIZATION. 7.) DZ 26 NOT USED IN DOTEDUED IN DOTEDUE ON PROCEMAD. TITLE	ISSOURI RGY CENTER  NDWATER MONITORING PROGRAM  2022 POTENTIOMETRIC SURFACE MAP  YYYY-MM-DD 2022-12-27 PREPARED JSI
Proposed SCPD - WFGD	Groundwater Flow Direction	3.) USGS NATIONAL WATER INFORMATION SYSTEM, USGS GAUGES 06935965	GOLDER DESIGN JSI
Surface Impoundment		(ST. CHARLES), 07010000 (ST. LOUIS), 05587498 (ALTON), GRAFTON (05587450).	REVIEW BTT
		0 500 1,000 1,500 2,000	APPROVED MNH
		Feet PROJECT No. 153140604	PHASE FIGURE 0003 C2



Misso	Cont Ribrer	Estimated Missouri River Level 4202 Source: Esri, Maxar, GeoEye IGN, and the GIS User Comm	e, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID,
LEGEND Sioux Energy Center Property Boundary CCR Units SCPA - Bottom Ash Surface	Groundwater Elevation Contour (FT MSL) Groundwater Elevation Contour (FT MSL)	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.	CLIENT AMEREN MISSOURI SIOUX ENERGY CENTER PROJECT CCR GROUNDWATER MONITORING PROGRAM
Impoundment SCPB - Fly Ash Surface Impoundment SCPC - WFGD Surface SCPC - WFGD Surface	= = Inferred Groundwater Elevation Contour (FT MSL Ground/Surface Water Measurement Locations	5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.	TITLE JUNE 6, 2022 POTENTIOMETRIC SURFACE MAP
Impoundment SCL4A - Dry CCR Disposal Area	River Gauge Location     Monitoring Well or     Piezometer	MAP, FEBRUARY 2011. 2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS	CONSULTANT         YYYY-MM-DD         2022-12-27           PREPARED         GTM
Proposed SCPD - WFGD Surface Impoundment	Groundwater Flow Direction	2,401 FEET. 3.) USGS NATIONAL WATER INFORMATION SYSTEM, USGS GAUGES 06935965 (ST. CHARLES), 07010000 (ST. LOUIS), 05587498 (ALTON), GRAFTON (05587450).	SOLDER         DESIGN         JSI           REVIEW         ETF
			APPROVED         MNH           PROJECT No.         PHASE         FIGURE           153140604         0003         C3



#### **Estimated Mis** iri River 413.1

#### LEGEND

 Sioux Energy Center
 Property Boundary

#### CCR Units

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Impoundment
SCPB - Fly As

CPB - Fly Ash Surface Impoundment SCPC - WFGD Surface

SCPA - Bottom Ash Surface

Missouri River

MSL)

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Ground/Surface Water Measurement Locations

Groundwater Elevation Contour (FT

Groundwater Elevation Contour (FT MSL)

Inferred Groundwater

River Gauge Location

Monitoring Well or

Piezometer Groundwater Flow

Direction

Elevation Contour (FT MSL)



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Proposed SCPD - WFGD Surface Impoundment

## NOTES

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 ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
 GROUNDWATER AND SURFACE WATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FT MSL). GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
 MISSOURI RIVER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
 MISSOURI RIVER ELEVATION ESTIMATED BASED ON NEARBY UNITED STATES GEOLOGICAL SURVEY (USGS) RIVER GAUGING LOCATIONS.

5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI. 6.) WFGD - WET FLUE GAS DESULFURIZATION.

#### REFERENCES

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL CONSUL 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)



#### CLIENT AMEREN MISSOURI SIOUX ENERGY CENTER

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID,



IGN, and the GIS User Community

CCR GROUNDWATER MONITORING PROGRAM

TITLE

#### **OCTOBER 17, 2022 POTENTIOMETRIC SURFACE MAP**

CONSULTANT		YYYY-MM-DD	2022-12-27	
		PREPARED	ETF	
<b>\\\)</b> GOLDER		DESIGN	JSI	
		REVIEW	RJF	
		APPROVED	MNH	
PROJECT No. 153140604	PHASE 0003B			FIGURE

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