REPORT

2024 Annual Groundwater Monitoring and Corrective Action Report

LCL1 – Utility Waste Landfill Cell 1, Labadie Energy Center, Franklin County, Missouri, USA

January 31, 2025

Project Number: 23007-24

Submitted to:

Ameren Missouri
1901 Chouteau Avenue
St. Louis, Missouri 63103

Submitted by:

Rocksmith Geoengineering, LLC
2320 Creve Coeur Mill Rd
Maryland Heights, MO 63043

EXECUTIVE SUMMARY AND STATUS OF THE LCL1 GROUNDWATER MONITORING PROGRAM

This annual report was developed to meet the requirements of United States Environmental Protection Agency (USEPA) 40 CFR Part 257 “Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule” (the CCR Rule). The CCR Rule requires owners or operators of existing CCR units to produce an Annual Groundwater Monitoring and Corrective Action Report (Annual Report) each year (§§ 257.90(e)). Ameren Missouri (Ameren) has determined that the Utility Waste Landfill (UWL) at the Labadie Energy Center (LEC) is subject to the requirements of the CCR Rule. The UWL currently only operates LCL1 (Cell 1), which is an on-site landfill cell and manages Coal Combustion Residuals (CCR) from the facility. This Annual Report for the LCL1 describes CCR Rule groundwater monitoring activities from January 1, 2024 through December 31, 2024 including verification results related to late 2023 sampling.

Throughout 2024, the LCL1 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. SSIs were verified in the February 2024 sampling event associated with the November 2023 sampling event. There were no SSIs observed during the May 2024 sampling event. A summary of the SSIs for the past year is provided in **Table 1**.

Table 1 - Summary of LCL1 Sampling Events, Previous Year Verification, and Statistical Evaluations

Event Name	Type of Event and Sampling Dates	Laboratory Analytical Data Receipt	Parameters Collected	Verified SSIs	SSI Determination Date	ASD Completion Date
November 2023 Sampling Event	Detection Monitoring, November 16-17, 2023	January 25, 2024	Appendix III, Major Cations and Anions	**Calcium:** TMW-2 **Chloride:** TMW-2 **Sulfate:** TMW-2	April 24, 2024	July 23, 2024
	Verification Sampling, February 12, 2024	February 28, 2024	Detected Appendix III parameters (See Note 1)			
May 2024 Sampling Event	Detection Monitoring, May 20-23, 2024	June 26, 2024	Appendix III, Major Cations and Anions	None	September 24, 2024	NA
	No Verification Sampling was required. No initial exceedances were observed in the May 2024 sampling event.					
October 2024 Sampling Event	Detection Monitoring October 28-31, 2024	December 23, 2024	Appendix III, Major Cations and Anions	To be determined after statistical analysis and Verification Sampling are completed in 2025.		

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 November 2023 sampling event and is discussed further in this Annual Report.

There were no changes made to the monitoring system in 2024 with no new wells being installed or decommissioned.

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1.0 INSTALLATION OR DECOMISSIONING OF MONITORING WELLS

In accordance with the CCR Rule, a groundwater monitoring system has been installed to monitor the LCL1. The groundwater monitoring system consists of six groundwater monitoring wells screened in the uppermost aquifer and is displayed in **Figure 1**. No new monitoring wells were installed or decommissioned in 2024 as a part of the CCR Rule monitoring program for the LCL1. For more information on the groundwater monitoring network, details are provided in the previous Annual Groundwater Monitoring Reports for the LCL1.

2.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION

The following sections discuss the sampling events completed for the LCL1 CCR Unit in 2024. **Table 2** below provides a summary of the groundwater samples collected in 2024 including the number of samples, the date of sample collection, and the monitoring program.

Table 2 – Summary of Groundwater Sampling Dates

Sampling Event	Groundwater Monitoring Wells						Monitoring Program
	BMW-1S	BMW-2S	MW-26	TMW-1	TMW-2	TMW-3	
	Date of Sample Collection						
February 2024 Verification Sampling	-	-	2/12/2024	2/12/2024	2/12/2024	2/12/2024	Detection
May 2024 Sampling Event	5/23/2024	5/23/2024	5/22/2024	5/20/2024	5/20/2024	5/20/2024	Detection
October 2024 Sampling Event	10/28/2024	10/28/2024	10/30/2024	10/31/2024	10/31/2024	10/30/2024	Detection
Total Number of Samples Collected	2	2	3	3	3	3	NA

Notes:
1) Detection Monitoring events tested for Appendix III Parameters.
2) Only analytes/wells that were detected above the prediction limit were tested during verification sampling.
3) No verification sampling associated with the May 2024 sampling event was required.
4) "-" No sample collected.
5) NA – Not applicable.
6) MW-26 was re-sampled in February 2024 following initial exceedances identified in November 2023. This occurred prior to updating prediction limits in April 2024 using data through August 2023. Using updated limits, the November 2023 results were no longer exceedances and therefore MW-26 is not included in **Table 3**.

2.1 Detection Monitoring Program

A Detection Monitoring groundwater sampling event was completed November 16-17, 2023. Verification sampling and the statistical analysis to evaluate for SSIs for the November 2023 event were not completed until 2024 and are therefore included in this report. Prior to the analysis of November 2023 sampling results, intrawell prediction limits were updated in accordance with the Statistical Analysis Plan (SAP) for the LCL1. Detection of Appendix III analytes above their respective prediction limits triggered a verification sampling event, which was completed on February 12, 2024, and verified SSIs at monitoring well TMW-2. **Table 3** summarizes the results of the statistical analysis of the November 2023 Detection Monitoring event. Laboratory analytical data from the February 2024 verification sampling event through the October 2024 sampling event 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 Alternative Source Demonstration (ASD) was completed for these SSIs and is provided in **Appendix B**. This ASD demonstrates that SSIs at the monitoring wells around LCL1 are not caused by the LCL1 CCR unit and the LCL1 CCR unit remains in Detection Monitoring.

Detection Monitoring samples were collected May 20-23, 2024, and testing was completed for all Appendix III analytes, as well as major cations and anions. There were no initial exceedances for the May 2024 event; therefore, no verification sampling was necessary, and no ASD was produced. **Table 4** summarizes the results and statistical analysis of the May 2024 Detection Monitoring event. Laboratory analytical data from this sampling event is included in **Appendix A**.

A Detection Monitoring sampling event was completed October 28-31, 2024 and testing was performed for all Appendix III analytes, as well as major cations and anions. The statistical analysis to evaluate for SSIs in October 2024 data was not completed in 2024 and will be provided in the 2025 Annual Report. **Table 5** summarizes the results of the October 2024 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 Missouri River. Water flows into and out of the alluvial aquifer because of fluctuating river water levels that produce “bank recharge” and “bank discharge” conditions. Overall, based on the potentiometric surface maps, a general flow direction from the south/southwest (bluffs area) to the north/northeast (Missouri River) is observed under normal river conditions. However, during periods of high river levels, groundwater flow can temporarily reverse, as was observed in May 2024. During these times of high river stage and temporary flow direction changes, horizontal groundwater gradients generally decrease, and little net movement of groundwater occurs. Based on quarterly water level measurements, groundwater across the LEC exhibited typical flow towards the Missouri River throughout much of 2024, except in May, when flow was directed away from the river to the southeast.

Groundwater flow direction and hydraulic gradient were estimated for the alluvial aquifer wells at the Labadie Energy Center (LEC) using commercially available software to evaluate data since 2016. Results from this assessment indicate that while groundwater flow direction is variable, the overall net groundwater flow in the alluvial aquifer at the LEC is from the bluffs toward the river. Horizontal gradients calculated by the program range from 0.0001 to 0.0009 feet/foot with an estimated net annual groundwater movement of approximately 19 feet per year in the prevailing downgradient direction.

2.3 Sampling Issues

No notable sampling issues were encountered at the LCL1 in 2024.

3.0 ACTIVITIES PLANNED FOR 2025

Detection Monitoring is scheduled to continue on a semi-annual basis in the second and fourth quarters of 2025. Statistical analysis of the October 2024 Detection Monitoring data will be completed in 2025 and will be included in the 2025 Annual Report. As outlined in the Statistical Analysis plan for the site, updates to the statistical limits should be completed once four to eight new sample results are available. After the first semi-annual sampling event in 2025, there will be at least 4 new readings for each Appendix III parameter. Therefore, background updates are planned to be completed in 2025.

Tables

Table 3
November 2023 Detection Monitoring Results
LCL1 - Utility Waste Landfill Cell 1
Labadie Energy Center, Franklin County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-2S	Prediction Limit MW-26	MW-26	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
November 2023 Detection Monitoring Event											
DATE	NA	11/16/2023	11/16/2023	NA	11/17/2023	NA	11/17/2023	NA	11/16/2023	NA	11/17/2023
pH	SU	6.71	7.04	6.685-7.272	7.02	6.58-7.16	7.02	6.547-7.255	6.83	6.602-7.053	6.94
BORON, TOTAL	µg/L	113	50.8 J	99.63	69.9 J	124.4	108	132.9	156	137.4	114
CALCIUM, TOTAL	µg/L	208,000	150,000	155,608	147,000	183,798	160,000	205,487	254,000	209,613	145,000
CHLORIDE, TOTAL	mg/L	5.3	2.8	14.49	10.0	5.559	25.6	7.142	19.9	9.478	3.3
FLUORIDE, TOTAL	mg/L	ND	ND	0.24	ND	0.2888	ND	0.2521	ND	0.2743	ND
SULFATE, TOTAL	mg/L	72.4	38.3	41.04	37.2	128	55.4	115.5	231	101	44.8
TOTAL DISSOLVED SOLIDS	mg/L	692	471	564.1	434	733.5	485	815.4	568 J	820.6	1,100
February 2024 Verification Sampling Event											
DATE	NA						2/12/2024		2/12/2024		2/12/2024
pH	SU										
BORON, TOTAL	µg/L								131		
CALCIUM, TOTAL	µg/L								231,000		
CHLORIDE, TOTAL	mg/L						3.8		11.6		
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L								165		
TOTAL DISSOLVED SOLIDS	mg/L										561

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. ND - Constituent was analyzed but was not detected above the Method Detection Limit (MDL) or the adjusted Practical Quantitation Limit (PQL) based on data validation and is considered a non-detect. Values displayed as ND.
5. Prediction Limits calculated using Sanitas Software.
6. Values highlighted in yellow indicate a Statistically Significant Increase (SSI).
7. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).
8. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.

Prepared By: GTM
Checked By: ANT
Reviewed By: JSI

Table 4
May 2024 Detection Monitoring Results
LCL1 - Utility Waste Landfill Cell 1
Labadie Energy Center, Franklin County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-2S	Prediction Limit MW-26	MW-26	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
May 2024 Detection Monitoring Event											
DATE	NA	5/23/2024	5/23/2024	NA	5/22/2024	NA	5/20/2024	NA	5/20/2024	NA	5/20/2024
pH	SU	6.72	6.98	6.685-7.272	7.08	6.58-7.16	6.97	6.547-7.255	6.95	6.602-7.053	6.89
BORON, TOTAL	µg/L	92.3 J	53.5 J	99.63	78.7 J	124.4	110	132.9	93.9 J	137.4	83.6 J
CALCIUM, TOTAL	µg/L	193,000	128,000	155,608	132,000	183,798	162,000	205,487	187,000	209,613	124,000
CHLORIDE, TOTAL	mg/L	6.9	2.9	14.49	7.2	5.559	2.9	7.142	5.4	9.478	2.4
FLUORIDE, TOTAL	mg/L	ND	ND	0.24	ND	0.2888	ND	0.2521	ND	0.2743	ND
SULFATE, TOTAL	mg/L	65.6	41.9	41.04	30.4	128	61.4	115.5	51.4	101	25.1
TOTAL DISSOLVED SOLIDS	mg/L	675	502	564.1	487	733.5	631	815.4	649	820.6	406

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. ND - Constituent was analyzed but was not detected above the Method Detection Limit (MDL) or the adjusted Practical Quantitation Limit (PQL) based on data validation and is considered a non-detect. Values displayed as ND.
5. Prediction Limits calculated using Sanitas Software.
6. There were no initial exceedances from the May 2024 Detection Monitoring sampling event, therefore no Verification Sampling was conducted.

Prepared By: JTA
Checked By: JTR
Reviewed By: MNH

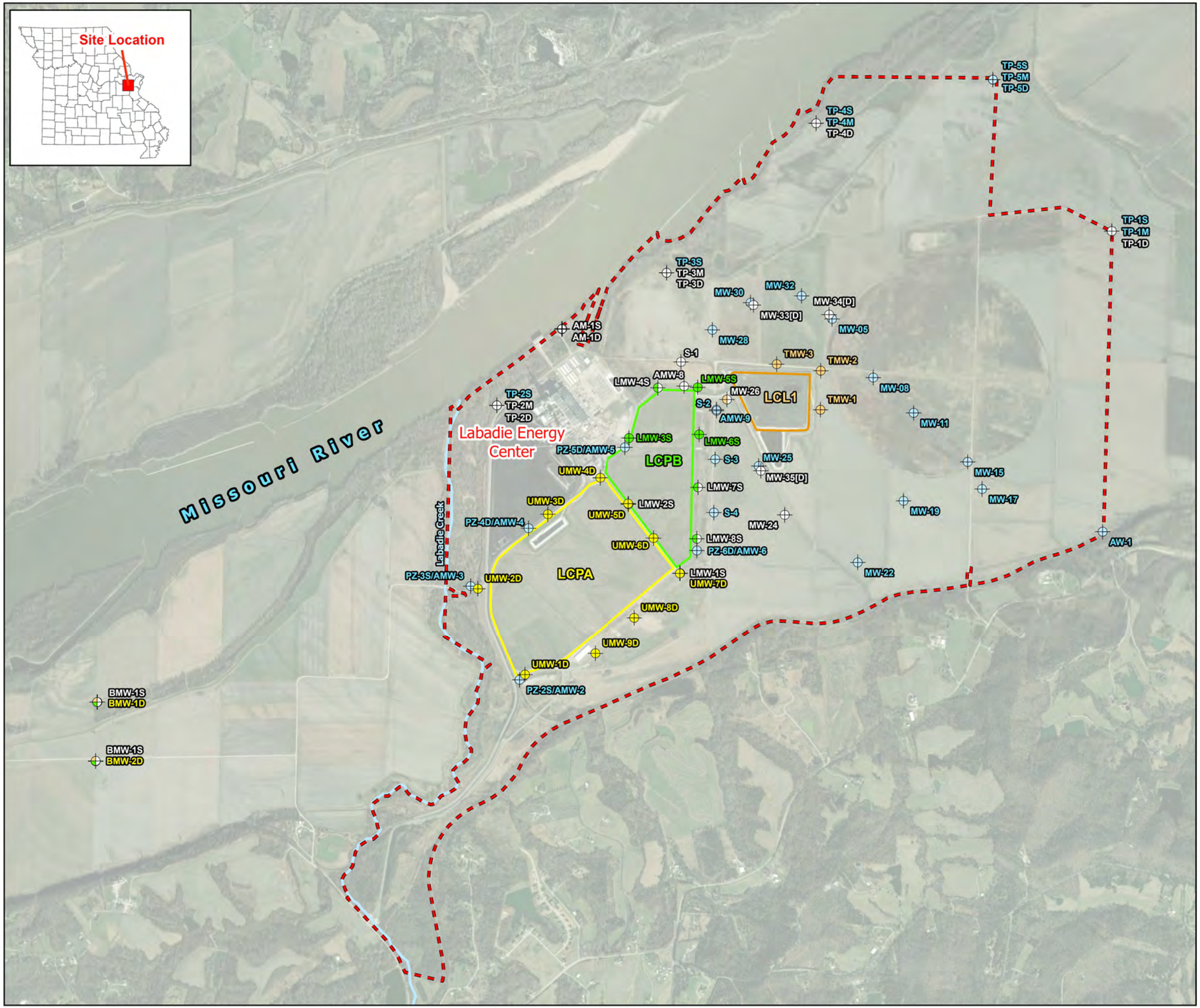
Table 5
October 2024 Detection Monitoring Results
LCL1 - Utility Waste Landfill Cell 1
Labadie Energy Center, Franklin County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS			
ANALYTE	UNITS	BMW-1S	BMW-2S	MW-26	TMW-1	TMW-2	TMW-3
October 2024 Detection Monitoring Event							
DATE	NA	10/28/2024	10/28/2024	10/30/2024	10/31/2024	10/31/2024	10/30/2024
pH	SU	6.47	6.92	6.67	6.82	6.73	6.68
BORON, TOTAL	µg/L	84.8 J	45.4 J	61.4 J	121	126	89.4 J
CALCIUM, TOTAL	µg/L	202,000	121,000	157,000	159,000	216,000	124,000
CHLORIDE, TOTAL	mg/L	4.5	1.8	17.7	3.7	10.3 J	2.4
FLUORIDE, TOTAL	mg/L	ND	ND	ND	ND	ND	ND
SULFATE, TOTAL	mg/L	95.1	13.7	28.5	55.0	95.7	27.3
TOTAL DISSOLVED SOLIDS	mg/L	744	436	572	619	769	428

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

Prepared By: JTR
Checked By: VAH
Reviewed By: MNH

Figures



TITLE

LABADIE ENERGY CENTER GROUNDWATER MONITORING PROGRAMS AND MONITORING WELL LOCATION MAP

Legend

Approximate Property Boundary

Labadie Energy Center CCR Units

- LCPA - Closed Bottom Ash Surface Impoundment
- LCPB - Closed Fly Ash Surface Impoundment
- LCL1 - Utility Waste Landfill Cell 1

Monitoring Well Network

- Corrective Action Monitoring Well
- LCPA Monitoring Well
- LCPB Monitoring Well
- LCPB and Corrective Action Monitoring Well
- LCL1 Monitoring Well
- LCL1 and Corrective Action Monitoring Well
- Background Well Used for LCPA, Corrective Action, LCPB, and LCL1 Monitoring
- Monitoring Well Used for Water Level Elevation Measurements Only

NOTES

1. All locations and boundaries are approximate.

REFERENCES

1. Zahner and Associates, Inc. 2016. Lot Consolidation Plat of "Labadie Energy Center" - Prepared for Ameren Missouri. Revised June 15, 2016.
2. USGS (United States Geological Survey), National Water Information System, USGS Gauge 06935550 Missouri River near Labadie, MO.

0 500 1,000 2,000 3,000 4,000 Feet

PROJECT
CCR RULE GROUNDWATER MONITORING PROGRAM

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

ROCKSMITH GEOENGINEERING

DESIGN	JSI	YYYY-MM-DD	2024-01-08
PREPARED	JSI	PROJECT No	23007-24
REVIEW	GTM		
APPROVED	MNH		

FIGURE 1

Path: C:\Users\JackRasmussen\Rocksmith Geoengineering LLC\23007 - Ameren GW - Documents\400 - Drawings, Figures\4.1 LEC\4.1.2 - Production\Other Maps\Annual Report Figure 1.aprx

Appendix A
Laboratory Analytical Data

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

February 28, 2024

Mark Haddock
Rocksmith Geoengineering, LLC.
2320 Creve Coeur Mill Road
Maryland Heights, MO 63043

RE: Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on February 14, 2024. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

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

Sincerely,

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

Enclosures

cc: Jeffrey Ingram, Rocksmith Geoengineering, LLC.
Lisa Meyer, Ameren
Grant Morey, Rocksmith Geoengineering, LLC.

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 88-00679
Illinois Certification #: 2000302023-5
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 #: T104704407-23-17
Utah Certification #: KS000212022-12
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60447272001	**L-MW-26**	Water	02/12/24 12:58	02/14/24 05:44
60447272002	**L-TMW-1**	Water	02/12/24 14:01	02/14/24 05:44
60447272003	**L-TMW-2**	Water	02/12/24 15:22	02/14/24 05:44
60447272004	**L-TMW-3**	Water	02/12/24 16:20	02/14/24 05:44
60447272005	**L-UWL-DUP-1**	Water	02/12/24 00:00	02/14/24 05:44
60447272006	**L-UWL-FB-1**	Water	02/12/24 14:05	02/14/24 05:44

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60447272001	**L-MW-26**	EPA 200.7	JXD	2	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	RKA	2	PASI-K
60447272002	**L-TMW-1**	EPA 200.7	JXD	2	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	RKA	2	PASI-K
60447272003	**L-TMW-2**	EPA 200.7	JXD	2	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	RKA	2	PASI-K
60447272004	**L-TMW-3**	SM 2540C	KVI	1	PASI-K
60447272005	**L-UWL-DUP-1**	EPA 200.7	JXD	2	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	RKA	2	PASI-K
60447272006	**L-UWL-FB-1**	EPA 200.7	JXD	2	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	RKA	2	PASI-K

PASI-K = Pace Analytical Services - Kansas City

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

Sample: L-MW-26 **Lab ID: 60447272001** Collected: 02/12/24 12:58 Received: 02/14/24 05:44 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**67.0J**	ug/L	100	6.4	1	02/19/24 11:41	02/21/24 14:05	7440-42-8	
Calcium	**138000**	ug/L	200	26.9	1	02/19/24 11:41	02/21/24 14:05	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**478**	mg/L	10.0	10.0	1		02/19/24 10:14		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**8.3**	mg/L	1.0	0.53	1		02/27/24 17:48	16887-00-6	
Sulfate	**28.6**	mg/L	5.0	2.8	5		02/27/24 19:02	14808-79-8	M1

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

Sample: L-TMW-1 **Lab ID: 60447272002** Collected: 02/12/24 14:01 Received: 02/14/24 05:44 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**114**	ug/L	100	6.4	1	02/19/24 11:41	02/21/24 14:18	7440-42-8	
Calcium	**173000**	ug/L	200	26.9	1	02/19/24 11:41	02/21/24 14:18	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**598**	mg/L	10.0	10.0	1		02/19/24 10:17		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.8**	mg/L	1.0	0.53	1		02/27/24 19:52	16887-00-6	
Sulfate	**60.0**	mg/L	10.0	5.5	10		02/28/24 10:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

Sample: L-TMW-2 **Lab ID: 60447272003** Collected: 02/12/24 15:22 Received: 02/14/24 05:44 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**131**	ug/L	100	6.4	1	02/19/24 11:41	02/21/24 14:20	7440-42-8	
Calcium	**231000**	ug/L	200	26.9	1	02/19/24 11:41	02/21/24 14:20	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**935**	mg/L	13.3	13.3	1		02/19/24 10:18		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**11.6**	mg/L	2.0	1.1	2		02/27/24 20:04	16887-00-6	
Sulfate	**165**	mg/L	20.0	11.0	20		02/27/24 20:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

Sample: L-TMW-3 **Lab ID: 60447272004** Collected: 02/12/24 16:20 Received: 02/14/24 05:44 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**561**	mg/L	10.0	10.0	1		02/19/24 10:18		

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

Sample: L-UWL-DUP-1 **Lab ID: 60447272005** Collected: 02/12/24 00:00 Received: 02/14/24 05:44 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**131**	ug/L	100	6.4	1	02/19/24 11:41	02/21/24 14:22	7440-42-8	
Calcium	**233000**	ug/L	200	26.9	1	02/19/24 11:41	02/21/24 14:22	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**889**	mg/L	13.3	13.3	1		02/19/24 10:18		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**11.8**	mg/L	1.0	0.53	1		02/27/24 20:54	16887-00-6	
Sulfate	**159**	mg/L	20.0	11.0	20		02/28/24 10:27	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

Sample: L-UWL-FB-1 **Lab ID: 60447272006** Collected: 02/12/24 14:05 Received: 02/14/24 05:44 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**<6.4**	ug/L	100	6.4	1	02/19/24 11:41	02/21/24 14:24	7440-42-8	
Calcium	**41.8J**	ug/L	200	26.9	1	02/19/24 11:41	02/21/24 14:24	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		02/19/24 10:19		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**<0.53**	mg/L	1.0	0.53	1		02/27/24 21:06	16887-00-6	
Sulfate	**<0.55**	mg/L	1.0	0.55	1		02/27/24 21:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

QC Batch: 883662
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60447272001, 60447272002, 60447272003, 60447272005, 60447272006

METHOD BLANK: 3497914 Matrix: Water
Associated Lab Samples: 60447272001, 60447272002, 60447272003, 60447272005, 60447272006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<6.4	100	6.4	02/21/24 13:52	
Calcium	ug/L	<26.9	200	26.9	02/21/24 13:52	

LABORATORY CONTROL SAMPLE: 3497915

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	941	94	85-115	
Calcium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3497916 3497917

Parameter	Units	60447271001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	378	1000	1000	1310	1320	93	94	70-130	1	20	
Calcium	ug/L	154000	10000	10000	158000	161000	40	78	70-130	2	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3497918 3497919

Parameter	Units	60447272001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	67.0J	1000	1000	1020	1030	95	96	70-130	0	20	
Calcium	ug/L	138000	10000	10000	150000	150000	115	116	70-130	0	20	

MATRIX SPIKE SAMPLE: 3497920

Parameter	Units	60447144002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	171	1000	1140	97	70-130	
Calcium	ug/L	85300	10000	104000	187	70-130	M1

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

QC Batch: 883635 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60447272001, 60447272002, 60447272003, 60447272004, 60447272005, 60447272006

METHOD BLANK: 3497855 Matrix: Water
Associated Lab Samples: 60447272001, 60447272002, 60447272003, 60447272004, 60447272005, 60447272006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	02/19/24 10:14	

LABORATORY CONTROL SAMPLE: 3497856

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	955	96	80-120	

SAMPLE DUPLICATE: 3497857

Parameter	Units	60447272001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	478	468	2	10	

SAMPLE DUPLICATE: 3497858

Parameter	Units	60447308006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	335	348	4	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

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

QUALITY CONTROL DATA

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

QC Batch: 884260
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60447272001, 60447272002, 60447272003, 60447272005, 60447272006

METHOD BLANK: 3500469 Matrix: Water
Associated Lab Samples: 60447272001, 60447272002, 60447272003, 60447272005, 60447272006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	02/27/24 08:52	
Sulfate	mg/L	<0.55	1.0	0.55	02/27/24 08:52	

METHOD BLANK: 3502717 Matrix: Water
Associated Lab Samples: 60447272001, 60447272002, 60447272003, 60447272005, 60447272006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	02/28/24 08:13	
Sulfate	mg/L	<0.55	1.0	0.55	02/28/24 08:13	

LABORATORY CONTROL SAMPLE: 3500470

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

LABORATORY CONTROL SAMPLE: 3502718

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3500471 3500472

Parameter	Units	60447272001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	8.3	5	5	13.4	13.6	102	107	80-120	2	15	
Sulfate	mg/L	28.6	25	25	53.5	61.5	100	131	80-120	14	15	M1

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

SAMPLE DUPLICATE: 3500473

Parameter	Units	60447272001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	8.3	8.3	0	15	
Sulfate	mg/L	28.6	27.8	3	15	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

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

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LCL1-VERIFICATION SAMP.
Pace Project No.: 60447272

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60447272001	**L-MW-26**	EPA 200.7	883662	EPA 200.7	883675
60447272002	**L-TMW-1**	EPA 200.7	883662	EPA 200.7	883675
60447272003	**L-TMW-2**	EPA 200.7	883662	EPA 200.7	883675
60447272005	**L-UWL-DUP-1**	EPA 200.7	883662	EPA 200.7	883675
60447272006	**L-UWL-FB-1**	EPA 200.7	883662	EPA 200.7	883675
60447272001	**L-MW-26**	SM 2540C	883635		
60447272002	**L-TMW-1**	SM 2540C	883635		
60447272003	**L-TMW-2**	SM 2540C	883635		
60447272004	**L-TMW-3**	SM 2540C	883635		
60447272005	**L-UWL-DUP-1**	SM 2540C	883635		
60447272006	**L-UWL-FB-1**	SM 2540C	883635		
60447272001	**L-MW-26**	EPA 300.0	884260		
60447272002	**L-TMW-1**	EPA 300.0	884260		
60447272003	**L-TMW-2**	EPA 300.0	884260		
60447272005	**L-UWL-DUP-1**	EPA 300.0	884260		
60447272006	**L-UWL-FB-1**	EPA 300.0	884260		

Pace	DC#_Title: ENV-FRM-LENE-0009_Sample		
	Revision: 2	Effective Date: 01/12/2022	Issued By: [illegible]

WO# : 60447272

60447272

Client Name: Rocksmith Geoenv

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

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

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

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

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

Cooler Temperature (°C): **As-read** 0.6 **Corr. Factor** -0.3 **Corrected** 0.3

Date and initials of person examining contents: PV 2/16/24

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☑No ☐N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) **LOT#:** 62180	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Qualtrax Document ID: 30468

Page 1 of 1

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company:	Rocksmith Geoengineering, LLC
Address:	5233 Roanoke Drive
	St. Charles, MO 63304
Email To:	mark.haddock@rocksmithgeo.com
Phone: 314-974-5678	Fax:
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Mark Haddock
Copy To:	Jeffery Ingram, Grant Morey
Purchase Order No.:	COC #3
Project Name:	Ameren LCL1 - Verification Sampling
Project Number:	COC#3

Section C Invoice Information:

Attention:	
Company Name:	Rocksmith
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	15856, line 1

REGULATORY AGENCY

NPDES ☑ GROUND WATER DRINKING WATER

UST RCRA OTHER

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test ↓ Y/N	Boron	Calcium	Chloride	Sulfate	Total Dissolved Solids							Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																			N	N	N	N	N	N	N	N	N	N		60447272
1	L-MW-26	WT	G			2-12-24	1258		3	2		1							✓	✓	✓	✓	✓								
2	L-TMW-1	WT	G				1401		3	2		1							✓	✓	✓	✓	✓								
3	L-TMW-2	WT	G				1522		3	2		1							✓	✓	✓	✓	✓								
4	L-TMW-3	WT	G				1620		1	1													✓								
5	L-UWL-DUP-1	WT	G				—		3	2		1							✓	✓	✓	✓	✓								
6	L-UWL-FB-1	WT	G				1405		3	2		1							✓	✓	✓	✓	✓								
7	L-UWL-MS-1	WT	G				1258		3	2		1							✓	✓	✓	✓	✓							Collected @ L-MW-26	
8	L-UWL-MSD-1	WT	G				1258		3	2		1							✓	✓	✓	✓	✓							11	
9		WT	G																												
10		WT	G																												
11		WT	G																												
12		WT	G																												

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	[signature] / Rocksmith	2-13-24	1545	[signature]	2/14	0544	0-3	X	X	X

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Grant Morey

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 02/13/24

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

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

Client: Rocksmith Geoeng Profile # 15856-1

Site: Notes

COC Line Item	Matrix	VG9H	DG9H	DG9Q	VG9U	DG9U	DG9M	DG9B	BG1U	AG1H	AG1U	AG2U	AG3S	AG4U	AG5U	JGFU	WGKU	WGDU	BP1U	BP2U	BP3U	BP1N	BP3N	BP3F	BP3S	BP3C	BP3Z	WPDU	ZPLC	Other		
1	WT																				6		3									
2																					2		1									
3																																
4																																
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

Container Codes

Glass				Plastic		Misc.	
DG9B	40mL bisulfate clear vial	WGKU	8oz clear soil jar	BP1C	1L NAOH plastic	I	Wipe/Swab
DG9H	40mL HCl amber voa vial	WGFU	4oz clear soil jar	BP1N	1L HNO3 plastic	SP5T	120mL Coliform Na Thiosulfate
DG9M	40mL MeOH clear vial	WG2U	2oz clear soil jar	BP1S	1L H2SO4 plastic	ZPLC	Ziploc Bag
DG9Q	40mL TSP amber vial	JGFU	4oz unpreserved amber wide	BP1U	1L unpreserved plastic	AF	Air Filter
DG9S	40mL H2SO4 amber vial	AG0U	100mL unores amber glass	BP1Z	1L NaOH, Zn Acetate	C	Air Cassettes
DG9T	40mL Na Thio amber vial	AG1H	1L HCl amber glass	BP2C	500mL NAOH plastic	R	Terracore Kit
DG9U	40mL amber unpreserved	AG1S	1L H2SO4 amber glass	BP2N	500mL HNO3 plastic	U	Summa Can
VG9H	40mL HCl clear vial	AG1T	1L Na Thiosulfate clear/amber glass	BP2S	500mL H2SO4 plastic		
VG9T	40mL Na Thio. clear vial	AG1U	1liter unpres amber glass	BP2U	500mL unpreserved plastic		
VG9U	40mL unpreserved clear vial	AG2N	500mL HNO3 amber glass	BP2Z	500mL NaOH, Zn Acetate	Matrix	
BG1S	1liter H2SO4 clear glass	AG2S	500mL H2SO4 amber glass	BP3C	250mL NaOH plastic		
BG1U	1liter unpres glass	AG3S	250mL H2SO4 amber glass	BP3F	250mL HNO3 plastic - field filtered	WT	Water
BG3H	250mL HCL Clear glass	AG2U	500mL unpres amber glass	BP3N	250mL HNO3 plastic	SL	Solid
BG3U	250mL Unpres Clear glass	AG3U	250mL unpres amber glass	BP3U	250mL unpreserved plastic	NAL	Non-aqueous Liquid
WGDU	16oz clear soil jar	AG4U	125mL unpres amber glass	BP3S	250mL H2SO4 plastic	OL	OIL
		AG5U	100mL unpres amber glass	BP3Z	250mL NaOH, Zn Acetate	WP	Wipe
				BP4U	125mL unpreserved plastic	DW	Drinking Water
				BP4N	125mL HNO3 plastic		
				BP4S	125mL H2SO4 plastic		
				WPDU	16oz unpresserved plstic		

Work Order Number: 604447272

Memorandum

March 27, 2024

To:	Project File Rocksmith Geoengineering, LLC	**Project Number:**	23007
CC:	Mark Haddock, Jeffrey Ingram		
From:	Grant Morey	**Email:**	Grant.Morey@Rocksmithgeo.com
RE:	**Data Validation Summary, Labadie Energy Center – LCL1 Verification – Data Package 60447272**		

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

- When a compound was detected in a sample result between the Method Detection Limit (MDL) and Practical Quantification Limit (PQL), the results were recorded at the detection value and qualified as estimates (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Rocksmith Geoengineering
Project Manager: J. Ingram
Project Name: Ameren LCL1 Verification
Project Number: 23007
Reviewer: G. Morey
Validation Date: 3/27/2024

Laboratory: Pace Analytical
SDG #: 60447272
Analytical Method (type and no.): EPA 200.7 (Total Metals); SM 2540C (TDS); EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐ EPA 903.1/904.0 (Radium 226+228)
Sample Names L-TMW-1, L-TMW-2, L-TMW-3, L-UWL-DUP-1, L-UWL-FB-1, L-MW-26

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			2/12/2024
b) Sampling team indicated?	x			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, Spec Cond, Turb, Temp, DO, ORP
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?	■			

Note Deficiencies:

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

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

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☒	☐	☐	L-UWL-DUP-1 @ L-TMW-2
b) Were field dup. precision criteria met (note RPD)?	☒	☐	☐	
c) Were lab duplicates analyzed (note original and duplicate samples)?	☒	☐	☐	See Notes
d) Were lab dup. precision criteria met (note RPD)?	☒	☐	☐	

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

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

Comments/Notes:

General:

Chloride and/or sulfate were diluted in several samples; no qualification necessary.

Field Blank:

L-UWL-FB-1 @ L-TMW-1: calcium (41.8 J). Result > RL and 10x blank, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

Duplicates:

Lab duplicate max RPD: 10%: TDS; 15%: chloride, sulfate

MS/MSD:

3497916/3497917: MS recovery low for calcium, MSD recovery and RPD within control limits, associated with sample -001, no qualification necessary.

3497920: MS recovery high for calcium, associated with unrelated sample, no qualification necessary.

3500471/3500472: MSD recovery high for sulfate, MS recovery and RPD within control limits, associated with sample -001, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason

Signature: Grant Morey Date: 3/27/2024

Pace Analytical Services, LLC
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(913)599-5665

January 07, 2025

Mark Haddock
Rocksmith Geoengineering, LLC.
2320 Creve Coeur Mill Road
Maryland Heights, MO 63043

RE: Project: AMEREN LCL1
Pace Project No.: 60453358

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory between May 22, 2024 and May 24, 2024. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

REV-1, Report revised to remove parameters not required under the CCR Rule.

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

Sincerely,

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

Enclosures

cc: Jeffrey Ingram, Rocksmith Geoengineering, LLC.
Lisa Meyer, Ameren
Grant Morey, Rocksmith Geoengineering, LLC.
Austin Nieman, Ameren

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: AMEREN LCL1
Pace Project No.: 60453358

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Arkansas Certification #: 88-00679
Illinois Certification #: 2000302023-6
Colorado Division of Oil and Public Safety
Iowa Certification #: 118
Kansas Field Laboratory Certification #: E-92587
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Missouri Inorganic Drinking Water Certification
Nevada Certification #: KS000212024-1
Oklahoma Certification #: 2023-073
Texas Certification #: T104704407-23-17
Utah Certification #: KS000212022-13

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: AMEREN LCL1
Pace Project No.: 60453358

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60453358001	**L-TMW-1**	Water	05/20/24 17:00	05/22/24 05:50
60453358002	**L-TMW-2**	Water	05/20/24 15:26	05/22/24 05:50
60453358003	**L-TMW-3**	Water	05/20/24 13:18	05/22/24 05:50
60453358004	**L-UWL-DUP-1**	Water	05/20/24 00:00	05/22/24 05:50
60453358005	**L-UWL-FB-1**	Water	05/20/24 16:44	05/22/24 05:50
60453358006	**L-UWL-MS-1**	Water	05/20/24 13:18	05/22/24 05:50
60453358007	**L-UWL-MSD-1**	Water	05/20/24 13:18	05/22/24 05:50
60453167022	**L-MW-26**	Water	05/22/24 12:01	05/24/24 05:00
60453167018	**L-BMW-1S**	Water	05/23/24 12:45	05/24/24 05:00
60453167019	**L-BMW-2S**	Water	05/23/24 09:28	05/24/24 05:00

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SAMPLE ANALYTE COUNT

Project: AMEREN LCL1
Pace Project No.: 60453358

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60453358001	**L-TMW-1**	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	SR1	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	3	PASI-K
60453358002	**L-TMW-2**	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	SR1	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	3	PASI-K
60453358003	**L-TMW-3**	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	SR1	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	3	PASI-K
60453358004	**L-UWL-DUP-1**	EPA 200.7	JXD	7	PASI-K
		SM 2320B	SR1	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	3	PASI-K
60453358005	**L-UWL-FB-1**	EPA 200.7	JXD	7	PASI-K
		SM 2320B	SR1	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	3	PASI-K
60453167022	**L-MW-26**	EPA 200.7	JXD	7	PASI-K
		SM 2320B	SR1	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	3	PASI-K
60453167018	**L-BMW-1S**	EPA 200.7	JXD	7	PASI-K
		SM 2320B	SR1	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	3	PASI-K
60453167019	**L-BMW-2S**	EPA 200.7	JXD	7	PASI-K
		SM 2320B	SR1	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60453358

Sample: L-TMW-1 **Lab ID: 60453358001** Collected: 05/20/24 17:00 Received: 05/22/24 05:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**110**	ug/L	100	6.4	1	05/29/24 14:58	06/03/24 11:02	7440-42-8	
Calcium	**162000**	ug/L	200	26.9	1	05/29/24 14:58	06/03/24 11:02	7440-70-2	
Iron	**3390**	ug/L	50.0	9.1	1	05/29/24 14:58	06/03/24 11:02	7439-89-6	
Magnesium	**43300**	ug/L	50.0	20.1	1	05/29/24 14:58	06/03/24 11:02	7439-95-4	
Manganese	**4860**	ug/L	5.0	0.39	1	05/29/24 14:58	06/03/24 11:02	7439-96-5	
Potassium	**5340**	ug/L	500	69.7	1	05/29/24 14:58	06/03/24 11:02	7440-09-7	
Sodium	**11300**	ug/L	500	115	1	05/29/24 14:58	06/03/24 11:02	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**567**	mg/L	20.0	10.5	1		06/01/24 17:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**631**	mg/L	13.3	13.3	1		05/22/24 15:15		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.9**	mg/L	1.0	0.53	1		06/12/24 14:28	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		06/12/24 14:28	16984-48-8	N2
Sulfate	**61.4**	mg/L	10.0	5.5	10		06/10/24 22:32	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60453358

Sample: L-TMW-2 **Lab ID: 60453358002** Collected: 05/20/24 15:26 Received: 05/22/24 05:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**93.9J**	ug/L	100	6.4	1	05/29/24 14:58	06/03/24 11:04	7440-42-8	
Calcium	**187000**	ug/L	200	26.9	1	05/29/24 14:58	06/03/24 11:04	7440-70-2	
Iron	**2000**	ug/L	50.0	9.1	1	05/29/24 14:58	06/03/24 11:04	7439-89-6	
Magnesium	**41800**	ug/L	50.0	20.1	1	05/29/24 14:58	06/03/24 11:04	7439-95-4	
Manganese	**2890**	ug/L	5.0	0.39	1	05/29/24 14:58	06/03/24 11:04	7439-96-5	
Potassium	**6450**	ug/L	500	69.7	1	05/29/24 14:58	06/03/24 11:04	7440-09-7	
Sodium	**10200**	ug/L	500	115	1	05/29/24 14:58	06/03/24 11:04	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**615**	mg/L	20.0	10.5	1		06/01/24 17:52		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**649**	mg/L	13.3	13.3	1		05/22/24 15:15		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**5.4**	mg/L	1.0	0.53	1		06/12/24 14:45	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		06/12/24 14:45	16984-48-8	N2
Sulfate	**51.4**	mg/L	5.0	2.8	5		06/10/24 22:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60453358

Sample: L-TMW-3 **Lab ID: 60453358003** Collected: 05/20/24 13:18 Received: 05/22/24 05:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**83.6J**	ug/L	100	6.4	1	05/29/24 14:58	06/03/24 11:06	7440-42-8	
Calcium	**124000**	ug/L	200	26.9	1	05/29/24 14:58	06/03/24 11:06	7440-70-2	M1,P6
Iron	**364**	ug/L	50.0	9.1	1	05/29/24 14:58	06/03/24 11:06	7439-89-6	
Magnesium	**24700**	ug/L	50.0	20.1	1	05/29/24 14:58	06/03/24 11:06	7439-95-4	
Manganese	**360**	ug/L	5.0	0.39	1	05/29/24 14:58	06/03/24 11:06	7439-96-5	
Potassium	**5270**	ug/L	500	69.7	1	05/29/24 14:58	06/03/24 11:06	7440-09-7	
Sodium	**6660**	ug/L	500	115	1	05/29/24 14:58	06/03/24 11:06	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**411**	mg/L	20.0	10.5	1		06/01/24 17:59		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**406**	mg/L	10.0	10.0	1		05/22/24 15:16		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.4**	mg/L	1.0	0.53	1		06/06/24 17:47	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		06/06/24 17:47	16984-48-8	N2
Sulfate	**25.1**	mg/L	10.0	5.5	10		06/06/24 19:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60453358

Sample: L-UWL-DUP-1 **Lab ID: 60453358004** Collected: 05/20/24 00:00 Received: 05/22/24 05:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**96.5J**	ug/L	100	6.4	1	05/31/24 09:05	06/05/24 16:20	7440-42-8	
Calcium	**188000**	ug/L	200	26.9	1	05/31/24 09:05	06/05/24 16:20	7440-70-2	
Iron	**1510**	ug/L	50.0	9.1	1	05/31/24 09:05	06/05/24 16:20	7439-89-6	
Magnesium	**43500**	ug/L	50.0	20.1	1	05/31/24 09:05	06/05/24 16:20	7439-95-4	
Manganese	**2630**	ug/L	5.0	0.39	1	05/31/24 09:05	06/05/24 16:20	7439-96-5	
Potassium	**6210**	ug/L	500	69.7	1	05/31/24 09:05	06/05/24 16:20	7440-09-7	
Sodium	**9660**	ug/L	500	115	1	05/31/24 09:05	06/05/24 16:20	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**618**	mg/L	20.0	10.5	1		06/01/24 18:12		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**640**	mg/L	13.3	13.3	1		05/22/24 15:16		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**5.2**	mg/L	1.0	0.53	1		06/06/24 20:16	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		06/06/24 20:16	16984-48-8	N2
Sulfate	**43.4**	mg/L	20.0	11.0	20		06/06/24 20:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60453358

Sample: L-UWL-FB-1 **Lab ID: 60453358005** Collected: 05/20/24 16:44 Received: 05/22/24 05:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**<6.4**	ug/L	100	6.4	1	05/31/24 09:05	06/05/24 16:22	7440-42-8	
Calcium	**<26.9**	ug/L	200	26.9	1	05/31/24 09:05	06/05/24 16:22	7440-70-2	
Iron	**<9.1**	ug/L	50.0	9.1	1	05/31/24 09:05	06/05/24 16:22	7439-89-6	
Magnesium	**<20.1**	ug/L	50.0	20.1	1	05/31/24 09:05	06/05/24 16:22	7439-95-4	
Manganese	**<0.39**	ug/L	5.0	0.39	1	05/31/24 09:05	06/05/24 16:22	7439-96-5	
Potassium	**<69.7**	ug/L	500	69.7	1	05/31/24 09:05	06/05/24 16:22	7440-09-7	
Sodium	**<115**	ug/L	500	115	1	05/31/24 09:05	06/05/24 16:22	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**<10.5**	mg/L	20.0	10.5	1		06/01/24 18:30		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		05/22/24 15:16		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**<0.53**	mg/L	1.0	0.53	1		06/06/24 20:46	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		06/06/24 20:46	16984-48-8	N2
Sulfate	**<0.55**	mg/L	1.0	0.55	1		06/06/24 20:46	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60453358

Sample: L-MW-26 **Lab ID: 60453167022** Collected: 05/22/24 12:01 Received: 05/24/24 05:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**78.7J**	ug/L	100	6.4	1	06/05/24 10:25	06/07/24 09:41	7440-42-8	
Calcium	**132000**	ug/L	200	26.9	1	06/05/24 10:25	06/07/24 09:41	7440-70-2	
Iron	**42.7J**	ug/L	50.0	9.1	1	06/05/24 10:25	06/07/24 09:41	7439-89-6	B
Magnesium	**24800**	ug/L	50.0	20.1	1	06/05/24 10:25	06/07/24 09:41	7439-95-4	
Manganese	**180**	ug/L	5.0	0.39	1	06/05/24 10:25	06/07/24 09:41	7439-96-5	
Potassium	**4460**	ug/L	500	69.7	1	06/05/24 10:25	06/07/24 09:41	7440-09-7	
Sodium	**5830**	ug/L	500	115	1	06/05/24 10:25	06/07/24 09:41	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**443**	mg/L	20.0	10.5	1		05/28/24 15:07		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**487**	mg/L	10.0	10.0	1		05/28/24 10:41		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**7.2**	mg/L	1.0	0.53	1		06/12/24 09:38	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		06/12/24 09:38	16984-48-8	N2
Sulfate	**30.4**	mg/L	20.0	11.0	20		06/12/24 09:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60453358

Sample: L-BMW-1S **Lab ID: 60453167018** Collected: 05/23/24 12:45 Received: 05/24/24 05:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**92.3J**	ug/L	100	6.4	1	06/05/24 10:25	06/07/24 09:34	7440-42-8	
Calcium	**193000**	ug/L	200	26.9	1	06/05/24 10:25	06/07/24 09:34	7440-70-2	
Iron	**31200**	ug/L	50.0	9.1	1	06/05/24 10:25	06/07/24 09:34	7439-89-6	
Magnesium	**43600**	ug/L	50.0	20.1	1	06/05/24 10:25	06/07/24 09:34	7439-95-4	
Manganese	**2490**	ug/L	5.0	0.39	1	06/05/24 10:25	06/07/24 09:34	7439-96-5	
Potassium	**5520**	ug/L	500	69.7	1	06/05/24 10:25	06/07/24 09:34	7440-09-7	
Sodium	**15500**	ug/L	500	115	1	06/05/24 10:25	06/07/24 09:34	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**690**	mg/L	40.0	21.0	2		05/28/24 14:44		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**675**	mg/L	13.3	13.3	1		05/28/24 14:19		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**6.9**	mg/L	1.0	0.53	1		06/12/24 05:21	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		06/12/24 05:21	16984-48-8	N2
Sulfate	**65.6**	mg/L	10.0	5.5	10		06/12/24 05:36	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60453358

Sample: L-BMW-2S **Lab ID: 60453167019** Collected: 05/23/24 09:28 Received: 05/24/24 05:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**53.5J**	ug/L	100	6.4	1	06/05/24 10:25	06/07/24 09:36	7440-42-8	
Calcium	**128000**	ug/L	200	26.9	1	06/05/24 10:25	06/07/24 09:36	7440-70-2	
Iron	**<9.1**	ug/L	50.0	9.1	1	06/05/24 10:25	06/07/24 09:36	7439-89-6	
Magnesium	**20200**	ug/L	50.0	20.1	1	06/05/24 10:25	06/07/24 09:36	7439-95-4	
Manganese	**2.9J**	ug/L	5.0	0.39	1	06/05/24 10:25	06/07/24 09:36	7439-96-5	
Potassium	**6150**	ug/L	500	69.7	1	06/05/24 10:25	06/07/24 09:36	7440-09-7	
Sodium	**5110**	ug/L	500	115	1	06/05/24 10:25	06/07/24 09:36	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**385**	mg/L	20.0	10.5	1		05/28/24 14:49		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**502**	mg/L	10.0	10.0	1		05/28/24 14:19		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.9**	mg/L	1.0	0.53	1		06/12/24 08:09	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		06/12/24 08:09	16984-48-8	N2
Sulfate	**41.9**	mg/L	10.0	5.5	10		06/12/24 08:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

QC Batch: 896075
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60453358001, 60453358002, 60453358003

METHOD BLANK: 3546453 Matrix: Water
Associated Lab Samples: 60453358001, 60453358002, 60453358003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<6.4	100	6.4	06/03/24 10:15	
Calcium	ug/L	<26.9	200	26.9	06/03/24 10:15	
Iron	ug/L	<9.1	50.0	9.1	06/03/24 10:15	
Magnesium	ug/L	<20.1	50.0	20.1	06/03/24 10:15	
Manganese	ug/L	<0.39	5.0	0.39	06/03/24 10:15	
Potassium	ug/L	<69.7	500	69.7	06/03/24 10:15	
Sodium	ug/L	<115	500	115	06/03/24 10:15	

LABORATORY CONTROL SAMPLE: 3546454

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	957	96	85-115	
Calcium	ug/L	10000	10100	101	85-115	
Iron	ug/L	10000	10300	103	85-115	
Magnesium	ug/L	10000	9810	98	85-115	
Manganese	ug/L	1000	1000	100	85-115	
Potassium	ug/L	10000	9730	97	85-115	
Sodium	ug/L	10000	9990	100	85-115	

MATRIX SPIKE SAMPLE: 3546455

Parameter	Units	60453572001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	ND	1000	1040	99	70-130	
Calcium	ug/L	13500	10000	24300	108	70-130	
Iron	ug/L	1110	10000	11700	106	70-130	
Magnesium	ug/L	10600	10000	21100	105	70-130	
Manganese	ug/L	22.3	1000	1050	103	70-130	
Potassium	ug/L	41900	10000	54100	122	70-130	
Sodium	ug/L	60600	10000	73800	132	70-130	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3546456 3546457

Parameter	Units	60453358003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	83.6J	1000	1000	1080	1030	99	95	70-130	4	20	
Calcium	ug/L	124000	10000	10000	135000	127000	108	29	70-130	6	20	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3546456 3546457

Parameter	Units	60453358003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	364	10000	10000	10600	10500	102	101	70-130	1	20	
Magnesium	ug/L	24700	10000	10000	35000	33300	103	86	70-130	5	20	
Manganese	ug/L	360	1000	1000	1430	1330	107	97	70-130	7	20	
Potassium	ug/L	5270	10000	10000	15800	15200	105	99	70-130	4	20	
Sodium	ug/L	6660	10000	10000	17300	16600	107	99	70-130	5	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

QC Batch: 896143
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60453358004, 60453358005

METHOD BLANK: 3546715 Matrix: Water
Associated Lab Samples: 60453358004, 60453358005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<6.4	100	6.4	06/05/24 16:16	
Calcium	ug/L	<26.9	200	26.9	06/05/24 16:16	
Iron	ug/L	<9.1	50.0	9.1	06/05/24 16:16	
Magnesium	ug/L	<20.1	50.0	20.1	06/05/24 16:16	
Manganese	ug/L	<0.39	5.0	0.39	06/05/24 16:16	
Potassium	ug/L	<69.7	500	69.7	06/05/24 16:16	
Sodium	ug/L	<115	500	115	06/05/24 16:16	

LABORATORY CONTROL SAMPLE: 3546716

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	918	92	85-115	
Calcium	ug/L	10000	9950	99	85-115	
Iron	ug/L	10000	9730	97	85-115	
Magnesium	ug/L	10000	9730	97	85-115	
Manganese	ug/L	1000	1000	100	85-115	
Potassium	ug/L	10000	9440	94	85-115	
Sodium	ug/L	10000	9490	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3546717 3546718

Parameter	Units	60453167011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	7190	1000	1000	7830	8140	64	95	70-130	4	20	M1
Calcium	ug/L	93300	10000	10000	98000	102000	47	91	70-130	4	20	M1
Iron	ug/L	6490	10000	10000	15900	16800	95	103	70-130	5	20	
Magnesium	ug/L	19200	10000	10000	28000	29400	88	102	70-130	5	20	
Manganese	ug/L	1010	1000	1000	2000	2010	99	99	70-130	0	20	
Potassium	ug/L	5030	10000	10000	15000	15300	100	103	70-130	2	20	
Sodium	ug/L	88500	10000	10000	94100	97500	56	90	70-130	3	20	M1

MATRIX SPIKE SAMPLE: 3546719

Parameter	Units	60453167013 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	171	1000	1110	94	70-130	
Calcium	ug/L	138000	10000	144000	63	70-130	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

MATRIX SPIKE SAMPLE: 3546719

Parameter	Units	60453167013 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	136	10000	9940	98	70-130	
Magnesium	ug/L	21800	10000	31300	95	70-130	
Manganese	ug/L	904	1000	1930	103	70-130	
Potassium	ug/L	23500	10000	33400	99	70-130	
Sodium	ug/L	4400	10000	14200	98	70-130	

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

QC Batch: 896753
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60453167018, 60453167019, 60453167022

METHOD BLANK: 3549216 Matrix: Water
Associated Lab Samples: 60453167018, 60453167019, 60453167022

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<6.4	100	6.4	06/07/24 08:19	
Calcium	ug/L	34.8J	200	26.9	06/07/24 08:19	
Iron	ug/L	13.7J	50.0	9.1	06/07/24 08:19	
Magnesium	ug/L	<20.1	50.0	20.1	06/07/24 08:19	
Manganese	ug/L	<0.39	5.0	0.39	06/07/24 08:19	
Potassium	ug/L	<69.7	500	69.7	06/07/24 08:19	
Sodium	ug/L	<115	500	115	06/07/24 08:19	

LABORATORY CONTROL SAMPLE: 3549217

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	10400	104	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1050	105	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3549218 3549219

Parameter	Units	60453848001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	9.6J	1000	1000	990	994	98	98	70-130	0	20	
Calcium	ug/L	238000	10000	10000	243000	249000	50	110	70-130	2	20	M1
Iron	ug/L	ND	10000	10000	10500	10600	105	106	70-130	1	20	
Magnesium	ug/L	25900	10000	10000	35600	36300	98	104	70-130	2	20	
Manganese	ug/L	158	1000	1000	1200	1190	104	103	70-130	1	20	
Potassium	ug/L	3210	10000	10000	13600	13700	103	105	70-130	1	20	
Sodium	ug/L	4130	10000	10000	14500	14700	104	105	70-130	1	20	

MATRIX SPIKE SAMPLE: 3549220

Parameter	Units	60453857001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	179	1000	1140	96	70-130	
Calcium	ug/L	77100	10000	87200	101	70-130	

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

MATRIX SPIKE SAMPLE: 3549220

Parameter	Units	60453857001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	ND	10000	10400	103	70-130	
Magnesium	ug/L	20400	10000	30300	99	70-130	
Manganese	ug/L	110	1000	1130	102	70-130	
Potassium	ug/L	7440	10000	17500	100	70-130	
Sodium	ug/L	63600	10000	74500	109	70-130	

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

QC Batch: 895910
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60453167018, 60453167019, 60453167022

METHOD BLANK: 3546043 Matrix: Water
Associated Lab Samples: 60453167018, 60453167019, 60453167022

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<10.5	20.0	10.5	05/28/24 13:13	

LABORATORY CONTROL SAMPLE: 3546044

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	502	100	90-110	

SAMPLE DUPLICATE: 3546045

Parameter	Units	60453167011 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	149	150	0	10	

SAMPLE DUPLICATE: 3546046

Parameter	Units	60453167015 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	127	127	0	10	

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

QC Batch: 896322 | Analysis Method: SM 2320B
QC Batch Method: SM 2320B | Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60453358001, 60453358002, 60453358003, 60453358004, 60453358005

METHOD BLANK: 3547437 Matrix: Water
Associated Lab Samples: 60453358001, 60453358002, 60453358003, 60453358004, 60453358005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<10.5	20.0	10.5	06/01/24 17:20	

LABORATORY CONTROL SAMPLE: 3547438

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	499	100	90-110	

SAMPLE DUPLICATE: 3547439

Parameter	Units	60453358003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	411	402	2	10	

SAMPLE DUPLICATE: 3547440

Parameter	Units	60453437003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	417	427	2	10	

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

QC Batch: 895513 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60453358001, 60453358002, 60453358003, 60453358004, 60453358005

METHOD BLANK: 3544098 Matrix: Water
Associated Lab Samples: 60453358001, 60453358002, 60453358003, 60453358004, 60453358005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/22/24 15:14	

LABORATORY CONTROL SAMPLE: 3544099

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	915	92	80-120	

SAMPLE DUPLICATE: 3544101

Parameter	Units	60453358003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	406	385	5	10	

SAMPLE DUPLICATE: 3544191

Parameter	Units	60453167011 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	640	695	8	10	

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

QC Batch: 895953
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60453167022

METHOD BLANK: 3546159 Matrix: Water
Associated Lab Samples: 60453167022

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/28/24 10:39	

LABORATORY CONTROL SAMPLE: 3546160

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	915	92	80-120	

SAMPLE DUPLICATE: 3546161

Parameter	Units	60453167004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	530	529	0	10	H1

SAMPLE DUPLICATE: 3546193

Parameter	Units	60453167028 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	715	719	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

QC Batch: 895999
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60453167018, 60453167019

METHOD BLANK: 3546289 Matrix: Water
Associated Lab Samples: 60453167018, 60453167019

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/28/24 14:18	

LABORATORY CONTROL SAMPLE: 3546290

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	946	95	80-120	

SAMPLE DUPLICATE: 3546291

Parameter	Units	60453637001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1570	1670	6	10	H1

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

QC Batch: 896825
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60453358001, 60453358002, 60453358003, 60453358004, 60453358005

METHOD BLANK: 3549460 Matrix: Water
Associated Lab Samples: 60453358001, 60453358002, 60453358003, 60453358004, 60453358005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	06/06/24 09:15	
Fluoride	mg/L	<0.12	0.20	0.12	06/06/24 09:15	N2
Sulfate	mg/L	<0.55	1.0	0.55	06/06/24 09:15	

METHOD BLANK: 3553513 Matrix: Water
Associated Lab Samples: 60453358001, 60453358002, 60453358003, 60453358004, 60453358005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	06/10/24 10:59	
Fluoride	mg/L	<0.12	0.20	0.12	06/10/24 10:59	N2
Sulfate	mg/L	<0.55	1.0	0.55	06/10/24 10:59	

METHOD BLANK: 3555090 Matrix: Water
Associated Lab Samples: 60453358001, 60453358002, 60453358003, 60453358004, 60453358005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	06/11/24 09:07	
Fluoride	mg/L	<0.12	0.20	0.12	06/11/24 09:07	N2
Sulfate	mg/L	<0.55	1.0	0.55	06/11/24 09:07	

LABORATORY CONTROL SAMPLE: 3549461

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.7	108	90-110	N2
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 3553514

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	N2
Sulfate	mg/L	5	5.1	102	90-110	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

LABORATORY CONTROL SAMPLE: 3555091

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	N2
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3549462 3549463

Parameter	Units	60453166004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	23.7	100	100	172	152	149	129	80-120	12	15	M1
Fluoride	mg/L	<0.12	2.5	2.5	<0.12	<0.12	0	1	80-120		15	M1,N2
Sulfate	mg/L	279	100	100	440	422	161	143	80-120	4	15	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3549465 3549466

Parameter	Units	60453358003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.4	5	5	7.3	7.3	99	98	80-120	0	15	
Fluoride	mg/L	<0.12	2.5	2.5	2.4	2.4	95	95	80-120	0	15	N2
Sulfate	mg/L	25.1	50	50	75.5	69.7	101	89	80-120	8	15	

SAMPLE DUPLICATE: 3549464

Parameter	Units	60453166004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	23.7	23.4	1	15	
Fluoride	mg/L	<0.12	<0.12		15	N2
Sulfate	mg/L	279	285	2	15	

SAMPLE DUPLICATE: 3549467

Parameter	Units	60453358003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	2.4	2.4	1	15	
Fluoride	mg/L	<0.12	<0.12		15	N2
Sulfate	mg/L	25.1	27.6	10	15	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60453358

QC Batch: 897383
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60453167018, 60453167019, 60453167022

METHOD BLANK: 3555098 Matrix: Water
Associated Lab Samples: 60453167018, 60453167019, 60453167022

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	06/11/24 08:59	
Fluoride	mg/L	<0.12	0.20	0.12	06/11/24 08:59	N2
Sulfate	mg/L	<0.55	1.0	0.55	06/11/24 08:59	

LABORATORY CONTROL SAMPLE: 3555099

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.7	107	90-110	N2
Sulfate	mg/L	5	4.8	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3552631 3552632

Parameter	Units	60453167028 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	49.7	100	100	213	200	163	150	80-120	6	15	M1
Fluoride	mg/L	<0.12	2.5	2.5	4.2	4.3	165	167	80-120	1	15	M1,N2
Sulfate	mg/L	351	100	100	543	508	192	157	80-120	7	15	M1

SAMPLE DUPLICATE: 3552633

Parameter	Units	60453167028 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	49.7	45.0	10	15	
Fluoride	mg/L	<0.12	<0.12		15	N2
Sulfate	mg/L	351	326	7	15	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: AMEREN LCL1
Pace Project No.: 60453358

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.
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.
N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LCL1
Pace Project No.: 60453358

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60453358001	**L-TMW-1**	EPA 200.7	896075	EPA 200.7	896170
60453358002	**L-TMW-2**	EPA 200.7	896075	EPA 200.7	896170
60453358003	**L-TMW-3**	EPA 200.7	896075	EPA 200.7	896170
60453358004	**L-UWL-DUP-1**	EPA 200.7	896143	EPA 200.7	896437
60453358005	**L-UWL-FB-1**	EPA 200.7	896143	EPA 200.7	896437
60453167018	**L-BMW-1S**	EPA 200.7	896753	EPA 200.7	896952
60453167019	**L-BMW-2S**	EPA 200.7	896753	EPA 200.7	896952
60453167022	**L-MW-26**	EPA 200.7	896753	EPA 200.7	896952
60453358001	**L-TMW-1**	SM 2320B	896322		
60453358002	**L-TMW-2**	SM 2320B	896322		
60453358003	**L-TMW-3**	SM 2320B	896322		
60453358004	**L-UWL-DUP-1**	SM 2320B	896322		
60453358005	**L-UWL-FB-1**	SM 2320B	896322		
60453167018	**L-BMW-1S**	SM 2320B	895910		
60453167019	**L-BMW-2S**	SM 2320B	895910		
60453167022	**L-MW-26**	SM 2320B	895910		
60453358001	**L-TMW-1**	SM 2540C	895513		
60453358002	**L-TMW-2**	SM 2540C	895513		
60453358003	**L-TMW-3**	SM 2540C	895513		
60453358004	**L-UWL-DUP-1**	SM 2540C	895513		
60453358005	**L-UWL-FB-1**	SM 2540C	895513		
60453167018	**L-BMW-1S**	SM 2540C	895999		
60453167019	**L-BMW-2S**	SM 2540C	895999		
60453167022	**L-MW-26**	SM 2540C	895953		
60453358001	**L-TMW-1**	EPA 300.0	896825		
60453358002	**L-TMW-2**	EPA 300.0	896825		
60453358003	**L-TMW-3**	EPA 300.0	896825		
60453358004	**L-UWL-DUP-1**	EPA 300.0	896825		
60453358005	**L-UWL-FB-1**	EPA 300.0	896825		
60453167018	**L-BMW-1S**	EPA 300.0	897383		
60453167019	**L-BMW-2S**	EPA 300.0	897383		
60453167022	**L-MW-26**	EPA 300.0	897383		

WO# : 60453358

60453358

Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-LENE-0009_Sample C		
	Revision: 2	Effective Date: 01/12/2022	Issued By: Lenexa

Client Name: Rocksmith Geoeng

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

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

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

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

Thermometer Used: T299 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 17.1/18.3 **Corr. Factor** 0.0 **Corrected** 17.1/18.3/16.9

Temperature should be above freezing to 6°C 16.9/1.5/2.1/1.4 1.5/2.1/1.4

Date and initials of person examining contents: PV 5/22/24

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) **LOT#:** 67187	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Qualtrax Document ID: 30468

Pace® Location Requested (City/State):
Pace Analytical Kansas
9608 Loiret Blvd., Lenexa, KS 66219

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here

60453358

Scan QR Code for instructions

Company Name:	Rocksmith Geoengineering, LLC.	Contact/Report To:	Mark Haddock
Street Address:	2320 Creve Coeur Mill Road, Maryland Heights, MO 63043	Phone #:	314-974-6578
		E-Mail:	mark.haddock@rocksmithgeo.com
		Cc E-Mail:	
Customer Project #:	COC# 4		
Project Name:	AMEREN LCL1	Invoice To:	Mark Haddock
		Invoice E-Mail:	mark.haddock@rocksmithgeo.com
Site Collection Info/Facility ID (as applicable):		Purchase Order # (if applicable):	
		Quote #:	

Time Zone Collected: [ ] AK [ ] PT [ ] MT [ ] CT [ ] ET

County / State origin of sample(s): Missouri

Data Deliverables:
[ ] Level II [ ] Level III [ ] Level IV
[ ] EQUIS
[ ] Other

Regulatory Program (DW, RCRA, etc.) as applicable: Reportable [ ] Yes [ ] No

Rush (Pre-approval required):
[ ] Same Day [ ] 1 Day [ ] 2 Day [ ] 3 Day [ ] Other _____

DW PWSID # or WW Permit # as applicable:

Date Results Requested:

Field Filtered (if applicable): [ ] Yes [ ] No

Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Surface Water (SW), Sediment (SED), Sludge (SL), Caulk (CK), Leachate (LL), Biosolid (BS), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Composite Start Date	Composite Start Time	Collected or Composite End Date	Collected or Composite End Time	# Cont.	Res. Chlorine Results	Res. Chlorine Units
L-TMW-1	WT	G			5-20-24	1700	6		
L-TMW-2	WT	G				1526	6		
L-TMW-3	WT	G				1318	6		
L-UWL-DUP-1	WT	G				—	6		
L-UWL-FB-1	WT	G				1644	6		
L-UWL-MS-1	WT	G				1318	6		
L-UWL-MSD-1	WT	G				1318	6		

Specify Container Size **

Chloride/Fluoride/Sulfate	TDS / Alkalinity	Ferrous/Fe Combo Iron	COD / TOC	Sulfide	App III and Cat/An Metals (200.7)*	Appendix IV Metals (200.7/200.8/7470)**	UWL Metals (200.7)***	TOX	Radium 226 & Radium 228
1	1		3		3	3	3	3	1

Identify Container Preservative Type***

1	1		3		2	2	2	3	2

Analysis Requested

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) 90mL, (10) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Lab Use Only

Proj. Mgr: Jamie Church
AcctNum / Client ID:
Table #:
Profile / Template: 15857
Prelog / Bottle Ord. ID: EZ 3086559

Sample Comment

Preservation non-conformance identified for sample.

Collected @ L-TMW3

Additional Instructions from Pace®:
*** App III and Cat/An Metals* - EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B**
****App IV Metals -EPA 200.7: Ba,Be,Co,Pb, Li,Mo & 200.8 Metals - Sb, As, Cd, Cr, Se,Tl +7470 Hg**
*****UWL Metals - 200.7: Al, Cu, Ni, Ag, Zn + Hardness**

Collected By: (Printed Name) Grant Morey
Signature:

Customer Remarks / Special Conditions / Possible Hazards:

# Coolers:	Thermometer ID:	Correction Factor (°C):	Obs. Temp. (°C)	Corrected Temp. (°C)	On Ice:
6	T299	0.0	17.1/18.3/16.9/1.5/2.4		

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Tracking Number:
Rocksmith	5/21/24 @ 1554		5/22/24 0550	
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Delivered by: [ ] In-Person [ ] Courier
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	[ ] FedEX [ ] UPS [ ] Other
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Page: of

Client: Rocksmith Geocng

Profile #

Site:

Notes

COC Line Item	Matrix	VG9H	DG9H	DG9Q	VG9U	DG9U	DG9M	DG9B	BG1U	AG1H	AG1U	AG2U	AG3S	AG4U	AG5U	JGFU	WGKU	WGDU	BP1U	BP2U	BP3U	BP1N	BP3N	BP3F	BP3S	BP3C	BP3Z	WPDU	ZPLC	Other		
1	WT												2						1			2	1									
2	↓												↓						↓			↓	↓									
3													6						3				3									
4													2						1				1									
5													↓						↓				↓									
6																																
7	↓																					↓										
8																																
9																																
10																																
11																																
12																																

Container Codes

Glass			
DG9B	40mL bisulfate clear vial	WGKU	8oz clear soil jar
DG9H	40mL HCl amber voa vial	WGFU	4oz clear soil jar
DG9M	40mL MeOH clear vial	WG2U	2oz clear soil jar
DG9Q	40mL TSP amber vial	JGFU	4oz unpreserved amber wide
DG9S	40mL H2SO4 amber vial	AG0U	100mL unores amber glass
DG9T	40mL Na Thio amber vial	AG1H	1L HCl amber glass
DG9U	40mL amber unpreserved	AG1S	1L H2SO4 amber glass
VG9H	40mL HCl clear vial	AG1T	1L Na Thiosulfate clear/amber glass
VG9T	40mL Na Thio. clear vial	AG1U	1liter unpres amber glass
VG9U	40mL unpreserved clear vial	AG2N	500mL HNO3 amber glass
BG1S	1liter H2SO4 clear glass	AG2S	500mL H2SO4 amber glass
BG1U	1liter unpres glass	AG3S	250mL H2SO4 amber glass
BG3H	250mL HCL Clear glass	AG2U	500mL unpres amber glass
BG3U	250mL Unpres Clear glass	AG3U	250mL unpres amber glass
WGDU	16oz clear soil jar	AG4U	125mL unpres amber glass
		AG5U	100mL unpres amber glass

Plastic	
BP1C	1L NAOH plastic
BP1N	1L HNO3 plastic
BP1S	1L H2SO4 plastic
BP1U	1L unpreserved plastic
BP1Z	1L NaOH, Zn Acetate
BP2C	500mL NAOH plastic
BP2N	500mL HNO3 plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Acetate
BP3C	250mL NaOH plastic
BP3F	250mL HNO3 plastic - field filtered
BP3N	250mL HNO3 plastic
BP3U	250mL unpreserved plastic
BP3S	250mL H2SO4 plastic
BP3Z	250mL NaOH, Zn Acetate
BP4U	125mL unpreserved plastic
BP4N	125mL HNO3 plastic
BP4S	125mL H2SO4 plastic
WPDU	16oz unpresserved plstic

Misc.	
I	Wipe/Swab
SP5T	120mL Coliform Na Thiosulfate
ZPLC	Ziploc Bag
AF	Air Filter
C	Air Cassettes
R	Terracore Kit
U	Summa Can

Matrix	
WT	Water
SL	Solid
NAL	Non-aqueous Liquid
OL	OIL
WP	Wipe
DW	Drinking Water

Work Order Number: 60453358

Pace® Location Requested (City/State):
Pace Analytical Kansas
9608 Loiret Blvd., Lenexa, KS 66219

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

WO# : 60453358

60453358

Company Name:	Rocksmith Geoengineering, LLC	Contact/Report To:	Mark Haddock
Street Address:	2320 Creve Coeur Mill Road, Maryland Heights, MO 63043	Phone #:	314-974-6578
		E-Mail:	mark.haddock@rocksmithgeo.com
		Cc E-Mail:	
Customer Project #:	COC# 4		
Project Name:	AMEREN LCL1	Invoice To:	Mark Haddock
		Invoice E-Mail:	mark.haddock@rocksmithgeo.com
Site Collection Info/Facility ID (as applicable):		Purchase Order # (if applicable):	
		Quote #:	

Time Zone Collected: [ ] AK [ ] PT [ ] MT [ ] CT [ ] ET

County / State origin of sample(s): Missouri

Data Deliverables:
[ ] Level II [ ] Level III [ ] Level IV
[ ] EQUIS
[ ] Other

Regulatory Program (DW, RCRA, etc.) as applicable: Reportable [ ] Yes [ ] No

Rush (Pre-approval required):
[ ] Same Day [ ] 1 Day [ ] 2 Day [ ] 3 Day [ ] Other _____

DW PWSID # or WW Permit # as applicable:

Date Results Requested:

Field Filtered (if applicable): [ ] Yes [ ] No

Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Surface Water (SW),Sediment (SED), Sludge (SL), Caulk (CK), Leachate (LL), Biosolid (BS), Other (OT)

Specify Container Size **

Identify Container Preservative Type***

Analysis Requested

Customer Sample ID	Matrix *	Comp / Grab	Composite Start Date	Composite Start Time	Collected or Composite End Date	Collected or Composite End Time	# Cont.	Res. Chlorine Results	Res. Chlorine Units	Chloride/Fluoride/Sulfate	TDS / Alkalinity	Perchlorate/Ammonia/Nitrogen	COD / TOC	Sulfide	App III and Cat/An Metals (200.7)*	Appendix IV Metals (200.7/200.8/7470)*	UWL Metals (200.7)***	TOX	Radium 226 & Radium 228	Sample Comment
							1			1	1		3		3	3	3	3	1	
							1	1		3		2	2	2	3	2				
L-TMW-1	WT																			
L-TMW-2	WT																			
L-TMW-3	WT																			
L-UWL-DUP-1	WT																			
L-UWL-FB-1	WT																			
L-UWL-MS-1	WT																			
L-UWL-MSD-1	WT																			
L-MW-26	WT	G			5-22-24	1201	6			✓	✓		✓		✓	✓	✓	✓	✓	
L-BMW-15	WT	G			5-23-24	1245	6			✓	✓		✓		✓	✓	✓	✓	✓	
L-BMW-25	WT	G			1	0928	6			✓	✓		✓			✓	✓	✓	✓	

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) 90mL, (10) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Lab Use Only

Proj. Mgr: **Jamie Church**
AcctNum / Client ID:
Table #:
Profile / Template: **15857**
Prelog / Bottle Ord. ID: **EZ 3086559**

Preservation non-conformance identified for sample.

Additional Instructions from Pace®:
*** App III and Cat/An Metals* - EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B**
****App IV Metals -EPA 200.7: Ba,Be,Co,Pb, Li,Mo & 200.8 Metals - Sb, As, Cd, Cr, Se,Tl +7470 Hg**
*****UWL Metals - 200.7: Al, Cu, Ni, Ag, Zn + Hardness**

Collected By: (Printed Name) Grant Morey
Signature:

Customer Remarks / Special Conditions / Possible Hazards:

# Coolers:	Thermometer ID:	Correction Factor (°C):	Obs. Temp. (°C)	Corrected Temp. (°C)	On Ice:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Tracking Number:
Grant Morey / Rocksmith	5-23-24/1530			
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Delivered by: [ ] In-Person [ ] Courier
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	[ ] FedEx [ ] UPS [ ] Other
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Page: 1 of 1

Internal Transfer Chain of Custody

Pace

A214

☐ Rush Multiplier_____X

☐ Samples Pre-Logged into eCOC

State Of Origin: MO

Cert. Needed: ☐ Yes ☒ No

Workorder: 60453358 Workorder Name: AMEREN LCL1 COC#4

Owner Received Date: 5/22/2024 Results Requested By: 6/13/2024

Report To	Subcontract To
Jamie Church Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 314-838-7223	Pace National 12065 Lebanon Rd Mt. Juliet, TN 37122 Phone (615) 758-5858

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4	9020B TOX	LAB USE ONLY
1	L-TMW-1	PS	5/20/2024 17:00	60453358001	Water	1	X	-01
2	L-TMW-2	PS	5/20/2024 15:26	60453358002	Water	1	X	-02
3	L-TMW-3	RQS	5/20/2024 13:18	60453358003	Water	2	X	MS/MSD -03
4	L-UWL-DUP-1	PS	5/20/2024 00:00	60453358004	Water	1	X	-04
5	L-UWL-FB-1	PS	5/20/2024 16:44	60453358005	Water	1	X	-05

LT39164

Transfers	Released By	Date/Time	Received By	Date/Time
1				
2				
3				

05-23-24 0900

Comments: KS sample location: 6090-R7-S6A

Cooler Temperature on Receipt LOT015.1 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

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

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres. Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RA Screen <0.5 mR/hr:	Y N		

total 7

7146 2379 3585

Internal Transfer Chain of Custody

Pace

☐ Rush Multiplier____X
☐ Samples Pre-Logged into eCOC

State Of Origin: MO
Cert. Needed: ☐ Yes ☒ No

Workorder: 60453358 Workorder Name: AMEREN LCL1 COC#4

Owner Received Date: 5/22/2024 Results Requested By: 6/13/2024

Report To	Subcontract To
Jamie Church Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 314-838-7223	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3						Radium 226	Radium 228											LAB USE ONLY
1	L-TMW-1	PS	5/20/2024 17:00	60453358001	Water	2						X	X											001
2	L-TMW-2	PS	5/20/2024 15:26	60453358002	Water	2						X	X											002
3	L-TMW-3	RQS	5/20/2024 13:18	60453358003	Water	2						X	X											003
4	L-UWL-DUP-1	PS	5/20/2024 00:00	60453358004	Water	2						X	X											004
5	L-UWL-FB-1	PS	5/20/2024 16:44	60453358005	Water	2						X	X											005
6	L-UWL-MS-1	PS	5/20/2024 13:18	60453358006	Water	2						X	X											006
7	L-UWL-MSD-1	PS	5/20/2024 13:18	60453358007	Water	2						X	X											007

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5-2224 1700	[signature]	5/23/24 1020
2				
3				

Comments: KS sample location: RECEIVING

Cooler Temperature on Receipt ___ °C | Custody Seal Y or (N) | Received on Ice Y or (N) | Samples Intact (Y) or N

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

WO# : 30686612

30686612

DC#_Title: ENV-FRM-GBUR-0088 v07_Sample Greensburg

Effective Date: 01/04/2024

WO#: 30686612

PM: MAR Due Date: 06/14/24

CLIENT: PACE_60_LEKS

Client Name: Pace-Lenexa, KS

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

Tracking Number: 7146 2379 3650

Initial / Date	
Examined By:	EJ 5-23-24
Labeled By:	EJ 5-23-24
Temped By:	—

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

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

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

Temp should be above freezing to 6°C

Comments:	Yes	No	NA
Chain of Custody Present	✓		
Chain of Custody Filled Out:	✓		
-Were client corrections present on COC		✓	
Chain of Custody Relinquished	✓		
Sampler Name & Signature on COC:		✓	
Sample Labels match COC:	✓		
-Includes date/time/ID			
Matrix: WT			
Samples Arrived within Hold Time:	✓		
Short Hold Time Analysis (<72hr remaining):		✓	
Rush Turn Around Time Requested:		✓	
Sufficient Volume:	✓		
Correct Containers Used:	✓		
-Pace Containers Used	✓		
Containers Intact:	✓		
Orthophosphate field filtered:			✓
Hex Cr Aqueous samples field filtered:			✓
Organic Samples checked for dichlorination			✓
Filtered volume received for dissolved tests:			✓
All containers checked for preservation:	✓		
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix			
All containers meet method preservation requirements:	✓		
8260C/D: Headspace in VOA Vials (> 6mm)			✓
624.1: Headspace in VOA Vials (0mm)			✓
Radon: Headspace in RAD Vials (0mm)			✓
Trip Blank Present:			✓
Rad Samples Screened <.05 mrem/hr.	✓		

pH paper Lot#	D.P.D. Residual Chlorine Lot #
10D2931	—

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14:
15:
16.

pH<2

Initial when completed EJ | Date/Time of Preservation | Lot# of added Preservative

17.
18.
19.

Trip blank custody seal present? YES or NO

Initial when completed EJ | Date: 5/23/24 | Survey Meter SN: ZSP14380

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.

Qualtrax ID: 55680

Memorandum

January 29, 2025

To:	Project File Rocksmith Geoengineering, LLC	**Project Number:**	23007-24
CC:	Mark Haddock, Jeffrey Ingram		
From:	Grant Morey	**Email:**	grant.morey@rocksmithgeo.com
RE:	**Data Validation Summary, Labadie Energy Center – LCL1 – Data Package 60453358**		

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 Method Detection Limit (MDL) and Practical Quantification Limit (PQL), the results were recorded at the detection value and qualified as estimates (J).
- When a 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: Rocksmith Geoengineering
Project Manager: J. Ingram
Project Name: Ameren LCL1
Project Number: 23007-24
Reviewer: G. Morey
Validation Date: 1/29/2025

Laboratory: Pace Analytical
SDG #: 60453358
Analytical Method (type and no.): EPA 200.7/200.8 (Total Metals); SM 2320B (Alkalinity); SM 2540C (TDS); EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names L-TMW-1, L-TMW-2, L-TMW-3, L-UWL-DUP-1, L-UWL-FB-1, L-UWL-MS-1, L-UWL-MSD-1, L-MW-26, L-BMW-1S, L-BMW-2S

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			05/20/24-05/23/24
b) Sampling team indicated?	x			GTM/ANT
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, Spec Cond, Turb, Temp, DO, ORP
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	No Lab narrative.

Note Deficiencies:

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

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

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			L-UWL-DUP-1 @ L-TMW-2
b) Were field dup. precision criteria met (note RPD)?		x		See Notes
c) Were lab duplicates analyzed (note original and duplicate samples)?	x			See Notes
d) Were lab dup. precision criteria met (note RPD)?	x			

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

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

Comments/Notes:

General:

Sulfate was diluted in several samples; no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

Method Blanks:

3549216: calcium (34.8J) and iron (13.7J); associated with samples -018, -019, -022. Sample -018 calcium and iron results > RL and 10x blank, no qualification necessary. Sample -019 calcium result > RL and 10x blank, no qualification necessary. Sample -019 iron result is a non-detect, no qualification necessary. Sample -022 calcium result > RL and 10x blank, no qualification necessary. Sample -022 iron result < RL, report at RL and qualify as non-detect (U).

Duplicates:

L-UWL-DUP-1 @ L-TMW-2: Field duplicate RPD exceeds control limit (20%) for iron (27%), results qualified as estimates.

Lab duplicate max RPD: 10%: alkalinity, TDS; 15%: chloride, fluoride, sulfate.

MS/MSD:

3546455: MS recovery high for sodium. Associated with unrelated sample, no qualification necessary.

3546456/3546457: MSD recovery low for calcium, MS and RPD within control limits, no qualification necessary.

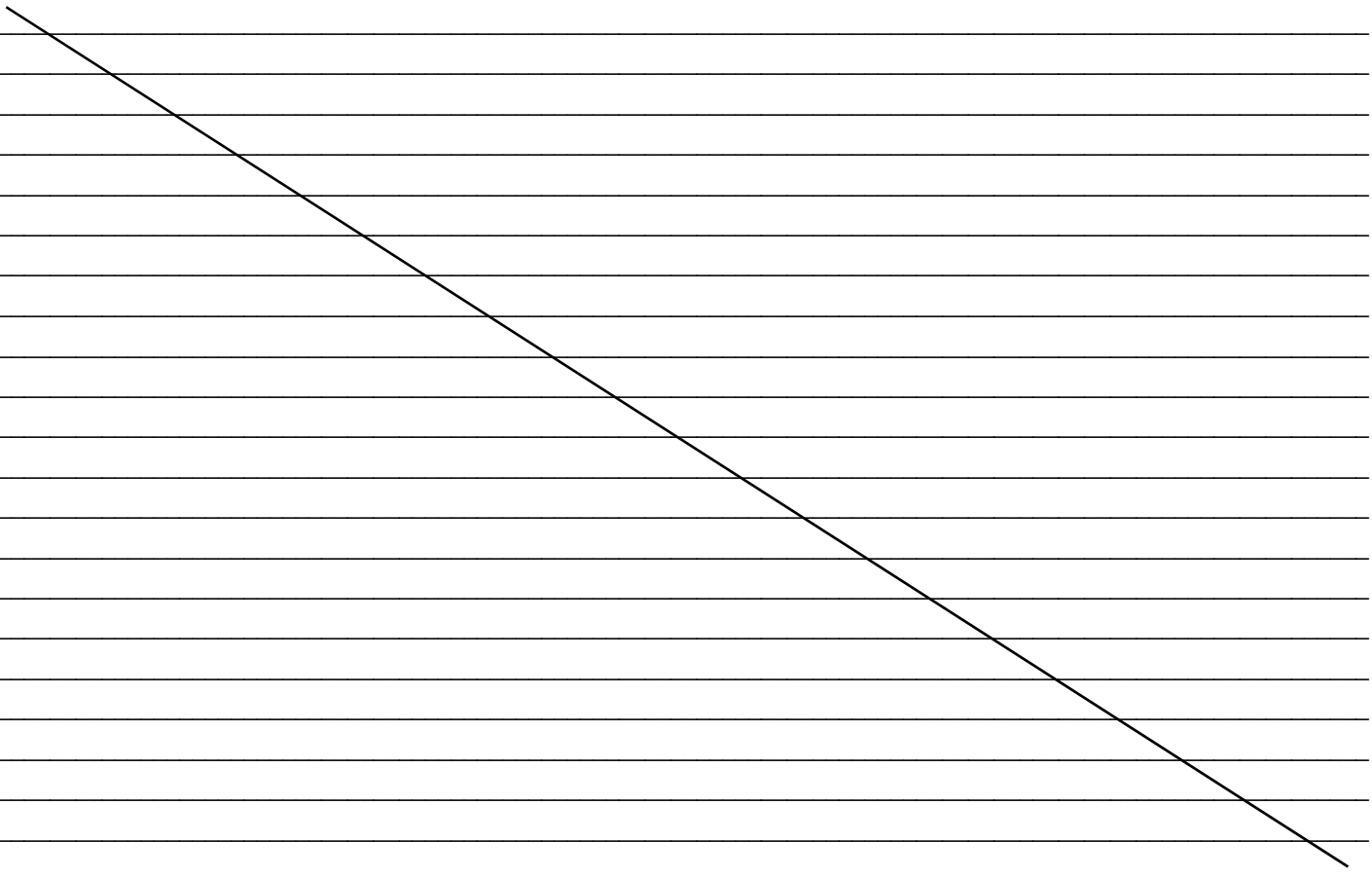
3546717/3546718: MS recovery low for boron, calcium and sodium. MSD and RPD within control limits, no qualification necessary.

3546719: MS recovery low for calcium, associated with unrelated sample.

3549218/3549219: MS recovery low for calcium, MSD and RPD within control limits. Associated with unrelated sample.

3549462/3549463: MS/MSD recovery low for fluoride (<10%). MS/MSD recovery high for chloride and sulfate, RPD within limits. Associated with unrelated sample, no qualification necessary.

3552631/3552632: MS/MSD recovery high for chloride, fluoride and sulfate, RPD within limits. Associated with unrelated sample.



QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-MW-26	Iron	50.0	U	Result < 10x blank and RL
L-TMW-2	Iron	2000	J	Field DUP RPD exceeds control limits
L-UWL-DUP-1	"	1510	J	"

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason

Signature: Grant Morey Date: 1/29/2025

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

January 06, 2025

Mark Haddock
Rocksmith Geoengineering, LLC.
2320 Creve Coeur Mill Road
Maryland Heights, MO 63043

RE: Project: AMEREN LCL1
Pace Project No.: 60463710

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory between October 30, 2024 and November 01, 2024. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

REV-1, Report revised to remove parameters not required under the CCR Rule.

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

Sincerely,

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

Enclosures

cc: Jeffrey Ingram, Rocksmith Geoengineering, LLC.
Lisa Meyer, Ameren
Grant Morey, Rocksmith Geoengineering, LLC.
Austin Nieman, Ameren

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

CERTIFICATIONS

Project: AMEREN LCL1
Pace Project No.: 60463710

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Arkansas Certification #: 88-00679
Illinois Certification #: 2000302023-6
Colorado Division of Oil and Public Safety
Iowa Certification #: 118
Kansas Field Laboratory Certification #: E-92587
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Missouri Inorganic Drinking Water Certification
Nevada Certification #: KS000212024-1
Oklahoma Certification #: 2023-073
Texas Certification #: T104704407-23-17
Utah Certification #: KS000212022-13

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

SAMPLE SUMMARY

Project: AMEREN LCL1
Pace Project No.: 60463710

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60463710001	**L-TMW-1**	Water	10/31/24 13:45	11/01/24 05:52
60463710002	**L-TMW-2**	Water	10/31/24 11:42	11/01/24 05:52
60463710003	**L-TMW-3**	Water	10/30/24 16:40	11/01/24 05:52
60463710004	**L-UWL-DUP-1**	Water	10/30/24 08:31	11/01/24 05:52
60463710005	**L-UWL-FB-1**	Water	10/31/24 14:10	11/01/24 05:52
60463710006	**L-UWL-MS-1**	Water	10/31/24 11:42	11/01/24 05:52
60463710007	**L-UWL-MSD-1**	Water	10/31/24 11:42	11/01/24 05:52
60463474019	**L-MW-26**	Water	10/30/24 14:38	11/01/24 05:52
60463474001	**L-BMW-1S**	Water	10/28/24 11:42	10/30/24 06:50
60463474002	**L-BMW-2S**	Water	10/28/24 09:40	10/30/24 06:50

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

SAMPLE ANALYTE COUNT

Project: AMEREN LCL1
Pace Project No.: 60463710

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60463710001	**L-TMW-1**	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60463710002	**L-TMW-2**	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60463710003	**L-TMW-3**	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60463710004	**L-UWL-DUP-1**	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60463710005	**L-UWL-FB-1**	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60463474019	**L-MW-26**	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60463474001	**L-BMW-1S**	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60463474002	**L-BMW-2S**	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60463710

Sample: L-TMW-1 **Lab ID: 60463710001** Collected: 10/31/24 13:45 Received: 11/01/24 05:52 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**121**	ug/L	100	6.4	1	11/04/24 12:51	11/15/24 11:48	7440-42-8	
Calcium	**159000**	ug/L	200	26.9	1	11/04/24 12:51	11/15/24 11:48	7440-70-2	
Iron	**173**	ug/L	50.0	9.1	1	11/04/24 12:51	11/15/24 11:48	7439-89-6	
Magnesium	**41700**	ug/L	50.0	20.1	1	11/04/24 12:51	11/15/24 11:48	7439-95-4	
Manganese	**3740**	ug/L	5.0	0.39	1	11/04/24 12:51	11/15/24 11:48	7439-96-5	
Potassium	**5900**	ug/L	500	69.7	1	11/04/24 12:51	11/15/24 11:48	7440-09-7	
Sodium	**11000**	ug/L	500	115	1	11/04/24 12:51	11/15/24 11:48	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**519**	mg/L	20.0	10.5	1		11/13/24 17:18		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**619**	mg/L	13.3	13.3	1		11/07/24 14:08		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.7**	mg/L	1.0	0.53	1		11/14/24 01:14	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/14/24 01:14	16984-48-8	
Sulfate	**55.0**	mg/L	10.0	5.5	10		11/14/24 01:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60463710

Sample: L-TMW-2 **Lab ID: 60463710002** Collected: 10/31/24 11:42 Received: 11/01/24 05:52 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**126**	ug/L	100	6.4	1	11/04/24 12:51	11/15/24 11:50	7440-42-8	R1
Calcium	**216000**	ug/L	200	26.9	1	11/04/24 12:51	11/15/24 11:50	7440-70-2	M1
Iron	**334**	ug/L	50.0	9.1	1	11/04/24 12:51	11/15/24 11:50	7439-89-6	R1
Magnesium	**49400**	ug/L	50.0	20.1	1	11/04/24 12:51	11/15/24 11:50	7439-95-4	
Manganese	**3180**	ug/L	5.0	0.39	1	11/04/24 12:51	11/15/24 11:50	7439-96-5	R1
Potassium	**7270**	ug/L	500	69.7	1	11/04/24 12:51	11/15/24 11:50	7440-09-7	R1
Sodium	**13000**	ug/L	500	115	1	11/04/24 12:51	11/15/24 11:50	7440-23-5	R1
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**648**	mg/L	20.0	10.5	1		11/13/24 17:24		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**769**	mg/L	13.3	13.3	1		11/07/24 14:08		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**10.3**	mg/L	2.0	1.1	2		11/13/24 17:03	16887-00-6	M1
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/13/24 16:44	16984-48-8	
Sulfate	**95.7**	mg/L	20.0	11.0	20		11/13/24 17:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60463710

Sample: L-TMW-3 **Lab ID: 60463710003** Collected: 10/30/24 16:40 Received: 11/01/24 05:52 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**89.4J**	ug/L	100	6.4	1	11/04/24 12:51	11/15/24 12:00	7440-42-8	
Calcium	**124000**	ug/L	200	26.9	1	11/04/24 12:51	11/15/24 12:00	7440-70-2	
Iron	**291**	ug/L	50.0	9.1	1	11/04/24 12:51	11/15/24 12:00	7439-89-6	
Magnesium	**23800**	ug/L	50.0	20.1	1	11/04/24 12:51	11/15/24 12:00	7439-95-4	
Manganese	**693**	ug/L	5.0	0.39	1	11/04/24 12:51	11/15/24 12:00	7439-96-5	
Potassium	**5820**	ug/L	500	69.7	1	11/04/24 12:51	11/15/24 12:00	7440-09-7	
Sodium	**6080**	ug/L	500	115	1	11/04/24 12:51	11/15/24 12:00	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**384**	mg/L	20.0	10.5	1		11/13/24 15:28		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**428**	mg/L	10.0	10.0	1		11/06/24 16:24		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.4**	mg/L	1.0	0.53	1		11/14/24 02:10	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/14/24 02:10	16984-48-8	
Sulfate	**27.3**	mg/L	10.0	5.5	10		11/14/24 02:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60463710

Sample: L-UWL-DUP-1 **Lab ID: 60463710004** Collected: 10/30/24 08:31 Received: 11/01/24 05:52 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**88.6J**	ug/L	100	6.4	1	11/04/24 12:51	11/15/24 12:02	7440-42-8	
Calcium	**122000**	ug/L	200	26.9	1	11/04/24 12:51	11/15/24 12:02	7440-70-2	
Iron	**261**	ug/L	50.0	9.1	1	11/04/24 12:51	11/15/24 12:02	7439-89-6	
Magnesium	**23700**	ug/L	50.0	20.1	1	11/04/24 12:51	11/15/24 12:02	7439-95-4	
Manganese	**640**	ug/L	5.0	0.39	1	11/04/24 12:51	11/15/24 12:02	7439-96-5	
Potassium	**5620**	ug/L	500	69.7	1	11/04/24 12:51	11/15/24 12:02	7440-09-7	
Sodium	**5890**	ug/L	500	115	1	11/04/24 12:51	11/15/24 12:02	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**376**	mg/L	20.0	10.5	1		11/13/24 15:34		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**438**	mg/L	10.0	10.0	1		11/06/24 16:24		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.1**	mg/L	1.0	0.53	1		11/14/24 11:08	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/14/24 11:08	16984-48-8	
Sulfate	**30.2**	mg/L	20.0	11.0	20		11/14/24 11:27	14808-79-8	M1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60463710

Sample: L-UWL-FB-1 **Lab ID: 60463710005** Collected: 10/31/24 14:10 Received: 11/01/24 05:52 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**<6.4**	ug/L	100	6.4	1	11/04/24 12:51	11/15/24 12:04	7440-42-8	
Calcium	**132J**	ug/L	200	26.9	1	11/04/24 12:51	11/15/24 12:04	7440-70-2	B
Iron	**<9.1**	ug/L	50.0	9.1	1	11/04/24 12:51	11/15/24 12:04	7439-89-6	
Magnesium	**<20.1**	ug/L	50.0	20.1	1	11/04/24 12:51	11/15/24 12:04	7439-95-4	
Manganese	**<0.39**	ug/L	5.0	0.39	1	11/04/24 12:51	11/15/24 12:04	7439-96-5	
Potassium	**<69.7**	ug/L	500	69.7	1	11/04/24 12:51	11/15/24 12:04	7440-09-7	
Sodium	**<115**	ug/L	500	115	1	11/04/24 12:51	11/15/24 12:04	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**<10.5**	mg/L	20.0	10.5	1		11/13/24 17:39		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**19.0**	mg/L	5.0	5.0	1		11/07/24 14:08		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**<0.53**	mg/L	1.0	0.53	1		11/14/24 13:01	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/14/24 13:01	16984-48-8	
Sulfate	**<0.55**	mg/L	1.0	0.55	1		11/14/24 13:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60463710

Sample: L-MW-26 **Lab ID: 60463474019** Collected: 10/30/24 14:38 Received: 11/01/24 05:52 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**61.4J**	ug/L	100	6.4	1	11/04/24 08:52	11/14/24 17:37	7440-42-8	
Calcium	**157000**	ug/L	200	26.9	1	11/04/24 08:52	11/14/24 17:37	7440-70-2	
Iron	**46.2J**	ug/L	50.0	9.1	1	11/04/24 08:52	11/14/24 17:37	7439-89-6	
Magnesium	**27600**	ug/L	50.0	20.1	1	11/04/24 08:52	11/14/24 17:37	7439-95-4	
Manganese	**79.2**	ug/L	5.0	0.39	1	11/04/24 08:52	11/14/24 17:37	7439-96-5	
Potassium	**4900**	ug/L	500	69.7	1	11/04/24 08:52	11/14/24 17:37	7440-09-7	
Sodium	**7530**	ug/L	500	115	1	11/04/24 08:52	11/14/24 17:37	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**469**	mg/L	20.0	10.5	1		11/13/24 14:12		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**572**	mg/L	13.3	13.3	1		11/06/24 16:22		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**17.7**	mg/L	1.0	0.53	1		11/13/24 14:32	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/13/24 14:32	16984-48-8	
Sulfate	**28.5**	mg/L	20.0	11.0	20		11/13/24 14:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60463710

Sample: L-BMW-1S **Lab ID: 60463474001** Collected: 10/28/24 11:42 Received: 10/30/24 06:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**84.8J**	ug/L	100	6.4	1	10/31/24 09:09	11/14/24 11:24	7440-42-8	
Calcium	**202000**	ug/L	200	26.9	1	10/31/24 09:09	11/14/24 11:24	7440-70-2	
Iron	**27000**	ug/L	50.0	9.1	1	10/31/24 09:09	11/14/24 11:24	7439-89-6	
Magnesium	**36700**	ug/L	50.0	20.1	1	10/31/24 09:09	11/14/24 11:24	7439-95-4	
Manganese	**2570**	ug/L	5.0	0.39	1	10/31/24 09:09	11/14/24 11:24	7439-96-5	
Potassium	**5040**	ug/L	500	69.7	1	10/31/24 09:09	11/14/24 11:24	7440-09-7	
Sodium	**10900**	ug/L	500	115	1	10/31/24 09:09	11/14/24 11:24	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**628**	mg/L	40.0	21.0	2		11/11/24 14:11		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**744**	mg/L	13.3	13.3	1		11/04/24 14:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**4.5**	mg/L	1.0	0.53	1		11/20/24 15:01	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/20/24 15:01	16984-48-8	
Sulfate	**95.1**	mg/L	10.0	5.5	10		11/20/24 15:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60463710

Sample: L-BMW-2S **Lab ID: 60463474002** Collected: 10/28/24 09:40 Received: 10/30/24 06:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**45.4J**	ug/L	100	6.4	1	10/31/24 09:09	11/14/24 11:26	7440-42-8	
Calcium	**121000**	ug/L	200	26.9	1	10/31/24 09:09	11/14/24 11:26	7440-70-2	
Iron	**<9.1**	ug/L	50.0	9.1	1	10/31/24 09:09	11/14/24 11:26	7439-89-6	
Magnesium	**17600**	ug/L	50.0	20.1	1	10/31/24 09:09	11/14/24 11:26	7439-95-4	
Manganese	**3.4J**	ug/L	5.0	0.39	1	10/31/24 09:09	11/14/24 11:26	7439-96-5	
Potassium	**5320**	ug/L	500	69.7	1	10/31/24 09:09	11/14/24 11:26	7440-09-7	
Sodium	**4600**	ug/L	500	115	1	10/31/24 09:09	11/14/24 11:26	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**353**	mg/L	20.0	10.5	1		11/11/24 14:17		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**436**	mg/L	10.0	10.0	1		11/04/24 14:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**1.8**	mg/L	1.0	0.53	1		11/20/24 15:39	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/20/24 15:39	16984-48-8	
Sulfate	**13.7**	mg/L	1.0	0.55	1		11/20/24 15:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 914554
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60463474001, 60463474002

METHOD BLANK: 3620890 Matrix: Water
Associated Lab Samples: 60463474001, 60463474002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<6.4	100	6.4	11/14/24 10:57	
Calcium	ug/L	36.1J	200	26.9	11/14/24 10:57	
Iron	ug/L	<9.1	50.0	9.1	11/14/24 10:57	
Magnesium	ug/L	<20.1	50.0	20.1	11/14/24 10:57	
Manganese	ug/L	<0.39	5.0	0.39	11/14/24 10:57	
Potassium	ug/L	<69.7	500	69.7	11/14/24 10:57	
Sodium	ug/L	235J	500	115	11/14/24 10:57	

LABORATORY CONTROL SAMPLE: 3620891

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	865	87	85-115	
Calcium	ug/L	10000	9330	93	85-115	
Iron	ug/L	10000	9170	92	85-115	
Magnesium	ug/L	10000	9050	90	85-115	
Manganese	ug/L	1000	945	95	85-115	
Potassium	ug/L	10000	9000	90	85-115	
Sodium	ug/L	10000	9460	95	85-115	

MATRIX SPIKE SAMPLE: 3620894

Parameter	Units	60463456004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	<6.4	1000	906	90	70-130	
Calcium	ug/L	50.8J	10000	9750	97	70-130	
Iron	ug/L	<9.1	10000	9680	97	70-130	
Magnesium	ug/L	<20.1	10000	9350	93	70-130	
Manganese	ug/L	<0.39	1000	990	99	70-130	
Potassium	ug/L	<69.7	10000	9350	93	70-130	
Sodium	ug/L	160J	10000	9880	97	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3621100 3621101

Parameter	Units	60463474005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	59.1J	1000	1000	1010	1030	95	97	70-130	2	20	
Calcium	ug/L	139000	10000	10000	148000	153000	89	137	70-130	3	20	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3621100 3621101

Parameter	Units	60463474005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	8290	10000	10000	18000	18900	97	106	70-130	5	20	
Magnesium	ug/L	34100	10000	10000	43800	45300	97	111	70-130	3	20	
Manganese	ug/L	241	1000	1000	1240	1290	100	105	70-130	4	20	
Potassium	ug/L	4140	10000	10000	14200	14500	100	103	70-130	2	20	
Sodium	ug/L	10900	10000	10000	21000	21500	100	105	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 914962
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60463474019

METHOD BLANK: 3622660 Matrix: Water
Associated Lab Samples: 60463474019

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<6.4	100	6.4	11/18/24 11:37	
Calcium	ug/L	116J	200	26.9	11/18/24 11:37	
Iron	ug/L	<9.1	50.0	9.1	11/18/24 11:37	
Magnesium	ug/L	<20.1	50.0	20.1	11/18/24 11:37	
Manganese	ug/L	<0.39	5.0	0.39	11/18/24 11:37	
Potassium	ug/L	<69.7	500	69.7	11/18/24 11:37	
Sodium	ug/L	<115	500	115	11/18/24 11:37	

LABORATORY CONTROL SAMPLE: 3622661

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	922	92	85-115	
Calcium	ug/L	10000	10000	100	85-115	
Iron	ug/L	10000	10300	103	85-115	
Magnesium	ug/L	10000	9730	97	85-115	
Manganese	ug/L	1000	987	99	85-115	
Potassium	ug/L	10000	9620	96	85-115	
Sodium	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3622662 3622663

Parameter	Units	60463713002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	ND	1000	1000	946	963	94	95	70-130	2	20	
Calcium	ug/L	ND	10000	10000	10200	10400	101	102	70-130	1	20	
Iron	ug/L	101	10000	10000	9910	10100	98	100	70-130	2	20	
Magnesium	ug/L	ND	10000	10000	9910	10000	99	100	70-130	1	20	
Manganese	ug/L	ND	1000	1000	1000	1010	100	101	70-130	1	20	
Potassium	ug/L	ND	10000	10000	9820	10000	97	99	70-130	2	20	
Sodium	ug/L	1260	10000	10000	11300	11400	101	102	70-130	1	20	

MATRIX SPIKE SAMPLE: 3622664

Parameter	Units	60463474017 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	2950	1000	3890	94	70-130	
Calcium	ug/L	168000	10000	179000	106	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

MATRIX SPIKE SAMPLE: 3622664

Parameter	Units	60463474017 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	5850	10000	15800	100	70-130	
Magnesium	ug/L	26900	10000	36600	96	70-130	
Manganese	ug/L	1540	1000	2520	98	70-130	
Potassium	ug/L	6830	10000	16600	97	70-130	
Sodium	ug/L	64800	10000	74500	97	70-130	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 914987
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60463710001, 60463710002, 60463710003, 60463710004, 60463710005

METHOD BLANK: 3622757 Matrix: Water
Associated Lab Samples: 60463710001, 60463710002, 60463710003, 60463710004, 60463710005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<6.4	100	6.4	11/15/24 11:38	
Calcium	ug/L	122J	200	26.9	11/15/24 11:38	
Iron	ug/L	10.8J	50.0	9.1	11/15/24 11:38	
Magnesium	ug/L	<20.1	50.0	20.1	11/15/24 11:38	
Manganese	ug/L	<0.39	5.0	0.39	11/15/24 11:38	
Potassium	ug/L	<69.7	500	69.7	11/15/24 11:38	
Sodium	ug/L	<115	500	115	11/15/24 11:38	

LABORATORY CONTROL SAMPLE: 3622758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	999	100	85-115	
Calcium	ug/L	10000	10700	107	85-115	
Iron	ug/L	10000	10700	107	85-115	
Magnesium	ug/L	10000	10300	103	85-115	
Manganese	ug/L	1000	1080	108	85-115	
Potassium	ug/L	10000	10300	103	85-115	
Sodium	ug/L	10000	10500	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3622759 3622760

Parameter	Units	60463453008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	76.9J	1000	1000	1050	1080	97	100	70-130	3	20	
Calcium	ug/L	116000	10000	10000	127000	130000	107	142	70-130	3	20	M1
Iron	ug/L	24200	10000	10000	34400	35200	102	110	70-130	2	20	
Magnesium	ug/L	30400	10000	10000	40600	41600	102	112	70-130	3	20	
Manganese	ug/L	394	1000	1000	1410	1430	102	104	70-130	1	20	
Potassium	ug/L	4110	10000	10000	14200	14800	101	106	70-130	4	20	
Sodium	ug/L	14100	10000	10000	24500	24900	104	108	70-130	2	20	

SAMPLE DUPLICATE: 3630022

Parameter	Units	60463710002 Result	Dup Result	RPD	Max RPD	Qualifiers
Boron	ug/L	126	121	4	20	
Calcium	ug/L	216000	214000	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

SAMPLE DUPLICATE: 3630022

Parameter	Units	60463710002 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron	ug/L	334	329	2	19	
Magnesium	ug/L	49400	48500	2	20	
Manganese	ug/L	3180	3120	2	12	
Potassium	ug/L	7270	7070	3	20	
Sodium	ug/L	13000	12700	2	20	

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 915877
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60463474001, 60463474002

METHOD BLANK: 3626396 Matrix: Water
Associated Lab Samples: 60463474001, 60463474002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<10.5	20.0	10.5	11/11/24 12:30	

LABORATORY CONTROL SAMPLE: 3626397

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	482	96	90-110	

SAMPLE DUPLICATE: 3626398

Parameter	Units	60462617001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	278	274	2	10	H1

SAMPLE DUPLICATE: 3626399

Parameter	Units	60463456004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<10.5	<10.5		10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 916260
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60463474019, 60463710003, 60463710004

METHOD BLANK: 3627536 Matrix: Water
Associated Lab Samples: 60463474019, 60463710003, 60463710004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<10.5	20.0	10.5	11/13/24 14:02	

LABORATORY CONTROL SAMPLE: 3627537

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	487	97	90-110	

SAMPLE DUPLICATE: 3627538

Parameter	Units	60463474019 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	469	485	3	10	

SAMPLE DUPLICATE: 3627539

Parameter	Units	60463453008 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	439	445	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 916261
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60463710001, 60463710002, 60463710005

METHOD BLANK: 3627540 Matrix: Water
Associated Lab Samples: 60463710001, 60463710002, 60463710005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<10.5	20.0	10.5	11/13/24 16:41	

LABORATORY CONTROL SAMPLE: 3627541

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	485	97	90-110	

SAMPLE DUPLICATE: 3627542

Parameter	Units	60463456005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	415	423	2	10	

SAMPLE DUPLICATE: 3627543

Parameter	Units	60463710002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	648	630	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 915015
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60463474001, 60463474002

METHOD BLANK: 3622827 Matrix: Water
Associated Lab Samples: 60463474001, 60463474002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/04/24 14:53	

LABORATORY CONTROL SAMPLE: 3622828

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	986	99	80-120	

SAMPLE DUPLICATE: 3622829

Parameter	Units	60463342004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	211	210	0	10	

SAMPLE DUPLICATE: 3622830

Parameter	Units	60463453004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	540	544	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 915374
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60463474019, 60463710003, 60463710004

METHOD BLANK: 3623979 Matrix: Water
Associated Lab Samples: 60463474019, 60463710003, 60463710004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/06/24 16:21	

LABORATORY CONTROL SAMPLE: 3623980

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	990	99	80-120	

SAMPLE DUPLICATE: 3623981

Parameter	Units	60463589002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	858	840	2	10	

SAMPLE DUPLICATE: 3623982

Parameter	Units	60463453008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	472	498	5	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 915563
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60463710001, 60463710002, 60463710005

METHOD BLANK: 3624813 Matrix: Water
Associated Lab Samples: 60463710001, 60463710002, 60463710005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/07/24 14:07	

LABORATORY CONTROL SAMPLE: 3624814

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	985	98	80-120	

SAMPLE DUPLICATE: 3624815

Parameter	Units	60463456005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	453	452	0	10	

SAMPLE DUPLICATE: 3624816

Parameter	Units	60463710002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	769	775	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 916152
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60463474019, 60463710001, 60463710002, 60463710003

METHOD BLANK: 3627172 Matrix: Water
Associated Lab Samples: 60463474019, 60463710001, 60463710002, 60463710003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	11/13/24 02:02	
Fluoride	mg/L	<0.12	0.20	0.12	11/13/24 02:02	
Sulfate	mg/L	<0.55	1.0	0.55	11/13/24 02:02	

LABORATORY CONTROL SAMPLE: 3627173

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.6	102	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3627174 3627175

Parameter	Units	60463456005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.5	5	5	8.3	8.7	96	104	80-120	4	15	
Fluoride	mg/L	<0.12	2.5	2.5	2.5	2.7	99	107	80-120	8	15	
Sulfate	mg/L	7.4	5	5	12.6	13.1	105	114	80-120	4	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3627177 3627178

Parameter	Units	60463710002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	10.3	10	10	18.2	18.1	79	79	80-120	0	15	M1
Fluoride	mg/L	<0.12	2.5	2.5	2.3	2.4	93	97	80-120	4	15	
Sulfate	mg/L	95.7	100	100	202	198	107	102	80-120	2	15	

SAMPLE DUPLICATE: 3627176

Parameter	Units	60463456005 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	3.5	4.1	16	15	D6
Fluoride	mg/L	<0.12	<0.12		15	
Sulfate	mg/L	7.4	7.3	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

SAMPLE DUPLICATE: 3627179

Parameter	Units	60463710002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	10.3	10.2	0	15	
Fluoride	mg/L	<0.12	<0.12		15	
Sulfate	mg/L	95.7	94.1	2	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 916325
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60463710004, 60463710005

METHOD BLANK: 3627881 Matrix: Water
Associated Lab Samples: 60463710004, 60463710005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	11/14/24 09:43	
Fluoride	mg/L	<0.12	0.20	0.12	11/14/24 09:43	
Sulfate	mg/L	<0.55	1.0	0.55	11/14/24 09:43	

LABORATORY CONTROL SAMPLE: 3627882

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	5	5.4	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3627883 3627884

Parameter	Units	60463710004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.1	5	5	7.3	6.7	103	92	80-120	8	15	
Fluoride	mg/L	<0.12	2.5	2.5	2.8	2.5	109	96	80-120	12	15	
Sulfate	mg/L	30.2	100	100	168	173	138	143	80-120	3	15	M1

MATRIX SPIKE SAMPLE: 3627885

Parameter	Units	60463474031 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	115	100	194	79	80-120	M1
Fluoride	mg/L	<0.12	2.5	2.4	97	80-120	
Sulfate	mg/L	14.9	5	21.4	131	80-120	CH,E,M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60463710

QC Batch: 916715
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60463474001, 60463474002

METHOD BLANK: 3629889 Matrix: Water
Associated Lab Samples: 60463474001, 60463474002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	11/20/24 09:18	
Fluoride	mg/L	<0.12	0.20	0.12	11/20/24 09:18	
Sulfate	mg/L	<0.55	1.0	0.55	11/20/24 09:18	

LABORATORY CONTROL SAMPLE: 3629890

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	101	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	5	4.6	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3629891 3629892

Parameter	Units	60463453001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	42.6	100	100	134	156	92	113	80-120	15	15	
Fluoride	mg/L	<0.12	2.5	2.5	2.2	2.8	88	112	80-120	24	15	R1
Sulfate	mg/L	150	100	100	257	283	106	133	80-120	10	15	M1

MATRIX SPIKE SAMPLE: 3629893

Parameter	Units	60463474007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	31.8	100	125	93	80-120	
Fluoride	mg/L	<0.12	2.5	2.4	95	80-120	
Sulfate	mg/L	532	250	868	134	80-120	M1

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN LCL1
Pace Project No.: 60463710

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.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
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.
R1	RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LCL1
Pace Project No.: 60463710

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60463474001	**L-BMW-1S**	EPA 200.7	914554	EPA 200.7	914652
60463474002	**L-BMW-2S**	EPA 200.7	914554	EPA 200.7	914652
60463474019	**L-MW-26**	EPA 200.7	914962	EPA 200.7	915011
60463710001	**L-TMW-1**	EPA 200.7	914987	EPA 200.7	915082
60463710002	**L-TMW-2**	EPA 200.7	914987	EPA 200.7	915082
60463710003	**L-TMW-3**	EPA 200.7	914987	EPA 200.7	915082
60463710004	**L-UWL-DUP-1**	EPA 200.7	914987	EPA 200.7	915082
60463710005	**L-UWL-FB-1**	EPA 200.7	914987	EPA 200.7	915082
60463474001	**L-BMW-1S**	SM 2320B	915877		
60463474002	**L-BMW-2S**	SM 2320B	915877		
60463474019	**L-MW-26**	SM 2320B	916260		
60463710001	**L-TMW-1**	SM 2320B	916261		
60463710002	**L-TMW-2**	SM 2320B	916261		
60463710003	**L-TMW-3**	SM 2320B	916260		
60463710004	**L-UWL-DUP-1**	SM 2320B	916260		
60463710005	**L-UWL-FB-1**	SM 2320B	916261		
60463474001	**L-BMW-1S**	SM 2540C	915015		
60463474002	**L-BMW-2S**	SM 2540C	915015		
60463474019	**L-MW-26**	SM 2540C	915374		
60463710001	**L-TMW-1**	SM 2540C	915563		
60463710002	**L-TMW-2**	SM 2540C	915563		
60463710003	**L-TMW-3**	SM 2540C	915374		
60463710004	**L-UWL-DUP-1**	SM 2540C	915374		
60463710005	**L-UWL-FB-1**	SM 2540C	915563		
60463474001	**L-BMW-1S**	EPA 300.0	916715		
60463474002	**L-BMW-2S**	EPA 300.0	916715		
60463474019	**L-MW-26**	EPA 300.0	916152		
60463710001	**L-TMW-1**	EPA 300.0	916152		
60463710002	**L-TMW-2**	EPA 300.0	916152		
60463710003	**L-TMW-3**	EPA 300.0	916152		
60463710004	**L-UWL-DUP-1**	EPA 300.0	916325		
60463710005	**L-UWL-FB-1**	EPA 300.0	916325		

Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-LENE-0009_Sample Cc	
	Revision: 2	Effective Date: 01/12/2022

Client Name: Rocksmith Geoeng

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

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

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

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

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

Cooler Temperature (°C): **As-read** 2.0/2.5/0.6 **Corr. Factor** -0.1 **Corrected** 1.9/2.5/0.5

Temperature should be above freezing to 6°C 15.4/14.0/14.5 15.3/13.9/14.4

Date and initials of person examining contents: PTOT 11/1/24

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☑No ☐N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) **LOT#:** 88727	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Pace® Location Requested (City/State):
Pace Analytical Kansas
9608 Loiret Blvd., Lenexa, KS 66219

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here

60463710

Scan QR Code for instructions

Company Name:	Rocksmith Geoengineering, LLC	Contact/Report To:	Mark Haddock
Street Address:	2320 Creve Coeur Mill Road, Maryland Heights, MO 63043	Phone #:	314-974-6578
		E-Mail:	mark.haddock@rocksmithgeo.com
		Cc E-Mail:	
Customer Project #:	COC# 4		
Project Name:	AMEREN LCL1	Invoice To:	Mark Haddock
		Invoice E-Mail:	mark.haddock@rocksmithgeo.com
Site Collection Info/Facility ID (as applicable):		Purchase Order # (if applicable):	
		Quote #:	

Time Zone Collected: [ ] AK [ ] PT [ ] MT [ ] CT [ ] ET

County / State origin of sample(s): Missouri

Data Deliverables:
[ ] Level II [ ] Level III [ ] Level IV
[ ] EQUIS
[ ] Other

Regulatory Program (DW, RCRA, etc.) as applicable: Reportable [ ] Yes [ ] No

Rush (Pre-approval required):
[ ] Same Day [ ] 1 Day [ ] 2 Day [ ] 3 Day [ ] Other _____

DW PWSID # or WW Permit # as applicable:

Date Results Requested:

Field Filtered (if applicable): [ ] Yes [ ] No

Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Surface Water (SW), Sediment (SED), Sludge (SL), Caulk (CK), Leachate (LL), Biosolid (BS), Other (OT)

Specify Container Size **: 1 1 3 3 3 3 3 1

Identify Container Preservative Type***: 1 1 3 2 2 2 3 2

Analysis Requested

Customer Sample ID	Matrix *	Comp / Grab	Composite Start Date	Composite Start Time	Collected or Composite End Date	Collected or Composite End Time	# Cont.	Res. Chlorine Results	Res. Chlorine Units	Chloride/Fluoride/Sulfate	TDS / Alkalinity	COD / TOC	App III and Cat/An Metals (200.7)*	Appendix IV Metals (200.7/200.8/7470)**	UWL Metals (200.7)***	TOX	Radium 226 & Radium 228	Sample Comment
L-TMW-1	WT	G			10/31/24	1345	6			✓	✓	✓	✓	✓	✓	✓	✓	
L-TMW-2	WT	G			10/31/24	1142	6			✓	✓	✓	✓	✓	✓	✓	✓	
L-TMW-3	WT	G			10/30/24	1640	6			✓	✓	✓	✓	✓	✓	✓	✓	
L-UWL-DUP-1	WT	G			10/30/24	—	6			✓	✓	✓	✓	✓	✓	✓	✓	
L-UWL-FB-1	WT	G			10/31/24	1410	6			✓	✓	✓	✓	✓	✓	✓	✓	
L-UWL-MS-1	WT	G			10/31/24	1142	6			✓	✓	✓	✓	✓	✓	✓	✓	
L-UWL-MSD-1	WT	G			10/31/24	1142	6			✓	✓	✓	✓	✓	✓	✓	✓	
L-MW-26	WT	G			10/30/24	1438	6			✓	✓	✓	✓	✓	✓	✓	✓	

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) 90mL, (10) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Lab Use Only
Proj. Mgr: Jamie Church
AcctNum / Client ID:
Table #:
Profile / Template: 15857
Prelog / Bottle Ord. ID: EZ 3163154

Preservation non-conformance identified for sample.

Additional Instructions from Pace®:
* App III and Cat/An Metals* - EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B
**App IV Metals -EPA 200.7: Ba,Be,Co,Pb, Li,Mo & 200.8 Metals - Sb, As, Cd, Cr, Se,Tl +7470 Hg
***UWL Metals - 200.7: Al, Cu, Ni, Ag, Zn + Hardness

Collected By: (Printed Name) John Rasmussen
Signature:

Customer Remarks / Special Conditions / Possible Hazards:

# Coolers:	Thermometer ID:	Correction Factor (°C):	Obs. Temp. (°C)	Corrected Temp. (°C)	On Ice:
6	T298	-0.1	1.9/2.5/0.5/15.3/13.9	14.4	

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Rocksmith	10/31/24 1600		11/1/24 0552
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:

Tracking Number:

Delivered by: [ ] In-Person [ ] Courier [ ] FedEX [ ] UPS [ ] Other

Page: 1 of 1

Pace® Location Requested (City/State):
Pace Analytical Kansas
9608 Loiret Blvd., Lenexa, KS 66219

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here

6a463710

Scan QR Code for instructions

Company Name:	Rocksmith Geoengineering, LLC.	Contact/Report To:	Mark Haddock
Street Address:	2320 Creve Coeur Mill Road, Maryland Heights, MO 63043	Phone #:	314-974-6578
		E-Mail:	mark.haddock@rocksmithgeo.com
		Cc E-Mail:	
Customer Project #:	COC# 4	Invoice To:	Mark Haddock
Project Name	AMEREN LCL1	Invoice E-Mail:	mark.haddock@rocksmithgeo.com
Site Collection Info/Facility ID (as applicable):		Purchase Order # (if applicable):	
		Quote #:	

Time Zone Collected: [ ] AK [ ] PT [ ] MT [ ] CT [ ] ET

County / State origin of sample(s): Missouri

Data Deliverables:
[ ] Level II [ ] Level III [ ] Level IV
[ ] EQUIS
[ ] Other

Regulatory Program (DW, RCRA, etc.) as applicable: Reportable [ ] Yes [ ] No

Rush (Pre-approval required):
[ ] Same Day [ ] 1 Day [ ] 2 Day [ ] 3 Day [ ] Other _____

Date Results Requested:

DW PWSID # or WW Permit # as applicable:

Field Filtered (if applicable): [ ] Yes [ ] No

Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Surface Water (SW),Sediment (SED), Sludge (SL), Caulk (CK), Leachate (LL), Biosolid (BS), Other (OT)

Specify Container Size **: 1 1 3 3 3 3 3 1

Identify Container Preservative Type***: 1 1 3 2 2 2 3 2

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) 90mL, (10) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Lab Use Only
Proj. Mgr: Jamie Church
AcctNum / Client ID:
Table #:
Profile / Template: 15857
Prelog / Bottle Ord. ID: EZ 3163154

Customer Sample ID	Matrix *	Comp / Grab	Composite Start Date	Composite Start Time	Collected or Composite End Date	Collected or Composite End Time	# Cont.	Res. Chlorine Results	Res. Chlorine Units	Chloride/Fluoride/Sulfate	TDS / Alkalinity	COD / TOC	App III and Cat/An Metals (200.7)*	Appendix IV Metals (200.7/200.8/7470)*	UWL Metals (200.7)***	TOX	Radium 226 & Radium 228	Sample Comment	Preservation non-conformance identified for sample
L-TMW-1	WT																		
L-TMW-2	WT																		
L-TMW-3	WT																		
L-UWL-DUP-1	WT																		
L-UWL-FB-1	WT																		
L-UWL-MS-1	WT																		
L-UWL-MSD-1	WT																		
L-BMW-15		G			10-28-24	1142	6			✓	✓	✓	✓	✓	✓	✓	✓		
L-BMW-25	↓	G			↓	0940	6			✓	✓	✓	✓	✓	✓	✓	✓		

Additional instructions from Pace®:
* App III and Cat/An Metals* - EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B
**App IV Metals -EPA 200.7: Ba,Be,Co,Pb, Li,Mo & 200.8 Metals - Sb, As, Cd, Cr, Se,Tl +7470 Hg
***UWL Metals - 200.7: Al, Cu, Ni, Ag, Zn + Hardness

Collected By: (Printed Name) John Rasmussen
Signature:

Customer Remarks / Special Conditions / Possible Hazards:

# Coolers:	Thermometer ID:	Correction Factor (°C):	Obs. Temp. (°C)	Corrected Temp. (°C)	On Ice:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Tracking Number:
Rocksmith	10/29/24 1600			
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Delivered by: [ ] In- Person [ ] Courier
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	[ ] FedEX [ ] UPS [ ] Other
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Page: of

DC#_Title: ENV-FRM-LENE-0001 v07_Sample Container Count
Effective Date: 7/12/2024
Client: Rocksmith Greeng Profile/EZ #: 3163154

Site: Notes

COC Line Item	Matrix	VG9H	DG9H	DG9Q	VG9U	DG9U	DG9M	DG9B	BG1U	AG1H	AG1U	AG2U	AG3S	AG4U	AG5U	JGFU	WGKU	WGDU	BP1U	BP2U	BP3U	BP1N	BP3N	BP3F	BP3S	BP3B	BP3Z	WPDU	ZPLC	Other		
1	WT												2						1			2	1									
2	↓												6						3			2	3									
3													2						1			2	1									
4													2						1			2	1									
5	↓												2						1			2	1									
6																						2										
7	↓																					2										
8																																
9																																
10																																
11																																
12																																

Container Codes

Glass			
DG9B	40mL bisulfate clear vial	WGKU	8oz clear soil jar
DG9H	40mL HCl amber voa vial	WGFU	4oz clear soil jar
DG9M	40mL MeOH clear vial	WG2U	2oz clear soil jar
DG9Q	40mL TSP amber vial	JGFU	4oz unpreserved amber wide
DG9S	40mL H2SO4 amber vial	AG0U	100mL unores amber glass
DG9T	40mL Na Thio amber vial	AG1H	1L HCl amber glass
DG9U	40mL amber unpreserved	AG1S	1L H2SO4 amber glass
VG9H	40mL HCl clear vial	AG1T	1L Na Thiosulfate clear/amber glass
VG9T	40mL Na Thio. clear vial	AG1U	1liter unpres amber glass
VG9U	40mL unpreserved clear vial	AG2N	500mL HNO3 amber glass
BG1S	1liter H2SO4 clear glass	AG2S	500mL H2SO4 amber glass
BG1U	1liter unpres glass	AG3S	250mL H2SO4 amber glass
BG3H	250mL HCL Clear glass	AG2U	500mL unpres amber glass
BG3U	250mL Unpres Clear glass	AG3U	250mL unpres amber glass
WGDU	16oz clear soil jar	AG4U	125mL unpres amber glass
		AG5U	100mL unpres amber glass

Plastic	
BP1B	1L NAOH plastic
BP1N	1L HNO3 plastic
BP1S	1L H2SO4 plastic
BP1U	1L unpreserved plastic
BP1Z	1L NaOH, Zn Acetate
BP2B	500mL NAOH plastic
BP2N	500mL HNO3 plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Acetate
BP3B	250mL NaOH plastic
BP3F	250mL HNO3 plastic - field filtered
BP3N	250mL HNO3 plastic
BP3U	250mL unpreserved plastic
BP3S	250mL H2SO4 plastic
BP3Z	250mL NaOH, Zn Acetate
BP4U	125mL unpreserved plastic
BP4N	125mL HNO3 plastic
BP4S	125mL H2SO4 plastic
WPDU	16oz unpresserved plstic

Misc.	
I	Wipe/Swab
SP5T	120mL Coliform Na Thiosulfate
ZPLC	Ziploc Bag
AF	Air Filter
C	Air Cassettes
R	Terracore Kit
U	Summa Can

Matrix	
WT	Water
SL	Solid
NAL	Non-aqueous Liquid
OL	OIL
WP	Wipe
DW	Drinking Water

Work Order Number: 6046371o

E206

Internal Transfer Chain of Custody

Pace

☐ Rush Multiplier_____X
☐ Samples Pre-Logged into eCOC

State Of Origin: MO
Cert. Needed: ☐ Yes ☒ No

Workorder: 60463710 **Workorder Name:** AMEREN LCL1

Owner Received Date: 11/1/2024 **Results Requested By:** 11/15/2024

Report To	Subcontract To
Jamie Church Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 314-838-7223	Pace National 12065 Lebanon Rd Mt. Juliet, TN 37122 Phone (615) 758-5858

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4	TOX	LAB USE ONLY
1	L-TMW-1	PS	10/31/2024 13:45	60463710001	Water	2	X	01
2	L-TMW-2	RQS	10/31/2024 11:42	60463710002	Water	2	X	02
3	L-TMW-3	PS	10/30/2024 16:40	60463710003	Water	1	X	03
4	L-UWL-DUP-1	PS	10/30/2024 08:31	60463710004	Water	1	X	04
5	L-UWL-FB-1	PS	10/31/2024 14:10	60463710005	Water	1	X	05

L795723

Transfers	Released By	Date/Time	Received By	Date/Time
1			Li Dawn IT	11-5-24 / 0900
2				
3				

Comments

KS sample location: 6090-R8-S5A

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

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

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres. Correct/Check:	Y N
Correct bottles used:	Y N	MU 11-5	
Sufficient volume sent:	Y N		
RA Screen <0.5 mR/hr:	Y N		

Fed Ex tracking #	Gun ID	Temperature
4033 6452 3298	MSA9	5.0 + 0.3 = 5.3
4033 6452 3265	MSA9	3.9 + 0.3 = 4.2
~~8~~ ~~38~~		
4033 6452 3287	MSA9	4.9 + 0.3 = 5.2
4033 6452 3276	MSA9	5.5 + 0.3 = 5.8

Eli Dossett
Name

11-5-24
Date

U745733

Internal Transfer Chain of Custody

☐ Rush Multiplier____X
☐ Samples Pre-Logged into eCOC

State Of Origin: MO
Cert. Needed: ☐ Yes ☒ No
Owner Received Date: 11/1/2024 Results Requested By: 11/15/2024

Workorder: 60463710 Workorder Name: AMEREN LCL1

Report To	Subcontract To
Jamie Church Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 314-838-7223	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3						Requested Analysis Radium 226	Radium 228											LAB USE ONLY
1	L-TMW-1	PS	10/31/2024 13:45	60463710001	Water	2						X	X											001
2	L-TMW-2	RQS	10/31/2024 11:42	60463710002	Water	2						X	X											002
3	L-TMW-3	PS	10/30/2024 16:40	60463710003	Water	2						X	X											003
4	L-UWL-DUP-1	PS	10/30/2024 08:31	60463710004	Water	2						X	X											004
5	L-UWL-FB-1	PS	10/31/2024 14:10	60463710005	Water	2						X	X											005
6	L-UWL-MS-1	PS	10/31/2024 11:42	60463710006	Water	2						X	X											006
7	L-UWL-MSD-1	PS	10/31/2024 11:42	60463710007	Water	2						X	X											007

Transfers	Released By	Date/Time	Received By	Date/Time
1			[signature]	11/7/24 930
2				
3				

Comments: KS sample location: 60-R01-S3A

Cooler Temperature on Receipt ____ °C | Custody Seal Y or (N) | Received on Ice Y or (N) | Samples Intact (Y) or N

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

WO# : 30732324

30732324

DC#_Title: ENV-FRM-GBUR-0088 v07_Sample C... Receipt Greensburg

Effective Date: 01/04/2024

WO# : 30732324

PM: MAR Due Date: 12/02/24

CLIENT: PACE_60_LEKS

Client Name: Pace - Lenexa, KS

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

Tracking Number: 4033 6452 4011

Initial / Date

Examined By: EJ 11/7/24

Labeled By: EJ 11/7/24

Temped By: —

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

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

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

Temp should be above freezing to 6°C

pH paper Lot# 10D1041 | D.P.D. Residual Chlorine Lot # —

Comments:	Yes	No	NA	
Chain of Custody Present	✓			1.
Chain of Custody Filled Out:	✓			2.
-Were client corrections present on COC		✓		
Chain of Custody Relinquished		✓		3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC:	✓			5.
-Includes date/time/ID				
Matrix: WT				
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered:			✓	12.
Hex Cr Aqueous samples field filtered:			✓	13.
Organic Samples checked for dichlorination			✓	14:
Filtered volume received for dissolved tests:			✓	15:
All containers checked for preservation:	✓			16.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix				pH<2
All containers meet method preservation requirements:	✓			Initial when completed EJ / Date/Time of Preservation / Lot# of added Preservative
8260C/D: Headspace in VOA Vials (> 6mm)			✓	17.
624.1: Headspace in VOA Vials (0mm)			✓	18.
Radon: Headspace in RAD Vials (0mm)			✓	19.
Trip Blank Present:			✓	Trip blank custody seal present? YES or NO
Rad Samples Screened <.05 mrem/hr.	✓			Initial when completed PS / Date: 11/7/24 / Survey Meter SN: 25014380

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.

Qualtrax ID: 55680

Memorandum

January 22, 2025

To:	Project File Rocksmith Geoengineering, LLC	**Project Number:**	23007-24
CC:	Mark Haddock, Jeffrey Ingram		
From:	Jack Rasmussen	**Email:**	jack.rasmussen@rocksmithgeo.com
RE:	**Data Validation Summary, Labadie Energy Center – LCL1 – Data Package 60463710**		

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 duplicate criterion was not met, the associated sample result was qualified as an estimate (J for detects, UJ for non-detects).
- When a compound was detected in a sample result between the Method Detection Limit (MDL) and Practical Quantification Limit (PQL), the results were recorded at the detection value and qualified as estimates (J).
- When a matrix spike/matrix spike duplicate (MS/MSD) criterion was not met, the associated sample result was qualified as an estimate (J, J+ for estimates based high, and J- for estimates based low).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Rocksmith Geoengineering
Project Manager: J. Ingram
Project Name: Ameren LCL1
Project Number: 23007-24
Reviewer: J. Rasmussen
Validation Date: 01/22/2025

Laboratory: Pace Analytical
SDG #: 60463710
Analytical Method (type and no.): EPA 200.7/200.8/7470 (Total Metals); SM 2320B (Alkalinity); SM 2540C (TDS); EPA 300.0 (Anions);
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐ SM 4500-S-2 (Sulfide); EPA 903.1/904.0 (Radium 226+228)
Sample Names L-TMW-1, L-TMW-2, L-TMW-3, L-UWL-DUP-1, L-UWL-FB-1, L-UWL-MS-1, L-UWL-MSD-1, L-MW-26, L-BMW-1S, L-BMW-2S

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			10/28/24-10/31/24
b) Sampling team indicated?	x			JTR/JDQ
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, Spec Cond, Turb, Temp, DO, ORP
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	No lab narrative.

Note Deficiencies:

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	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	L-UWL-FB-1 @ L-TMW-1
d) Were analytes detected in the trip blank(s)?			x	

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			L-UWL-DUP-1 @ L-TMW-3
b) Were field dup. precision criteria met (note RPD)?	x			See Notes
c) Were lab duplicates analyzed (note original and duplicate samples)?	x			
d) Were lab dup. precision criteria met (note RPD)?		x		See Notes

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

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

Comments/Notes:

General:

Sulfate and/or alkalinity were diluted in several samples; no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

Method Blanks:

3620890: calcium (36.1J) and sodium (235J), associated with samples -001 and -002. All results > 10x blank and RL, no qualification necessary.

3622660: calcium (116J), associated with sample -019. Result > 10x blank and RL, no qualification necessary.

3622757: calcium (122J) and iron (10.8J), associated with samples -001 through -005.

-001, -002, -003, and -004 iron > 10x blank and > RL, results qualified as estimates. -005 calcium <10x blank and RL, result qualified as non detect. -005 iron not detected, no qualification necessary.

Field Blanks:

L-UWL-FB-1 @ L-TMW-1: calcium (132J) and TDS (19.0). All results > 10x blank and RL, no qualification necessary.

Lap Duplicate:

3627176: RPD control (15%) exceeded for chloride (16%), associated with unrelated sample, no qualification necessary.

Max RPD: 20%, metals; 15%, chloride fluoride, sulfate; 10%, alkalinity, TDS.

MS/MSD:

3621100/3621101: MSD recovery high for calcium, MS recovery and RPD within control. Associated with unrelated sample, no qualification necessary.

3622759/3622760: MSD recovery high for calcium, MS recovery and RPD within control. Associated with unrelated sample, no qualification necessary.

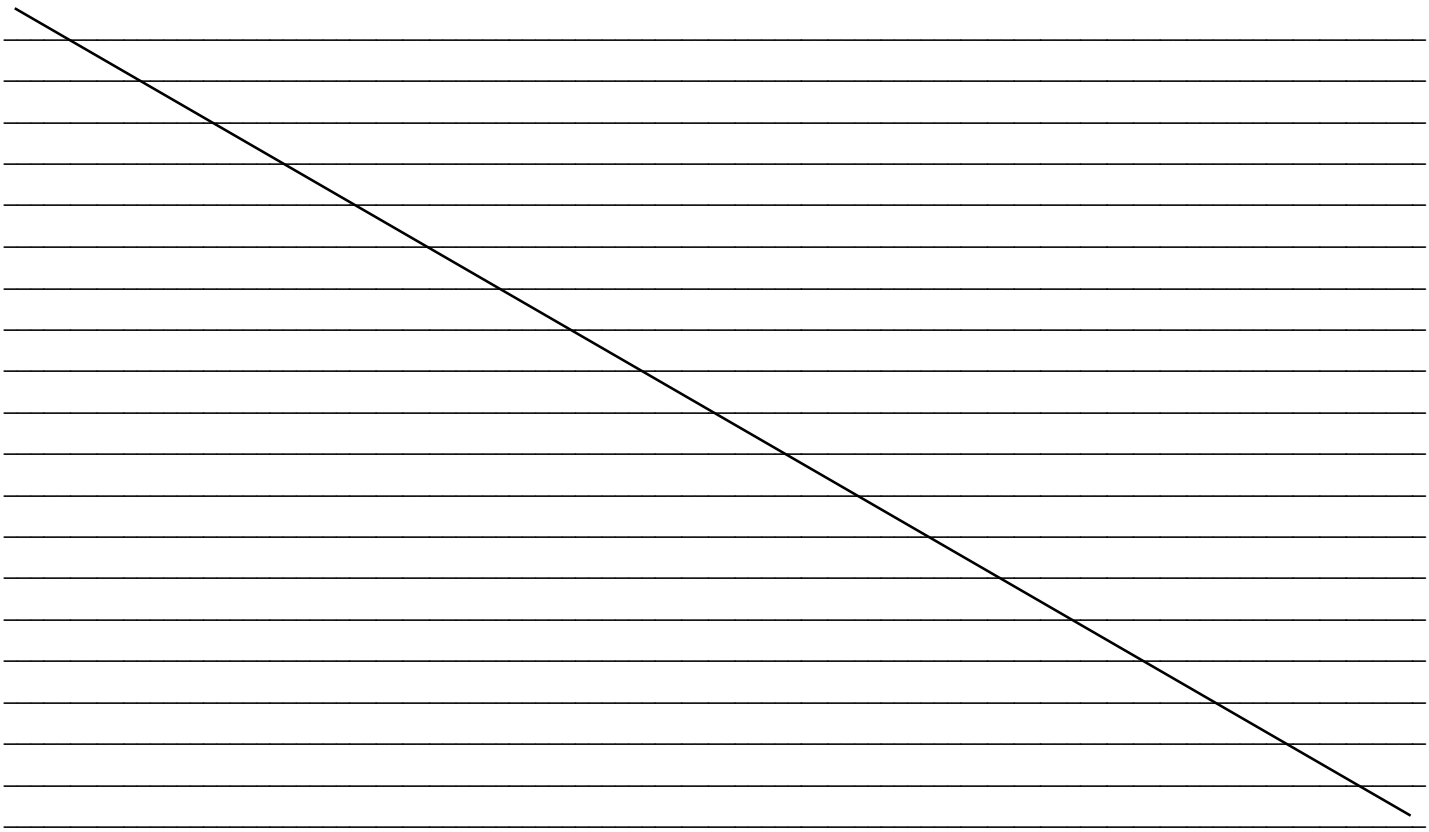
3627177/3627178: MS/MSD recovery low for chloride, RPD within control. Associated with sample -002, result qualified as estimate.

3627883/3627884: MS/MSD recovery high for sulfate, RPD within control. Associated with sample -004, result qualified as estimate.

3627885: MS recovery low for chloride and high for sulfate. Associated with unrelated sample, no qualification necessary.

3629891/3629891: RPD high for fluoride, MS/MSD within control. MSD recovery high for sulfate, MS recovery and RPD within control. Associated with unrelated sample, no qualification necessary.

3629893: MS recovery high for sulfate. Associated with unrelated sample, no qualification necessary.



QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-UWL-FB-1	Calcium	200	U	Result < 10x method blank and RL
L-TMW-2	Chloride	10.3	J-	MS/MSD low, RPD okay
L-UWL-DUP-1	Sulfate	30.2	J+	MS/MSD high, RPD okay

Signature: _____ Date: 01/22/2025

Appendix B

Alternative Source Demonstration – November 2023 Sampling Event

REPORT

LCL1 – Alternative Source Demonstration

Labadie Energy Center, Franklin County, Missouri, USA

July 23, 2024

Project Number: 23007-24

Submitted to:

Ameren Missouri
1901 Chouteau Ave,
St. Louis, MO 63103

Submitted by:

Rocksmith Geoengineering, LLC
2320 Creve Coeur Mill Rd
Maryland Heights, MO 63043

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TABLES

FIGURES

Certification Statement

This *LCL1 – Alternative Source Demonstration, Labadie Energy Center, Franklin 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 Rocksmith Geoengineering, LLC.

I hereby certify that this *LCL1 – Alternative Source Demonstration, Labadie Energy Center, Franklin County, Missouri, USA* located at 226 Labadie Power Plant Road, Labadie Missouri 63055 has been prepared to meet the requirements of 40 CFR §257.94(e)(2).

Rocksmith Geoengineering, LLC.

_____

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

Principal Engineer, Senior Partner

1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (CCR Rule or The Rule), this LCL1 – Alternative Source Demonstration has been prepared to document an Alternative Source Demonstration (ASD) for Statistically Significant Increases (SSI) calculated at Ameren Missouri's (Ameren) Labadie Energy Center (LEC), Utility Waste Landfill (UWL) LCL1, or Cell 1. 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 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.

2.0 SITE DESCRIPTION AND BACKGROUND

The LEC is located approximately 35 miles west of downtown St. Louis in Franklin County, Missouri, just south of the Missouri River. **Figure 1** depicts the site location and layout, including the location of LCL1. The LEC encompasses approximately 2,400 acres and is located within the Missouri River Valley. The facility is bounded to the north by the Missouri River, to the west by Labadie Creek, to the northeast and east by agricultural land, and to the south by a railroad line and bedrock bluffs.

2.1 Geological and Hydrogeological Setting

The site lies in a low-lying agricultural field area called the Labadie Bottoms that is between the Missouri River (to the north) and bedrock bluffs (to the south). Flow and deposition from the Missouri River have resulted in thick alluvial deposits that lie on top of bedrock. These alluvial deposits, which can range from approximately 90 to 120 feet in thickness, comprise the uppermost aquifer. Overall, this alluvial aquifer is described as a fining-upwards sequence of stratified sands and gravels with varying amounts of silts and clays. Based on drilling records, the alluvial aquifer is divided into 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 variable.

Beneath the alluvial aquifer lies the bedrock aquifer. Bedrock in this region consists of Ordovician-aged rock. Formations include primarily limestone, dolomite, sandstone, and shale and are comprised of the Plattin Group, Joachim Dolomite, St. Peter Sandstone, Powell Dolomite, and the Cotter/Jefferson City Dolomites.

2.2 Utility Waste Landfill Cell 1 – LCL1

UWL Cell 1 is referred to by Ameren as the LCL1, or Cell 1. The LCL1 is approximately 31 acres in size and is located east of the generating plant (**Figure 1**). The CCR Unit manages CCR from the LEC and is permitted to accept 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. Currently, the LCL1 is used for the dry disposal of fly ash and bottom ash from the LEC.

The LCL1 was constructed with a composite liner system consisting of two feet of compacted clay soil with a hydraulic conductivity of less than 1 X 10^{-7} centimeters per second (cm/sec) overlain by a 60-mil High Density Polyethylene (HDPE) geomembrane liner. Information on the design of the UWL is available in the 2013 Proposed Construction Permit application (Gredell and Reitz & Jens, 2013).

A groundwater monitoring well network was installed in 2013 and 2014 to permit the UWL construction. This monitoring well network was approved by the Missouri Department of Natural Resources (MDNR) and consists of 36 monitoring wells surrounding the current and future extents of the UWL (**Figure 1**). Most of these monitoring wells are screened in the uppermost portions of the alluvial aquifer, just below the seasonally low elevation for groundwater. Three monitoring wells [MW-33(D), MW-34(D), and MW-35(D)] are installed in the intermediate/deeper zones of the alluvial aquifer. Groundwater samples have been collected in most of these monitoring wells since April 2013 and tested for the MDNR UWL parameters. In April 2017, four monitoring wells were installed and added to this network along Labadie Bottom Road (S-1, S-2, S-3, and S-4).

The permit for the LCL1 was issued October 27, 2016 (permit #0907101). Eleven sampling events were performed prior to October 27, 2016 at most of the state required UWL monitoring wells, and four rounds of

baseline CCR Rule sampling were completed at CCR Rule monitoring wells (discussed below). These results represent groundwater quality prior to CCR placement in the UWL. The results from these pre-disposal monitoring events are used in conjunction with other site information in the ASD presented below.

2.3 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 well design, installation, development, sampling procedures, as well as statistical methods, and placed in the owner's operating record, and eight baseline groundwater sampling events were completed for all Appendix III and Appendix IV parameters of CCR Rule.

The groundwater monitoring system for the LCL1 consists of six monitoring wells screened in the uppermost aquifer (alluvial aquifer) as shown on **Figure 1**. Two existing monitoring wells (MW-26 and TMW-1) were installed by Reitz & Jens, Inc. in 2013 as a part of the state UWL monitoring program. The remaining monitoring wells (TMW-2, TMW-3, BMW-1S, and BMW-2S) were installed by Golder Associates Inc. (Golder) in 2015 and 2016 for CCR Rule groundwater monitoring purposes. More information regarding the design and installation of the monitoring wells is provided in the LCL1 GMP (Golder, 2017) and the LCL1 2017 Annual Report (Golder, 2018).

Between May 2016 and June 2017, eight baseline sampling events were completed for the LCL1. After baseline sampling, Detection Monitoring events have been completed twice a year, generally once in Q2 and once in Q4. April 2022 was the last Detection Monitoring sampling event. Laboratory testing was performed for the following Appendix III constituents during each Detection Monitoring event:

- Boron
- Calcium
- Chloride
- pH
- Sulfate
- Total Dissolved Solids (TDS)
- Fluoride

Background results from the eight baseline sampling events were used to calculate statistical upper prediction limits (UPL). These UPLs were then compared to the Detection Monitoring results. If the result from the current Detection Monitoring event was higher than the calculated UPL, the result was considered an initial exceedance, and verification sampling was performed in accordance with the LCL1 statistical analysis plan. Per the statistical analysis plan, after the May 2019 sampling event, the UPLs were updated to incorporate results from four (4) of the Detection Monitoring events. The UPLs were updated again following the April 2021 sampling event after an additional four Detection Monitoring events were completed. Most recently, UPLs were updated following the May 2023 sampling event, after four additional Detection Monitoring events were completed since the previous update.

Since November 2017, several ASDs have been prepared for SSIs identified at wells MW-26, TMW-1, and TMW-2. These previous ASDs are available in the 2018 through 2023 Annual Reports for the LCL1 and are available on Ameren's publicly available CCR Compliance website[1]. These ASDs have demonstrated that previous SSIs at the site were not caused by the LCL1 and were primarily the result of relatively low calculated UPLs that were not representative of the full, natural geochemical variability within the alluvial aquifer or were caused by the LCL1's location being downgradient from the LCPA, which is currently in corrective action. Additionally, soluble salts associated with the gravel and concrete construction of the LCL1 display an increase in constituent

[1] Website is available at: https://www.ameren.com/company/environment-and-sustainability/managing-coal-combustion/ccr-compliance-reports

concentrations that correlate with the time of placement of road gravel and LCL1 construction activities and the net shallow groundwater movement at the site.

In November 2023, initial exceedances were identified for chloride at TMW-1, boron, calcium, chloride, and sulfate at TMW-2, and total dissolved solids at TMW-3. Verification sampling in February 2024 confirmed SSIs for calcium, chloride, and sulfate at TMW-2. Other initial exceedances were not confirmed. Results from this sampling event are provided in **Table 1**.

2.4 Review of the Statistically Significant Increases

Results from the November 2023 sampling event and subsequent February 2024 verification sampling are presented on **Table 1**. Each of the SSIs noted above occurred at monitoring well TMW-2. This monitoring well is screened in the upper portion of the alluvial aquifer, just below the average seasonal low for groundwater. As shown on **Figure 1**, TMW-2 is located to the northeast of the LCL1, east of the generating plant and surface impoundments LCPA and LCPB. Closure of these CCR Units was substantially completed before the April 2021 sampling event, with the completion of the engineered geomembrane cover system on December 30, 2020.

Based on review of the pre-disposal data discussed in Section 2.3 above, as well as our comparison of the pre-disposal data with the results from the eight CCR-Rule baseline events, the groundwater at the LCL1 contains low-level, pre-existing CCR impacts from units/activities that pre-dated disposal activities in the LCL1. As a result of these pre-existing impacts, the LCL1 statistical analysis plan uses intrawell upper prediction limits (UPLs) to determine SSIs. Intrawell UPLs are calculated from historical data within a particular well, and not by pooling data from background wells, such that individual limits are calculated for each constituent in each well in the monitoring program.

3.0 EVIDENCE OF SSI FROM ALTERNATIVE SOURCE

Multiple lines of evidence indicate that the SSIs are not the result of a release from the LCL1 but are rather from an alternative source. The following bullets summarize the different lines of evidence that support this ASD:

- Pre-existing, low-level concentrations of CCR impacts in groundwater that pre-date the installation and operation of the LCL1.
- Construction of the LCL1 with a 60-mil high density polyethylene (HDPE) geomembrane liner and a 2-foot thick clay barrier near TMW-2.
- Location near fresh limestone and dolomitic gravels, and the potential geochemical influence from the LCL1 gravel construction materials and parking lot/road salting on shallow groundwater.
- Lack of increasing concentrations of the key CCR Indicator (boron) in monitoring wells with SSIs.
- Lack of any exceedances for any constituent following results of the May 2024 sampling event.

3.1 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 2** below describes the different types of CCRs and their typical indicator parameters (USEPA 2018, EPRI 2011, EPRI 2012, and EPRI 2017).

Table 2: Types of CCR and Typical Indicator Parameters

Type of CCR	Description of CCR (USEPA 2018)	Key Indicators (EPRI 2011, 2012, 2017)
Fly Ash	Fine grained, powdery material composed mostly of silica made from	• Boron

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

Notes:

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

As described above, the LCL1 has historically received fly ash. No FGD type wastes are managed at the LEC.

3.2 Evaluation of SSIs at TMW-2

3.2.1 Boron Concentrations

As indicated in **Table 2**, boron is a key indicator for fly ash and boiler slag/bottom ash impacts because it is typically present at relatively high concentrations 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 and key indicator of impacts from a CCR Unit. Boron is also present in the monitoring wells around the LCPA and has been shown to be a key indicator for CCR impacts at this site. Therefore, if groundwater was impacted by the LCL1, current boron concentrations should be statistically elevated with respect to pre-CCR placement downgradient of the LCL1.

Figure 2 displays boron concentrations at TMW-2 as well as the two shallow background wells for the LEC for the entire historical monitoring period. At TMW-2, boron concentrations have varied over time with values ranging from 86.8 J to 156 micrograms per liter (µg/L). The intrawell UPL for boron at TMW-2 is 132.9 µg/L. Throughout this same timeframe, background wells BMW-1S and BMW-2S, which have no pre-existing CCR impact and are located approximately 2.5 miles to the west of the LCL1, have had boron concentrations ranging from non-detect (< 50 µg/L) to 151 µg/L. The interwell UPL for boron (based on shallow LEC background wells) is 141.2 µg/L.

As displayed in **Figure 2**, the most recent boron concentration at TMW-2 (131 µg/L) is below the UPL for both TMW-2 and the background monitoring wells and is consistent with previous results. The absence of boron exceedances and lack of an increasing trend of boron at TMW-2 demonstrates that elevated concentrations for other constituents come from an alternative source, rather than LCL1 CCR.

3.3 Constituents of Interest (COI) at TMW-2

As stated in Section 2.3 there are three verified SSIs from the November 2023 sampling event, all at monitoring well TMW-2, including calcium, chloride, and sulfate (referred to hereafter as the Constituents of Interest or COIs). To determine the source of the recent exceedances for the COIs, values were compared to background and different source water datasets. **Figures 3** to **9** are timeseries plots displaying the concentrations of the COIs compared to shallow background concentrations from background wells located 2.5 miles upgradient of the LCL1.

As displayed on these figures, there is an increase in each of the COIs since April 2021, however, as discussed in Section 3.2.1, the absence of boron with the other confirmed exceedances indicates that it is unlikely that these low-level SSIs are caused by CCR impacts.

Table 3 below displays concentration data for the COIs as well as major cations and anions from the November 2023 and February 2024 sampling events, compared with the CCR porewater concentrations from the LCPA (contains bottom ash and fly ash) and the LCPB (contains fly ash).

Table 3: Comparison of TMW-2 and Porewater Concentrations for Contaminants of Interest

Constituent (Units)	November 2023 Result at TMW-2	February 2024 Result at TMW-2	LCPA Porewater Range	LCPB Porewater Range
Calcium (µg/L)	254,000	231,000	76,500 – 106,000	11,400 – 22,600
Chloride (mg/L)	19.9	11.6	15.2 – 25.5	15.6 – 18.4
Sulfate (mg/L)	231	165	254 – 306	728 – 1,060
Total Dissolved Solids (mg/L)	568 J	Not Sampled	528 – 642	1,860 – 2,850
Magnesium (µg/L)	73,700	Not Sampled	184 – 45,500	84.4 – 386
Alkalinity (mg/L)	766	Not Sampled	77.6 – 208	861 – 1,340
Sodium (µg/L)	18,500	Not Sampled	50,500 - 84,000	750,000 – 969,000

Notes:
1) µg/L – Micrograms per liter.
2) mg/L – Milligrams per liter.

As displayed in **Table 3**, porewater samples collected from the LCPA and LCPB CCR units indicate that CCR is not a potential source for increases in calcium or magnesium at TMW-2, as the concentrations in porewater are lower than those found in groundwater at TMW-2. This, combined with a lack of increased boron concentrations, the key CCR indicator, indicates that an alternative source is responsible for exceedances present at TMW-2.

3.3.1 Nearby Carbonate Gravel Roadways and Concrete Construction as Potential Source

In addition to the lines of evidence presented above, the recent placement of fresh, crushed limestone ($CaCO_3$)/dolomite ($CaMg(CO_3)_2$) gravel and concrete near well TMW-2 is a potential source of the elevated COI concentrations reported in the shallow well TMW-2. As displayed in **Figure 10**, the area surrounding TMW-2 has been affected by activities associated with LCL1 construction over the past several years, and fresh limestone and dolomite gravels, as well as concrete, have been placed near TMW-2 in the following locations:

1) After construction of the LCL1, Labadie Bottom Road was re-graded and fresh, crushed gravel was placed on the road in late 2018 to early 2019. TMW-2 is located approximately 30 feet south and east of the new gravel roads as displayed in **Figure 10.**

2) The LCL1 Cell was constructed between 2015 and October 2016 and is constructed with gravel roads at the top of the unit, gravel beneath the fabric-formed articulated concrete mat (FCM) side slopes of the unit, and a gravel road at the base of the LCL1 as displayed in **Figure 10**. TMW-2[2] is approximately 145 feet from the

[2] The location of TMW-2 is as close as was feasible to the LCL1 as site conditions allowed in 2016 to comply with the timeframes of the CCR Rule. Construction activities associated with the LCL1 and a nearby gas pipeline made it so the closest practicable location for TMW-2 was ~145 feet from the toe of the berm at the LCL1.

toe of the berm. Based on aerial imagery and photographs, completion of the FCM and gravel road began in April 2016 and was completed by October 2016.

3) During the construction of the LCL1, fresh limestone/dolomite gravel was placed just to the east of the LCL1 and ~50 feet west of TMW-2. This gravel area was used as a parking area for construction and as a staging and laydown area for equipment. Based on onsite photos and aerial imagery, the gravel area was built in April 2016, and was removed after completion of the LCL1, in late 2016. The parking area is approximately 50 – 125 feet to the west/southwest of TMW-2. An image displaying the north end of the parking area is provided in **Figure 11**.

Figure 11 - North Area of LCL1 Construction Parking

The gravel used for the roadways, under the FCM, and parking lots nearby consists mostly of limestone and dolomite and contains some calcite sourced from nearby quarries. Precipitation and infiltration of surface water through fresh gravel, salting of gravel and road surfaces, and the use of concrete containing water-soluble salts that may leach into the shallow groundwater can cause an increase in the COIs observed in TMW-2.

The potential impact of carbonate rocks and their associated water-soluble salts has been studied since the 1950s, and Lamar and Shorde (1953) determined that soluble salts in dolomite and limestone commonly contain increased amounts of magnesium, bicarbonate (alkalinity), chloride, calcium, and sulfate. Numerous studies and geochemistry textbook citations since that time have confirmed these findings. Concrete is also known to contain water-soluble salts (Cheng et al., 2013) similar to those discussed for carbonate gravels with increased levels of calcium, chloride, and sulfate. The leaching of these salts from concrete is called efflorescence, and it can be common in the concrete construction industry. Efflorescence, the migration of salts to the surface, is typically described as a whitish colored powder that coats the surface of the concrete. As with carbonate gravels, precipitation and the ensuing runoff of surface water from the concrete FCM and associated water-soluble salts leaches soluble components into the shallow groundwater, which can cause an increase in the COIs observed at TMW-2.

3.3.2 Hydraulic Connection Between Potential Fresh Carbonate Gravel/Concrete Sources and TMW-2

As discussed in the 2023 LCL1 Annual Report (Rocksmith, 2024), net groundwater flow at the site is estimated to be approximately 18 feet per year from the bluffs to the south to the Missouri river to the north. Groundwater flow direction at the site varies slightly over time, but flow to the north/northeast is observed under normal river conditions. Based on the net groundwater flow, both the former gravel parking and laydown area associated with the construction of the LCL1, and the gravel roads and exposed FCM concrete/berm associated with the finished LCL1 cell are likely sources for COI impacts at TMW-2. Diffusion and dispersion of COIs in the groundwater may also facilitate impacts observed at TMW-2 due to its close proximity to the LCL1 construction activities.

The FCM and the gravel road at the top of the berm around the LCL1 were placed on top of compacted earth fill and were sloped to drain surface water toward the gravel road at the toe of the berm, surrounding the LCL1 (Gredell and Reitz & Jens, 2013). Historical aerial images (See **Figure 12** In text) display that the surface water runoff from the FCM is occurring as designed with some pooling of surface water below the berm and is causing increased infiltration over the former gravel area. As discussed above, the water that is infiltrating into the

groundwater will have leached available water-soluble salts from the FCM concrete and the underlying carbonate gravel/rock base.

Figure 12 – Historic Aerial Images near TMW-2

Notes:

1) Aerial images from Google Earth ®

As discussed above, the FCM, gravel roads associated with the UWL, and the gravel area located just west of TMW-2 were built between April and October 2016. These potential upgradient leaching sources are located approximately 50 to 145 feet upgradient of TMW-2. Based on the net groundwater flow rate (~18 feet per year average), leaching impacts from these carbonates and associated salt sources would be expected to reach well TMW-2 between 2019 and 2024.

As displayed in **Figure 3**, calcium concentrations at TMW-2 display an overall increasing trend since April 2020, with transitory increases and decreases observed since then. This timeframe of increased concentrations corresponds with the date range that would be expected for impacts caused by the leaching of the water-soluble salts associated with the fresh carbonate gravel/rock placement during the LCL1 construction and adjacent parking area construction.

Additionally, CCR placed in the LCL1 is not a potential source for increases in calcium at TMW-2, as the concentrations in CCR porewater at LEC are lower than those found in groundwater at TMW-2 and in the background wells. Therefore, leaching of the gravel and concrete water-soluble salts provides the most likely explanation for the increase in calcium concentrations at TMW-2, as fresh carbonates have been demonstrated to cause increases to calcium concentrations to groundwater (Lamar and Shorde, 1953) and the potential carbonate source is upgradient and hydrologically connected to TMW-2.

In addition to calcium impacts, magnesium, alkalinity, chloride, sulfate, sodium, and TDS display very similar trends to calcium (see **Figures 4-9**), with increasing concentrations in the same timeframe. Increases in these constituents, especially those that are not a result of CCR influence (i.e., calcium, magnesium, alkalinity, as shown in **Table 3**), coupled with a lack of increasing boron, indicates that these impacts are not from CCR influence on the groundwater, but are most likely related to leaching of fresh carbonate gravel and concrete and their associated soluble salt sources.

Lastly, the documented construction of the LCL1 with a robust, engineered base liner system constructed of 2 feet of low-permeability compacted clay overlain by a 60-mil high HDPE liner, also limits the potential that the November 2023 SSIs reported for TMW-2 are a result of influence from the LCL1. These lines of evidence collectively indicate that the SSIs observed in TMW-2 are not the result of CCR impacts from the LCL1.

3.3.3 Data Collected in May 2024

At the time of writing this ASD, data from the May 2024 sampling event at the LCL1 is available. Based on results from May 2024, there are no longer any SSIs for any Appendix III constituent within the LCL1 monitoring network. A comparison of results for selected constituents from November 2023 and May 2024 at TMW-2 is displayed below in **Table 4**:

Table 4: Comparison of November 2023 and May 2024 Sampling Results at TMW-2

Constituent (Units)	Upper Prediction Limit (UPL)	November 2023 Results	February 2024 Verification Results	May 2024 Results
Boron (µg/L)	132.9	156	131	93.9
Calcium (µg/L)	205,487	254,000	231,000	187,000
Chloride (mg/L)	7.142	19.9	11.6	5.4
Sulfate (mg/L)	115.5	231	165	51.4

Notes:

1) Data validation procedures have not been completed on results from May 2024.

Overall, concentrations of these Appendix III constituents show a significant decrease from November 2023 to May 2024. These recent results suggest that previously observed increases in some Appendix III constituents are the result of an alternative source, such as placement of fresh gravel and construction activities nearby TMW-2. The leaching rate from these materials is expected to decrease with time, as the salts on gravel and concrete surfaces are leached away, resulting in decreased concentrations of calcium and other constituents.

4.0 DEMONSTRATION THAT SSIS WERE NOT CAUSED BY IMPACTS FROM LCL1

Based on the information presented above, the SSIs reported for TMW-2 during the November 2023 monitoring event are not a result of impacts from the LCL1. The SSIs appear to be a result of the limestone/dolomite gravel, parking lot/road salting, and leaching of concrete placed upgradient of TMW-2 that has migrated downgradient into shallow groundwater to TMW-2. Soluble salts associated with the gravel and concrete (calcium, chloride, sulfate, magnesium, alkalinity, and TDS) display an increase in concentration that correlates with the time of placement and LCL1 construction activities and the net groundwater movement at the site. Additionally, recently collected data from May 2024 shows significant decreases across each constituent at an SSI, with each constituent no longer being in exceedance of their respective prediction limits. These trends, coupled with the lack of boron increases and robust engineered construction of the LCL1, indicate that the changes in concentration are not caused by the LCL1, and originate from gravel and exposed concrete sources used in LCL1 construction.

5.0 REFERENCES

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Tables

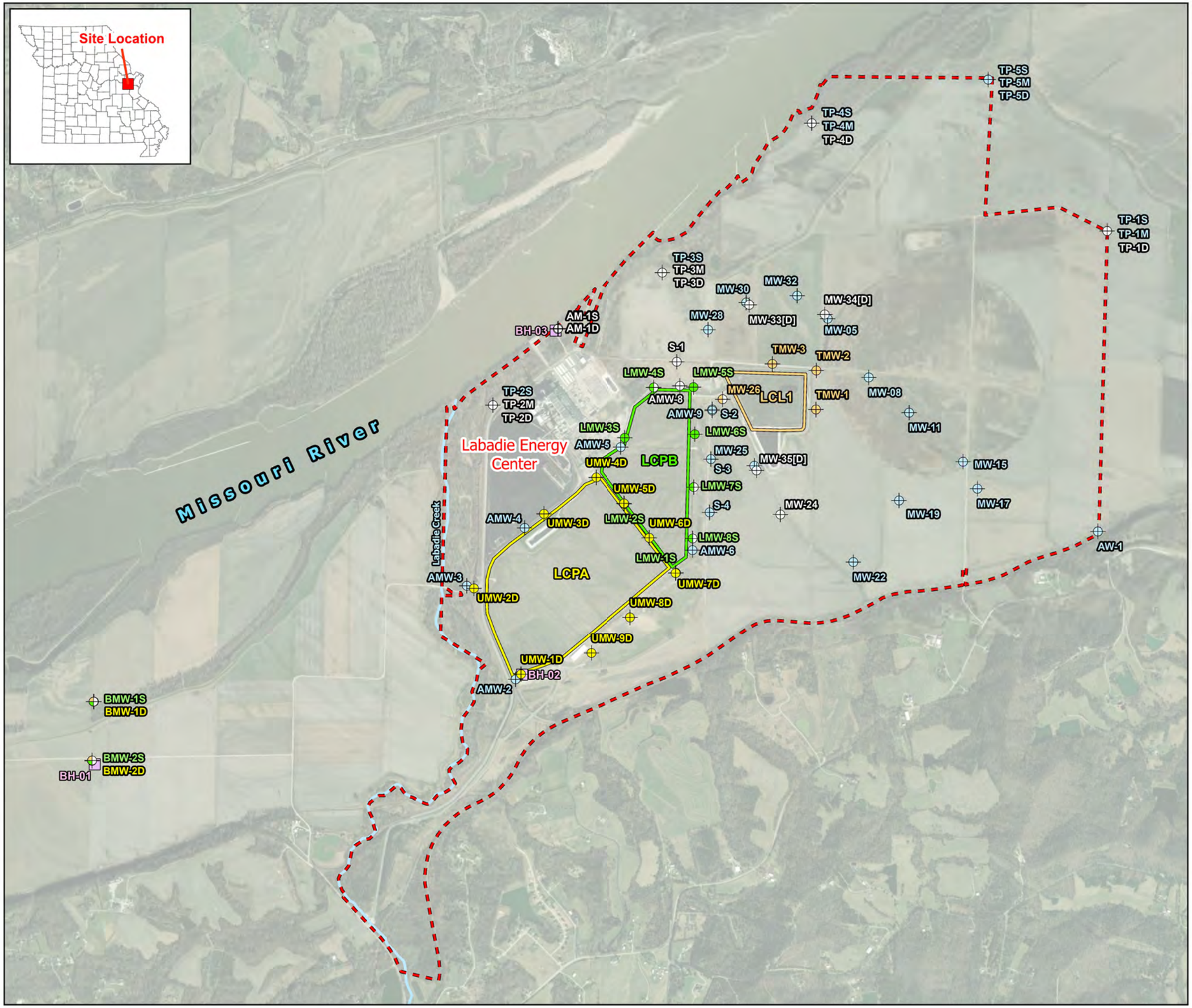
Table 1
November 2023 Detection Monitoring Results
LCL1 - Utility Waste Landfill Cell 1
Labadie Energy Center, Franklin County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-2S	Prediction Limit MW-26	MW-26	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
November 2023 Detection Monitoring Event											
DATE	NA	11/16/2023	11/16/2023	NA	11/17/2023	NA	11/17/2023	NA	11/16/2023	NA	11/17/2023
pH	SU	6.71	7.04	6.685-7.272	7.02	6.58-7.16	7.02	6.547-7.255	6.83	6.602-7.053	6.94
BORON, TOTAL	µg/L	113	50.8 J	99.63	69.9 J	124.4	108	132.9	156	137.4	114
CALCIUM, TOTAL	µg/L	208,000	150,000	155,608	147,000	183,798	160,000	205,487	254,000	209,613	145,000
CHLORIDE, TOTAL	mg/L	5.3	2.8	14.49	10.0	5.559	25.6	7.142	19.9	9.478	3.3
FLUORIDE, TOTAL	mg/L	ND	ND	0.24	ND	0.2888	ND	0.2521	ND	0.2743	ND
SULFATE, TOTAL	mg/L	72.4	38.3	41.04	37.2	128	55.4	115.5	231	101	44.8
TOTAL DISSOLVED SOLIDS	mg/L	692	471	564.1	434	733.5	485	815.4	568 J	820.6	1,100
February 2024 Verification Sampling Event											
DATE	NA						2/12/2024		2/12/2024		2/12/2024
pH	SU										
BORON, TOTAL	µg/L								131		
CALCIUM, TOTAL	µg/L								231,000		
CHLORIDE, TOTAL	mg/L						3.8		11.6		
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L								165		
TOTAL DISSOLVED SOLIDS	mg/L										561

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. ND - Constituent was analyzed but was not detected above the Method Detection Limit (MDL) or the adjusted Practical Quantitation Limit (PQL) based on data validation and is considered a non-detect. Values displayed as ND.
5. Prediction Limits calculated using Sanitas Software.
6. Values highlighted in yellow indicate a Statistically Significant Increase (SSI).
7. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).
8. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.

Prepared By: GTM
Checked By: ANT
Reviewed By: JSI

Figures



TITLE

LABADIE ENERGY CENTER GROUNDWATER MONITORING PROGRAMS AND MONITORING WELL LOCATION MAP

Legend

- Approximate Property Boundary

Labadie Energy Center CCR Units

- LCPA - Bottom Ash Surface Impoundment
- LCPB - Fly Ash Surface Impoundment
- LCL1 - Utility Waste Landfill Cell 1

Monitoring Well Network

- Corrective Action Monitoring Well
- LCPA Monitoring Well
- LCPB Monitoring Well
- LCPB and Corrective Action Monitoring Well
- LCL1 Monitoring Well
- LCL1 and Corrective Action Monitoring Well
- Backgrcund Well Used for LCPA, Corrective Action, LCPB, and LCL1 Monitoring
- Monitoring Well Used for Water Level Elevation Measurements Only
- Soil Sample Borehole Location

NOTES

1. All locations and boundaries are approximate.

REFERENCES

1. Zahner and Associates, Inc. 2016. Lot Consolidation Plat of "Labadie Energy Center" - Prepared for Ameren Missouri. Revised June 15, 2016.
2. USGS (United States Geological Survey), National Water Information System, USGS Gauge 06935550 Missouri River near Labadie, MO.

0 500 1,000 2,000 3,000 4,000 Feet

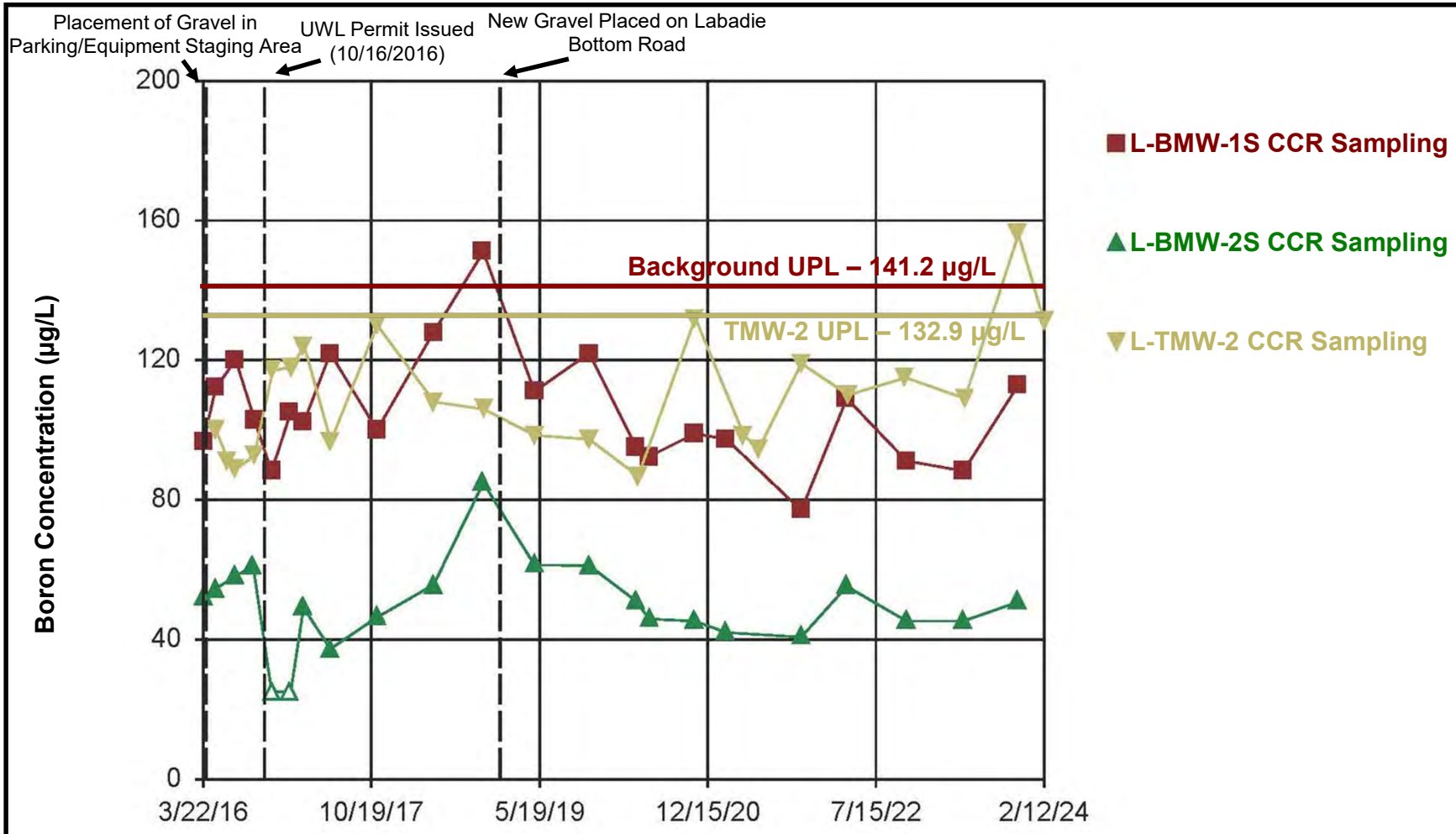
PROJECT
CCR RULE GROUNDWATER MONITORING PROGRAM

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

ROCKSMITH GEOENGINEERING

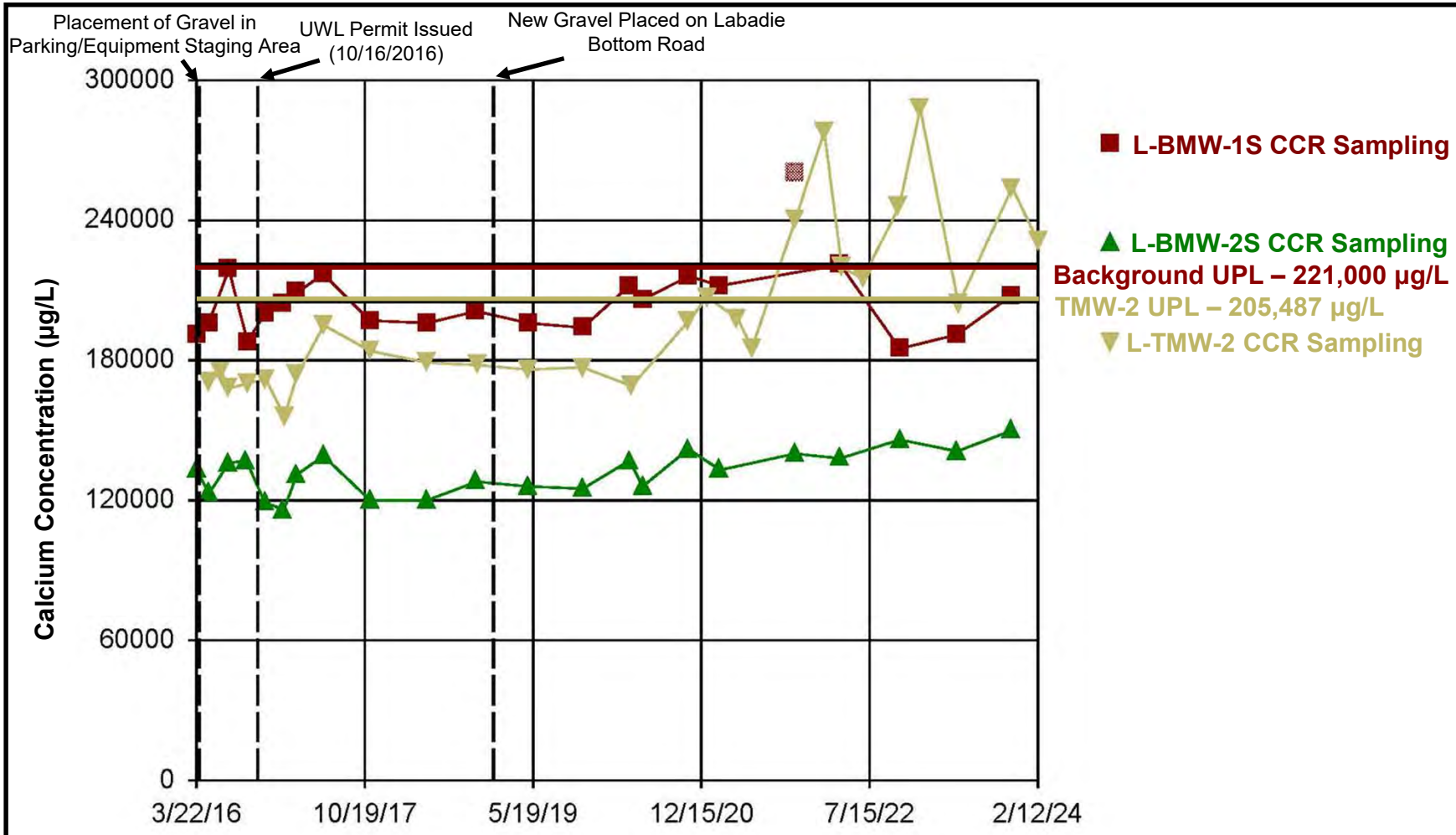
DESIGN	JSI	YYYY-MM-DD	2024-07-22
PREPARED	JSI	PROJECT No.	23007-24
REVIEW	MNH		
APPROVED	MNH		

FIGURE 1



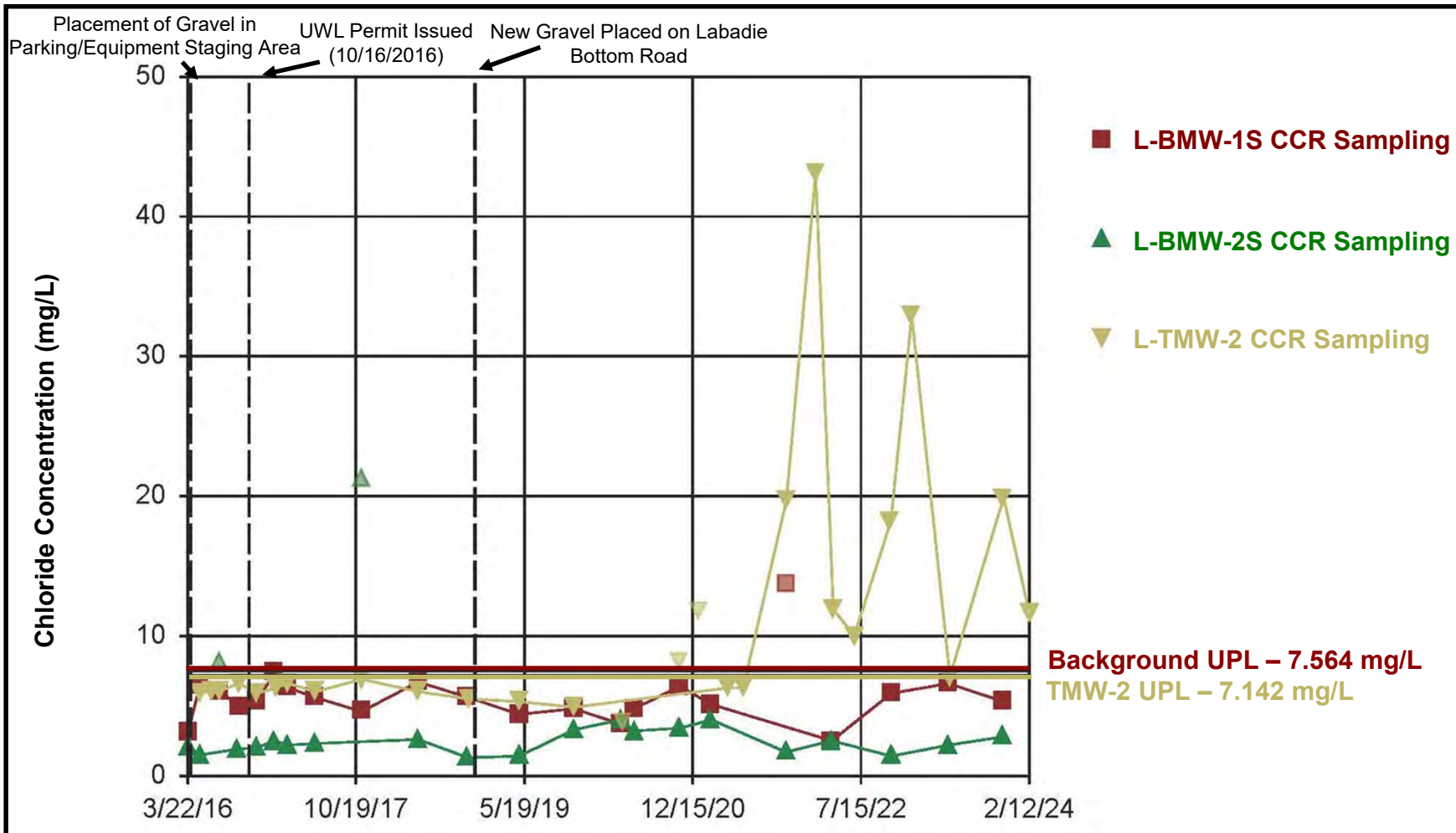
Notes
1) µg/L – Micrograms per liter.
2) UPL – Upper Prediction Limit.
3) UWL – Utility Waste Landfill.
4) CCR – Coal Combustion Residuals.
5) Non-detected concentrations are depicted as unfilled points.

CLIENT/PROJECT				TITLE		
AMEREN MISSOURI LABADIE ENERGY CENTER				Timeseries Plot of Boron Concentrations at TMW-2 and Background Monitoring Wells		
DRAWN	CHECKED	REVIEWED	DATE	Rev No.	JOB NO.	FIGURE
JTR	GTM	MNH	2024-07-17	NA	23007-24	2



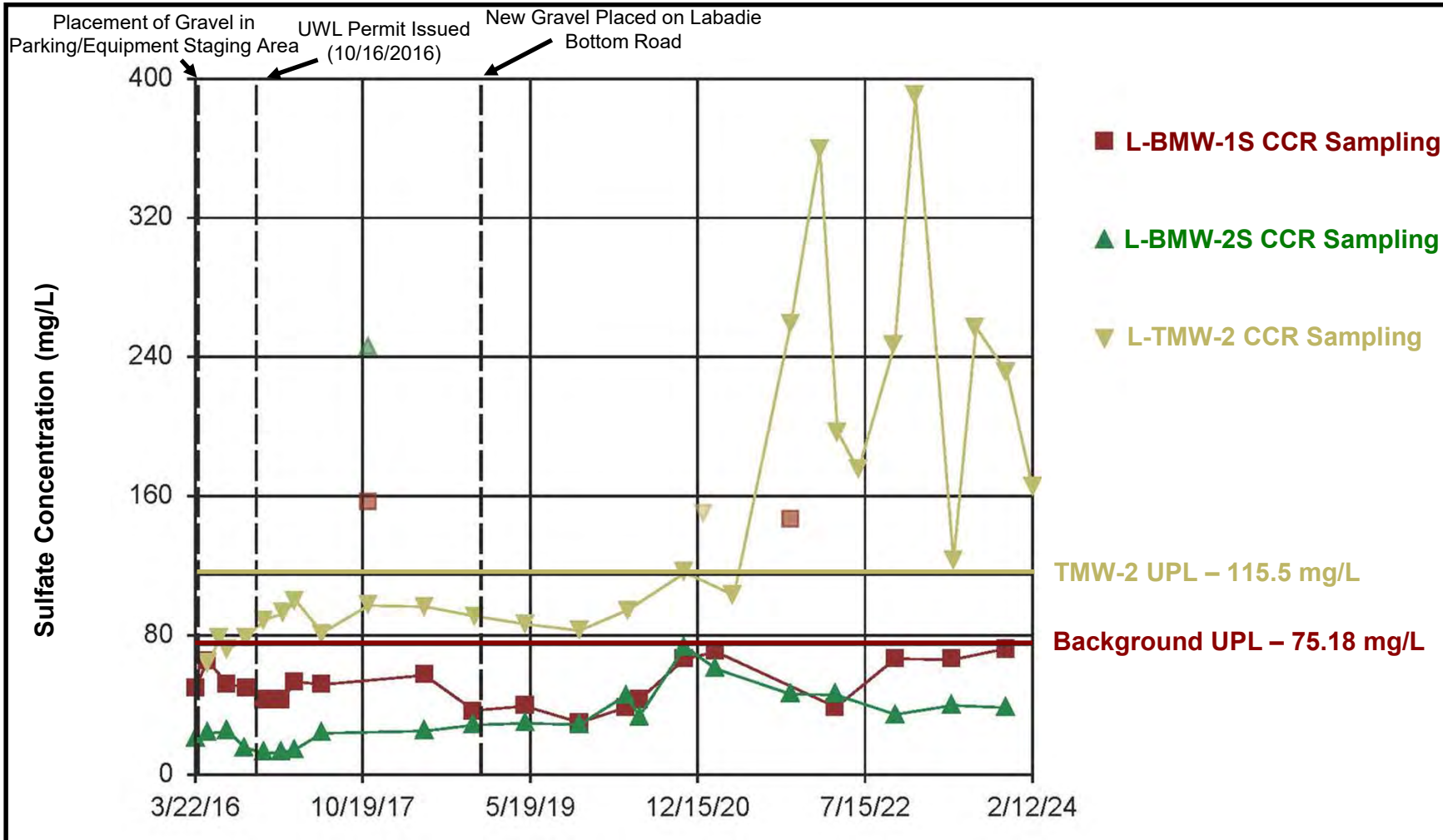
Notes
1) µg/L – Micrograms per liter.
2) UPL – Upper Prediction Limit.
3) UWL – Utility Waste Landfill.
4) CCR – Coal Combustion Residuals.
5) Data points not connected to lines are considered outliers.

CLIENT/PROJECT				TITLE		
AMEREN MISSOURI LABADIE ENERGY CENTER				Timeseries Plot of Calcium Concentrations at TMW-2 and Background Monitoring Wells		
DRAWN	CHECKED	REVIEWED	DATE	Rev No.	JOB NO.	FIGURE
JTR	GTM	MNH	2024-07-17	NA	23007-24	3



Notes
1) mg/L – Milligrams per liter.
2) UPL – Upper Prediction Limit.
3) UWL – Utility Waste Landfill.
4) CCR – Coal Combustion Residuals.
5) Data points not connected to lines are considered outliers.

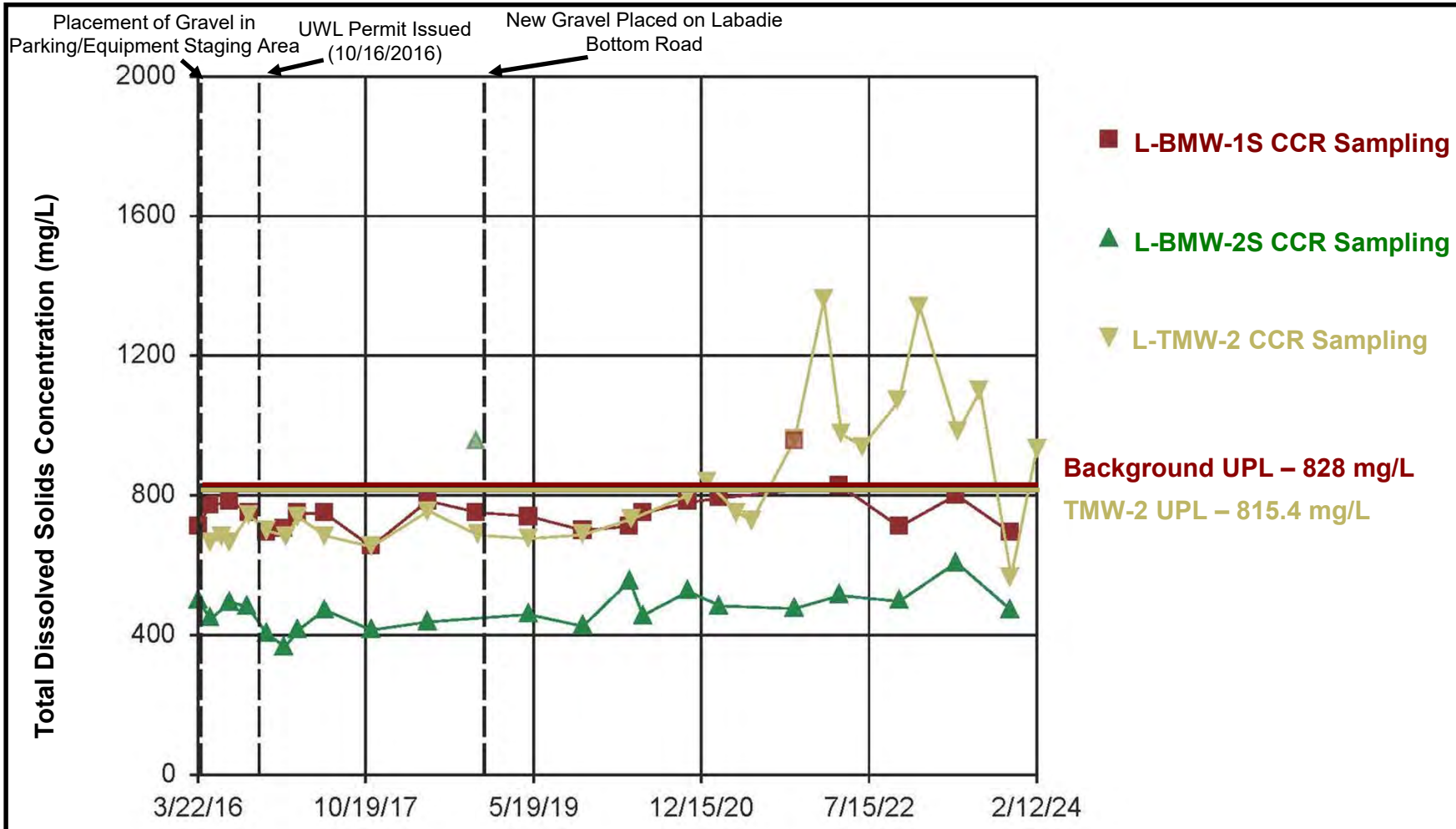
CLIENT/PROJECT				TITLE		
AMEREN MISSOURI LABADIE ENERGY CENTER				Timeseries Plot of Chloride Concentrations at TMW-2 and Background Monitoring Wells		
DRAWN	CHECKED	REVIEWED	DATE	Rev No.	JOB NO.	FIGURE
JTR	GTM	MNH	2024-07-17	NA	23007-24	4



Notes
1) mg/L – Milligrams per liter.
2) UPL – Upper Prediction Limit.
3) UWL – Utility Waste Landfill.
4) CCR – Coal Combustion Residuals.
5) Data points not connected to lines are considered outliers.

CLIENT/PROJECT				TITLE		
AMEREN MISSOURI LABADIE ENERGY CENTER				Timeseries Plot of Sulfate Concentrations at TMW-2 and Background Monitoring Wells		
DRAWN	CHECKED	REVIEWED	DATE	Rev No.	JOB NO.	FIGURE
JTR	GTM	MNH	2024-07-17	NA	23007-24	5

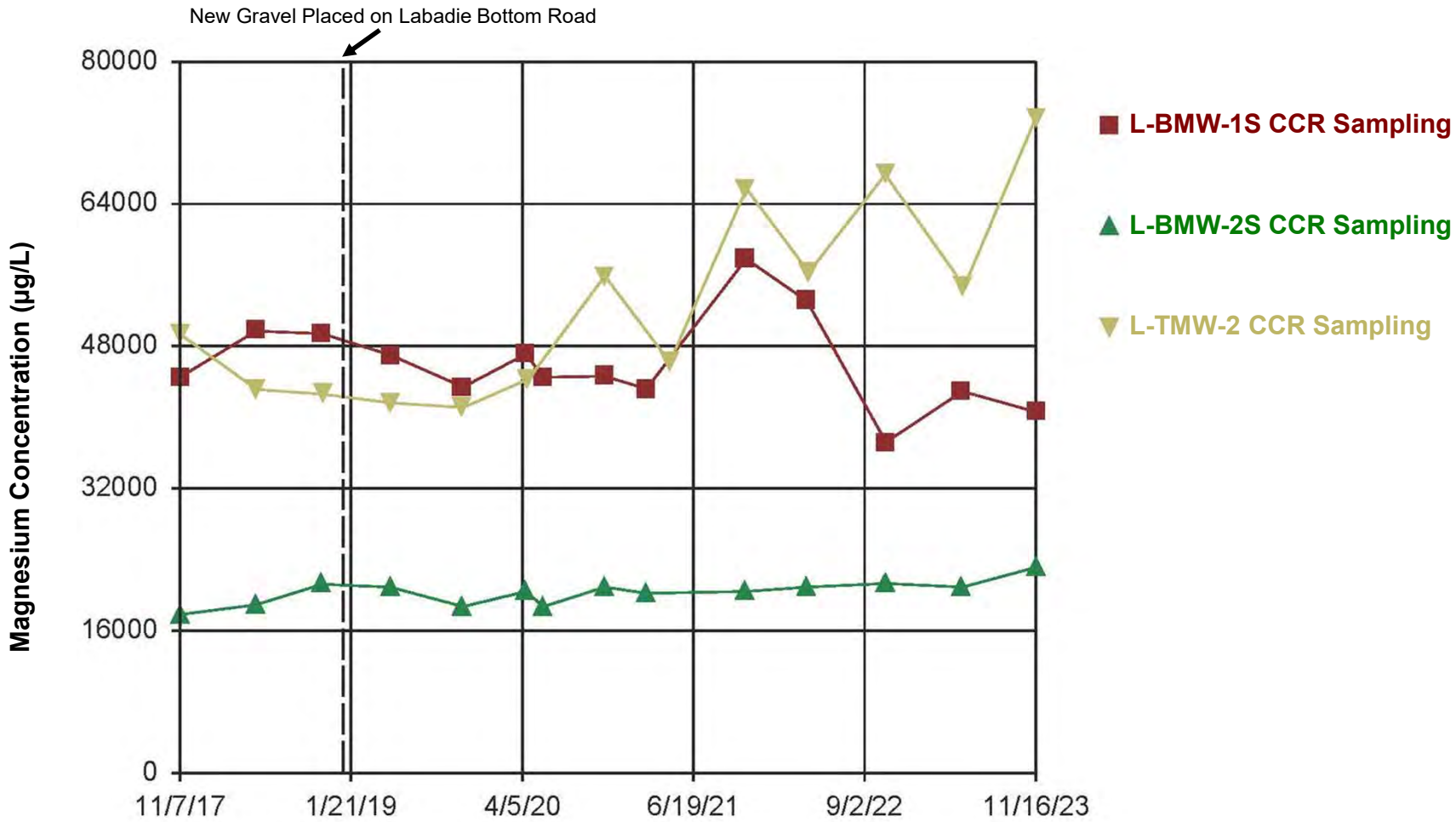
ROCKSMITH GEOENGINEERING



Notes
1) mg/L – Milligrams per liter.
2) UPL – Upper Prediction Limit.
3) UWL – Utility Waste Landfill.
4) CCR – Coal Combustion Residuals.
5) Data points not connected to lines are considered outliers.

CLIENT/PROJECT				TITLE		
AMEREN MISSOURI LABADIE ENERGY CENTER				Timeseries Plot of Total Dissolved Solids Concentrations at TMW-2 and Background Monitoring Wells		
DRAWN JTR	CHECKED GTM	REVIEWED MNH	DATE 2024-07-17	Rev No. NA	JOB NO. 23007-24	FIGURE 6

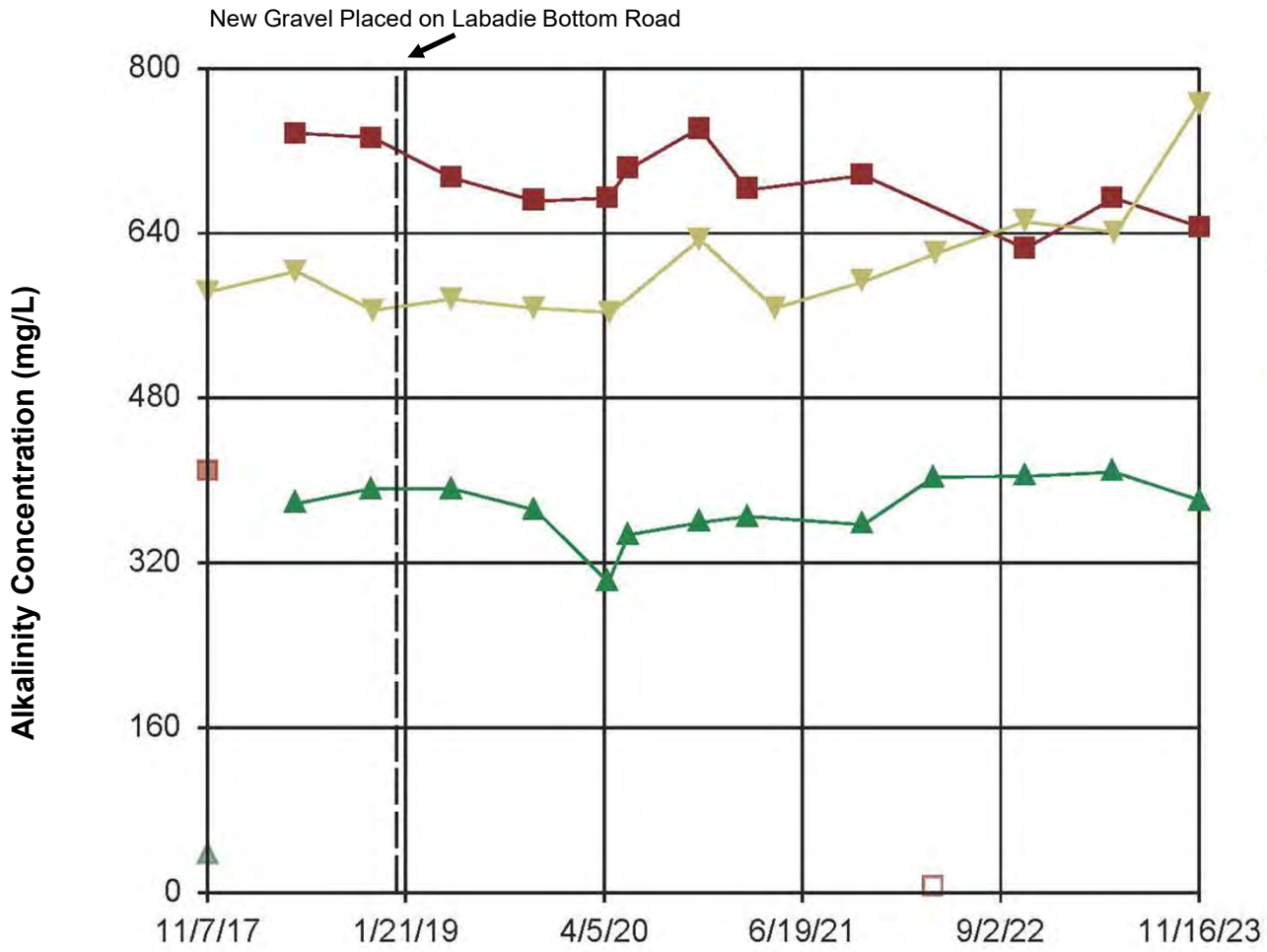
ROCKSMITH GEOENGINEERING



Notes
1) µg/L – Micrograms per liter.
2) UWL – Utility Waste Landfill.
3) CCR – Coal Combustion Residuals.

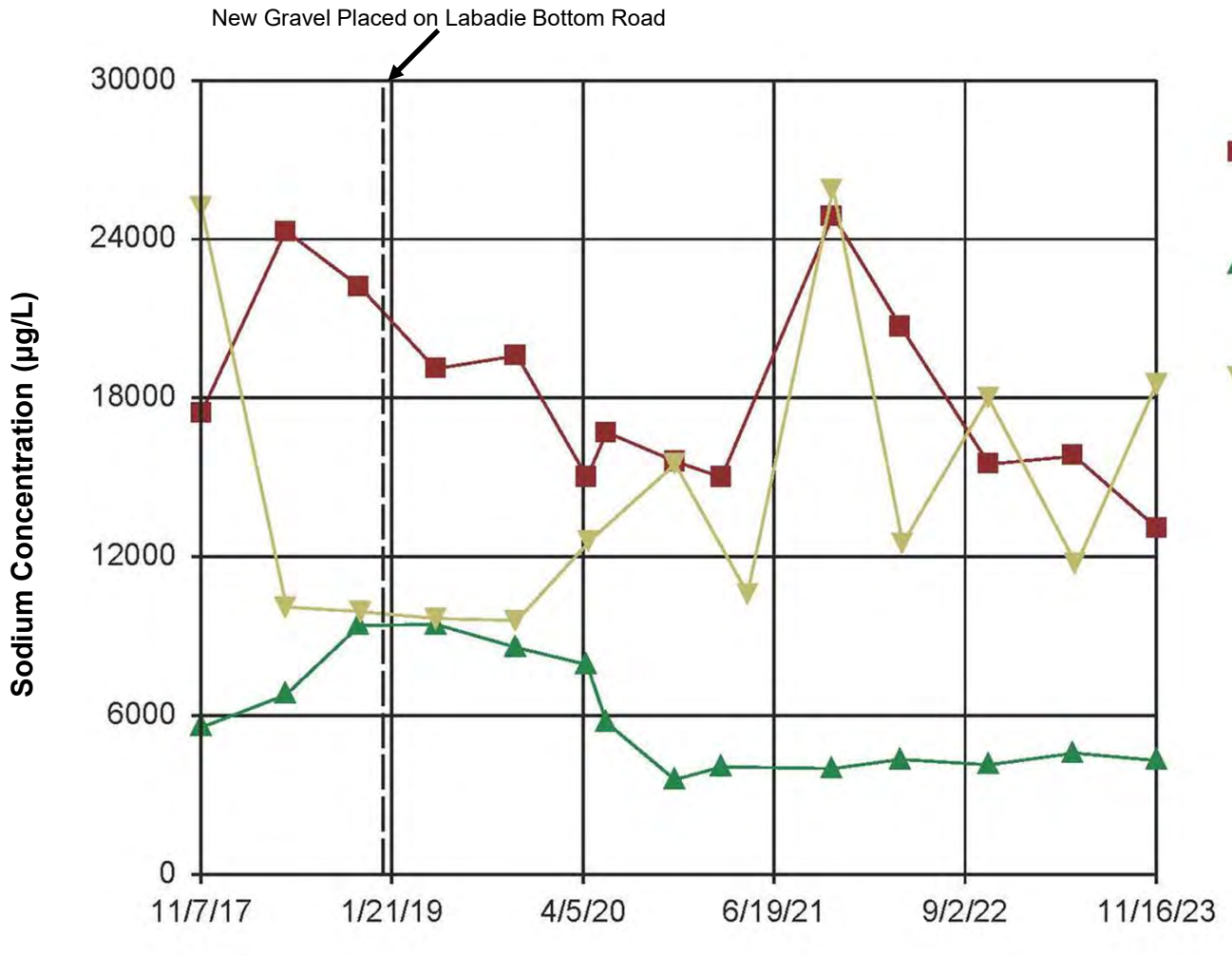
CLIENT/PROJECT				TITLE		
AMEREN MISSOURI **LABADIE ENERGY CENTER**				**Timeseries Plot of Magnesium Concentrations at TMW-2 and Background Monitoring Wells**		
DRAWN	CHECKED	REVIEWED	DATE	Rev No.	JOB NO.	FIGURE
JTR	GTM	MNH	2024-07-14	NA	23007-24	**7**

ROCKSMITH GEOENGINEERING



Notes
1) mg/L – Milligrams per liter.
2) UWL – Utility Waste Landfill.
3) CCR – Coal Combustion Residuals.
4) Data points not connected to lines are considered outliers.
5) Non-detected concentrations are depicted as unfilled points.

CLIENT/PROJECT					TITLE
AMEREN MISSOURI LABADIE ENERGY CENTER					Timeseries Plot of Alkalinity Concentrations at TMW-2 and Background Monitoring Wells
DRAWN	CHECKED	REVIEWED	DATE		
JTR	GTM	MNH	2024-07-17		
				Rev No. NA	JOB NO. 23007-24
					FIGURE 8



Notes
1) µg/L – Micrograms per liter.
2) UWL – Utility Waste Landfill.
3) CCR – Coal Combustion Residuals.

CLIENT/PROJECT				TITLE
AMEREN MISSOURI **LABADIE ENERGY CENTER**				**Timeseries Plot of Sodium Concentrations at TMW-2 and Background Monitoring Wells**
DRAWN JTR	CHECKED GTM	REVIEWED MNH	DATE 2024-07-24	Rev No. NA / JOB NO. 23007-24 / FIGURE **9**

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LEGEND

Monitoring Well TMW-2

Labadie Bottom Road, Fresh Gravel Placed Late 2018- Early 2019

Gravel Parking Area, April 2016 - Late 2016

LCL1 FCM and Gravel Roads, Built 2015 - October 2016

0 200 400

Feet

NOTE(S)

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. FCM - FABRIC-FORMED ARTICULATED CONCRETE MAT.

REFERENCE(S)

1. LCL1 ALTERNATIVE SOURCE DEMONSTRATION (ROCKSMITH, 2023).

CLIENT

AMEREN MISSOURI
LABADIE ENERGY CENTER

PROJECT

CCR GROUNDWATER MONITORING PROGRAM

CONSULTANT

ROCKSMITH GEOENGINEERING

YYYY-MM-DD	2023-12-01
DESIGNED	GTM
PREPARED	GTM
REVIEWED	JSI
APPROVED	MNH

TITLE

AERIAL MAP OF FRESH GRAVEL PLACEMENT NEAR MONITORING WELL TMW-2

PROJECT NO.

23007-24

FIGURE

10

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

1 in

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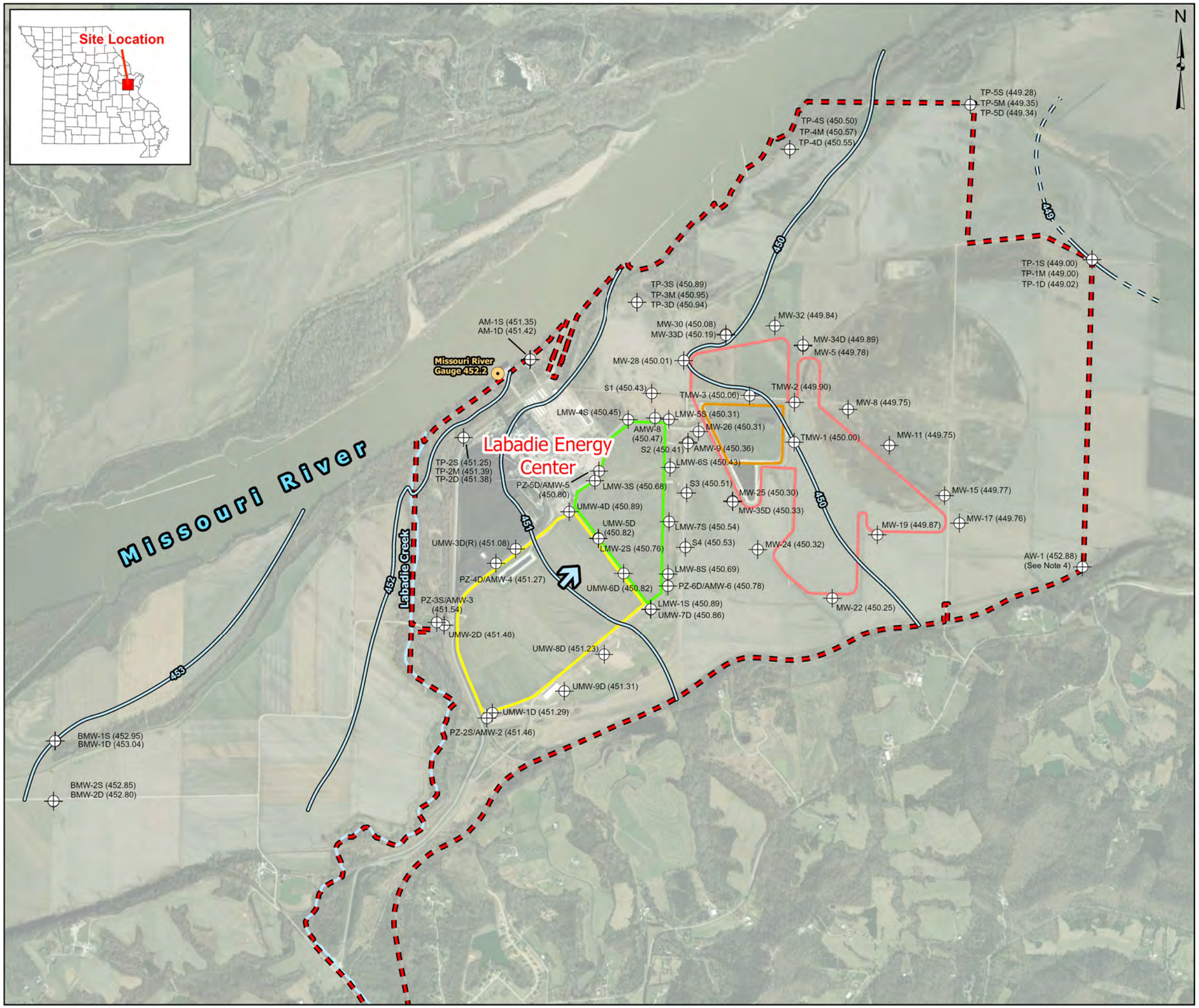
Appendix C

2024 Potentiometric Surface Maps



TITLE

FEBRUARY 9, 2024 POTENTIOMETRIC SURFACE MAP

Legend

- Labadie Energy Center Property Boundary

CCR Units

- LCPA - Closed Bottom Ash Surface Impoundment
- LCPB - Closed Fly Ash Surface Impoundment
- LCL1 - Utility Waste Landfill Cell 1
- Proposed Final UWL Fence Perimeter

Monitoring Well or Piezometer

- Monitoring Well or Piezometer

Surface Water Elevation Measurement Location

- Missouri River Gauge

Groundwater Elevation Contours

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

NOTES

1. All locations and boundaries are approximate.
2. Groundwater elevations displayed in FT MSL (Feet above Mean Sea Level).
3. Missouri River level obtained from USGS Labadie gauge 06935550.
4. AW-1 was not used in potentiometric surface contouring due to localized conditions causing an artificially high potentiometric elevation.

REFERENCES

1. Zahner and Associates, Inc. 2016. Lot Consolidation Plat of "Labadie Energy Center" - Prepared for Ameren Missouri. Revised June 15, 2016.
2. USGS (United States Geological Survey), National Water Information System, USGS Gauge 06935550 Missouri River near Labadie, MO.

0 500 1,000 2,000 3,000 4,000 Feet

PROJECT
CCR RULE GROUNDWATER MONITORING PROGRAM

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

ROCKSMITH GEOENGINEERING

DESIGN	JSI	YYYY-MM-DD	2024-09-09
PREPARED	ANT	PROJECT No	23007-24
REVIEW	GTM		
APPROVED	MNH		

FIGURE C1

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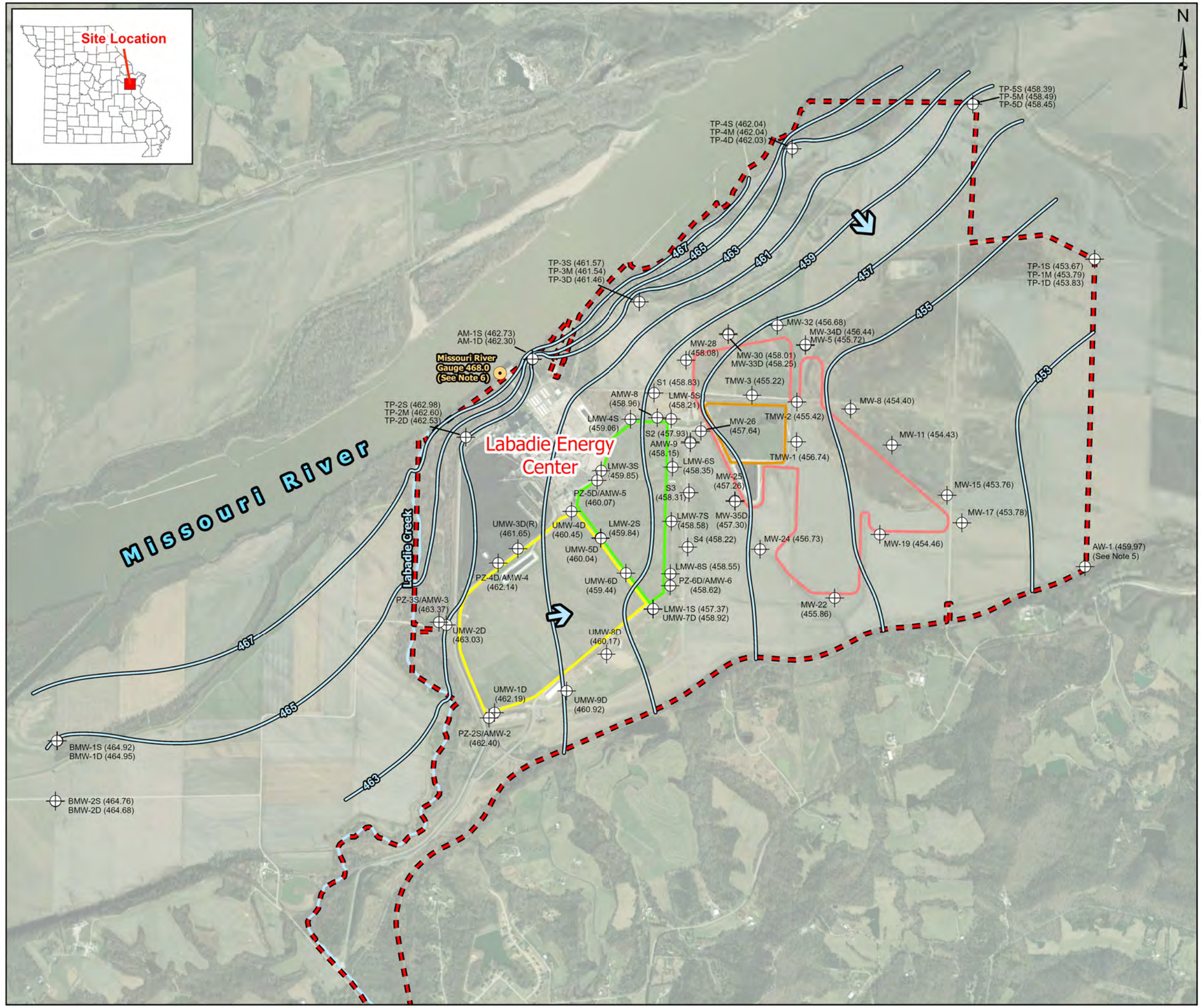
MAY 10, 2024 POTENTIOMETRIC SURFACE MAP



Legend

- Labadie Energy Center Property Boundary

CCR Units

- LCPA - Closed Bottom Ash Surface Impoundment
- LCPB - Closed Fly Ash Surface Impoundment
- LCL1 - Utility Waste Landfill Cell 1
- Proposed Final UWL Fence Perimeter

Monitoring Well or Piezometer

- Monitoring Well or Piezometer

Surface Water Elevation Measurement Location

- Missouri River Gauge

Groundwater Elevation Contours

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

NOTES

1. All locations and boundaries are approximate.
2. Groundwater elevations displayed in FT MSL (Feet above Mean Sea Level).
3. Missouri River Level obtained from USGS Labadie gauge 06935550.
4. Due to the large range of groundwater elevations measured across the site, a 2-foot ccntour interval is displayed for clarity.
5. AW-1 was not used in potentiometric surface contouring due to localized conditions causing an artificially high potentiometric elevation.
6. The large contour change directly adjacent to the river is caused by a jump in the river level from 466 to 468 the day before the sampling event, along with a jump from 454 to 470 two weeks prior.

REFERENCES

1. Zahner and Associates, Inc. 2016. Lot Consolidation Plat of "Labadie Energy Center" - Prepared for Ameren Missouri. Revised June 15, 2016.
2. USGS (United States Geological Survey), National Water Information System, USGS Gauge 06935550 Missouri River near Labadie, MO.

0 500 1,000 2,000 3,000 4,000 Feet

PROJECT
CCR RULE GROUNDWATER MONITORING PROGRAM

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

ROCKSMITH GEOENGINEERING

DESIGN	JSI	YYYY-MM-DD	2024-07-05
PREPARED	JTA	PROJECT No	23007-24
REVIEW	GTM		
APPROVED	MNH		FIGURE C2

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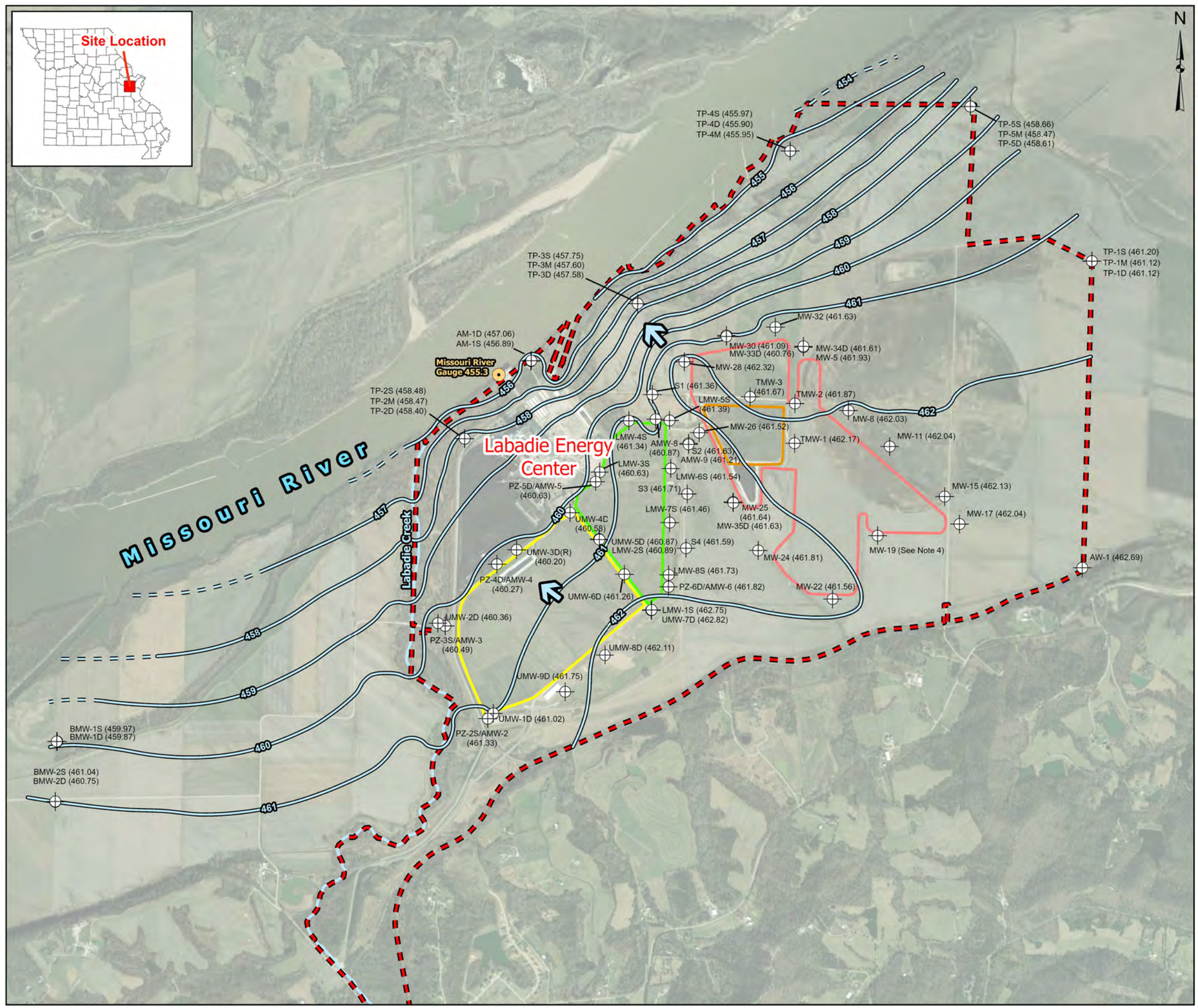
TITLE

JULY 24, 2024 POTENTIOMETRIC SURFACE MAP



Legend

- Labadie Energy Center Property Boundary

CCR Units

- LCPA - Closed Bottom Ash Surface Impoundment
- LCPB - Closed Fly Ash Surface Impoundment
- LCL1 - Utility Waste Landfill Cell 1
- Proposed Final UWL Fence Perimeter

Monitoring Well or Piezometer

- Monitoring Well or Piezometer

Surface Water Elevation Measurement Location

- Missouri River Gauge

Groundwater Elevation Contours

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

NOTES

1. All locations and boundaries are approximate.
2. Groundwater elevations displayed in FT MSL (Feet above Mean Sea Level).
3. Missouri River Level obtained from USGS Labadie gauge 06935550.
4. MW-19 was inaccessible due to standing water, therefore no water level measurement as collected.

REFERENCES

1. Zahner and Associates, Inc. 2016. Lot Consolidation Plat of "Labadie Energy Center" - Prepared for Ameren Missouri. Revised June 15, 2016.
2. USGS (United States Geological Survey), National Water Information System, USGS Gauge 06935550 Missouri River near Labadie, MO.

0 5001,000 2,000 3,000 4,000 Feet

PROJECT
CCR RULE GROUNDWATER MONITORING PROGRAM

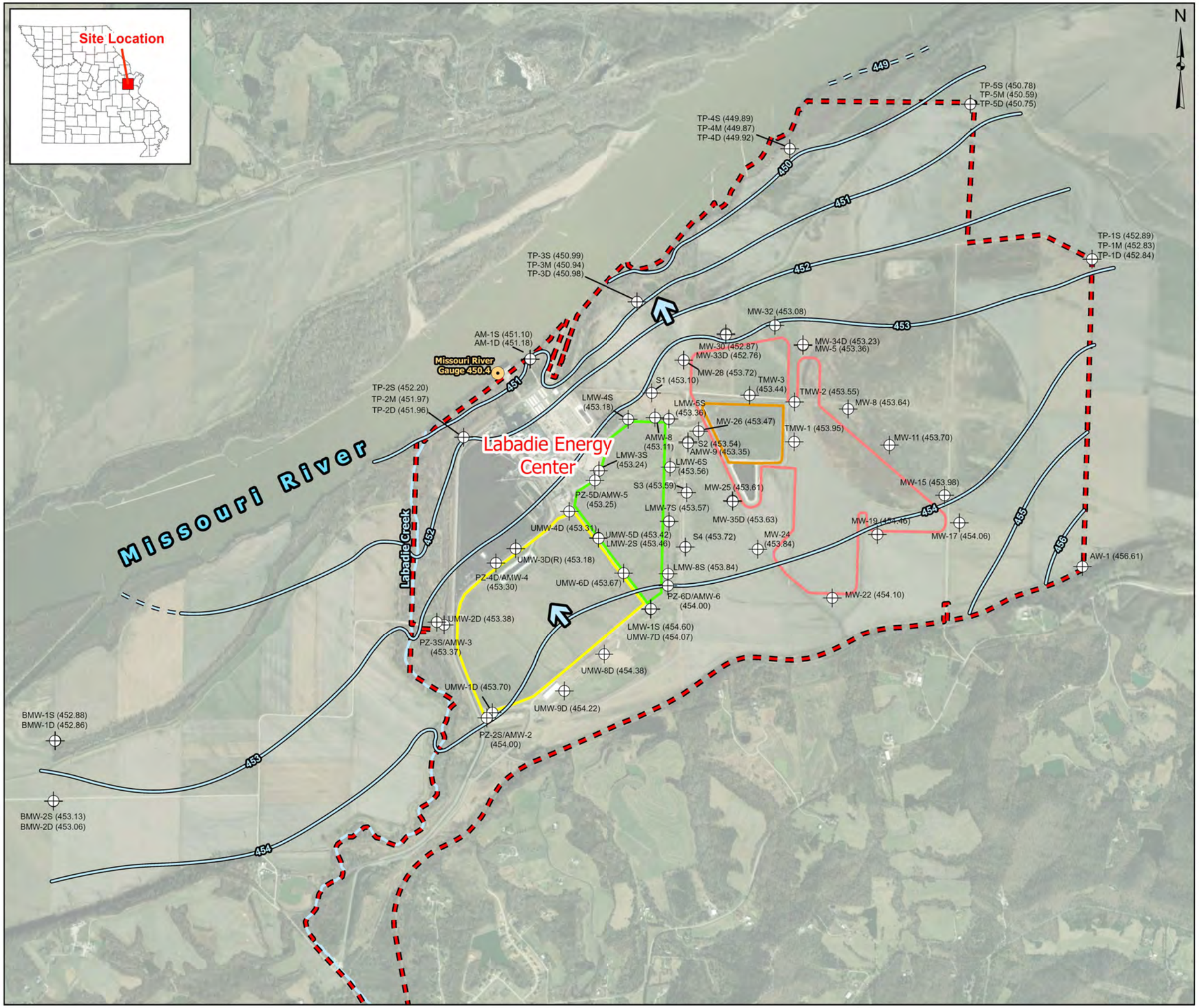
CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

ROCKSMITH GEOENGINEERING

DESIGN	JSI	YYYY-MM-DD	2024-09-12
PREPARED	JTR	PROJECT No.	23007-24
REVIEW	GTM		
APPROVED	MNH		

FIGURE C3

Path: C:\Users\JackRasmussen\Rocksmith Geoengineering LLC\23007 - Ameren GW - Documents\400 - Drawings, Figures\4.1-LEC\4.1.2 - Production\POT MAPS\2024 Annual Report\240724 JulyLecPotMap.aprx



TITLE

OCTOBER 28, 2024 POTENTIOMETRIC SURFACE MAP

Legend

- Labadie Energy Center Property Boundary

CCR Units

- LCPA - Closed Bottom Ash Surface Impoundment
- LCPB - Closed Fly Ash Surface Impoundment
- LCL1 - Utility Waste Landfill Cell 1
- Proposed Final UWL Fence Perimeter

Monitoring Well or Piezometer

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0 500 1,000 2,000 3,000 4,000 Feet

PROJECT
CCR RULE GROUNDWATER MONITORING PROGRAM

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

ROCKSMITH GEOENGINEERING

DESIGN	JSI	YYYY-MM-DD	2024-10-28
PREPARED	JTR	PROJECT No	23007-24
REVIEW	GTM		
APPROVED	MNH		

FIGURE C4