REPORT

2022 Annual Groundwater Monitoring and Corrective Action Report

LCPB Surface Impoundment, Labadie Energy Center, Franklin County, Missouri USA

Submitted to:

Ameren Missouri

1901 Chouteau Avenue, St. Louis, Missouri 63103

Submitted by:

WSP USA Inc.

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

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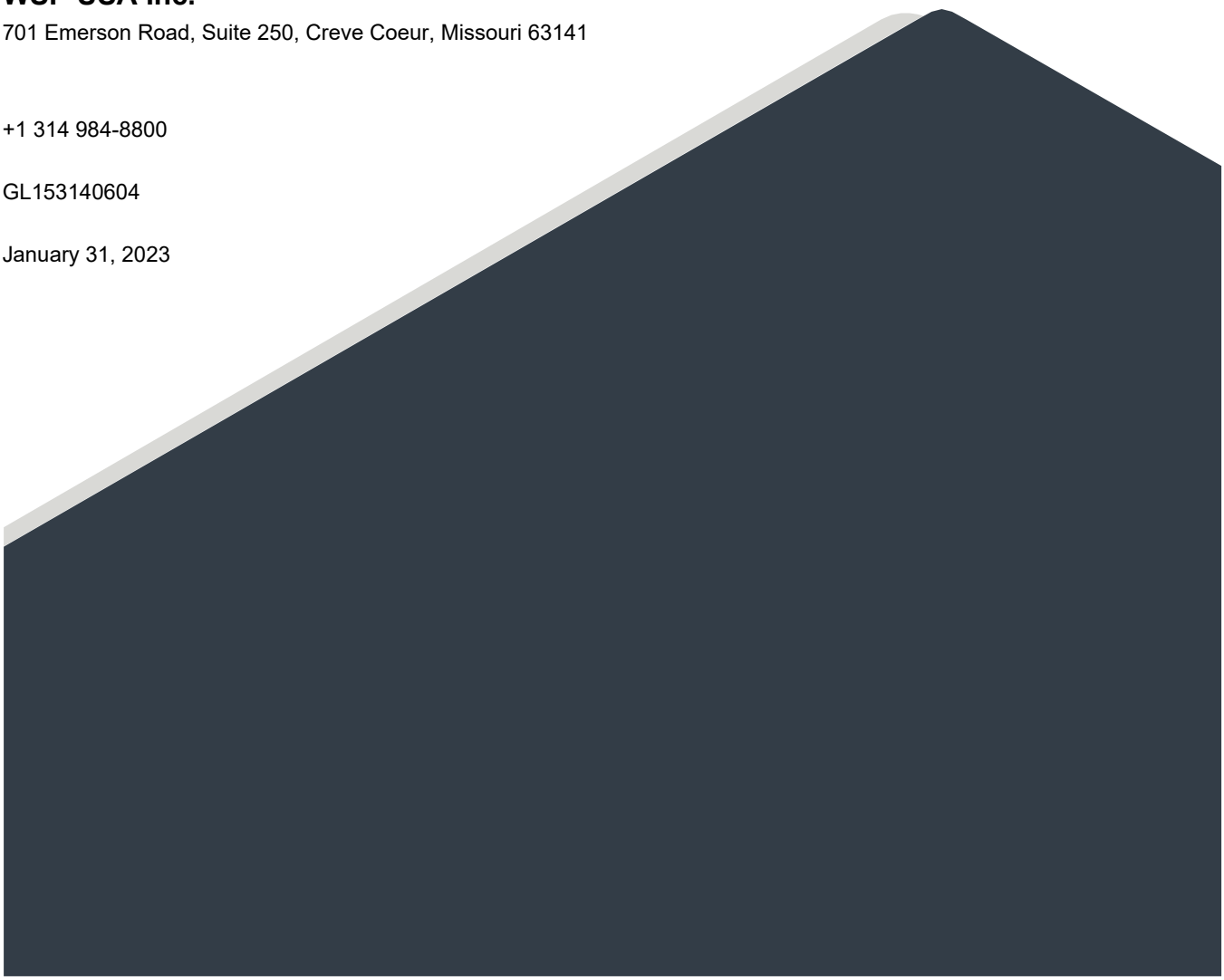
GL153140604

January 31, 2023



EXECUTIVE SUMMARY AND STATUS OF THE LCPB 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 LCPB Coal Combustion Residuals (CCR) Surface Impoundment at the Labadie Energy Center (LEC) is subject to the requirements of the CCR Rule. This Annual Report for the LCPB describes CCR Rule groundwater monitoring activities from January 1, 2022 through December 31, 2022 including verification results related to late 2021 sampling.

Throughout 2022, the LCPB 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 have been determined during each sampling event and a summary of the SSIs for the past year is provided in **Table 1**.

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

Event Name	Type of Event and Sampling Dates	Laboratory Analytical Data Receipt Date	Parameters Collected	Verified SSIs	SSI Determination Date	ASD Completion Date
November 2021 Sampling Event	Detection Monitoring, November 1-5, 2021	December 28, 2021	Appendix III, Major Cations and Anions	**pH:** LMW-2S **Boron:** LMW-1S, LMW-2S, LMW-3S, LMW-4S, LMW-6S, LMW-7S, LMW-8S **Chloride:** LMW-2S, LMW-3S, LMW-4S, LMW-7S, LMW-8S **Fluoride:** LMW-8S **Sulfate:** LMW-1S, LMW-2S, LMW-3S, LMW-4S, LMW-7S, LMW-8S **TDS:** LMW-7S, LMW-8S	March 28, 2022	June 16, 2022
	Verification Sampling, February 10, 2022	February 22, 2022	Detected Appendix III parameters (See Note 1)			
April 2022 Sampling Event	Detection Monitoring, April 6-8, 2022	June 5, 2022	Appendix III, Major Cations and Anions	**pH:** LMW-2S, LMW-3S **Boron:** LMW-1S, LMW-2S, LMW-3S, LMW-4S, LMW-6S, LMW-7S, LMW-8S **Chloride:** LMW-2S, LMW-3S, LMW-4S, LMW-7S, LMW-8S **Fluoride:** LMW-3S, LMW-8S **Sulfate:** LMW-2S, LMW-3S, LMW-4S, LMW-7S, LMW-8S **TDS:** LMW-7S, LMW-8S	September 2, 2022	November 18, 2022
	Verification Sampling, June 22, 2022	July 8, 2022	Detected Appendix III parameters (See Note 1)			
October 2022 Sampling Event	Detection Monitoring, October 25-28, 2022	November 22, 2022	Appendix III, Major Cations and Anions	To be determined after statistical analysis and Verification Sampling are completed in 2023.		

Notes:
1) Only analytes/wells that were detected above the prediction limit and that had not already been verified were tested during Verification Sampling.
2) SSI – Statistically Significant Increase.
3) ASD – Alternative Source Demonstration.
4) TDS – Total Dissolved Solids.

As outlined in section 257.95(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. Alternative Source Demonstrations (ASDs) were prepared for each of these sampling events and are discussed further in this Annual Report.

There were no changes made to the monitoring system in 2022 with no new wells being installed or decommissioned. Substantial closure of the LCPB was completed in 2020, with the geomembrane liner system completed on December 15, 2020. Additional aspects of closure were completed in spring 2021, and the CCR unit is now closed. The LCPB has now transitioned into the post-closure care requirements of the CCR Rule. As outlined in §257.104 (Post-closure Care Requirements) of the CCR Rule, the monitoring system and programs must be maintained for at least 30 years after the completion of closure.

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APPENDICES

1.0 INSTALLATION OR DECOMMISSIONING OF MONITORING WELLS

In accordance with the CCR Rule, a groundwater monitoring system has been installed to monitor the LCPB. The groundwater monitoring system consists of ten (10) groundwater monitoring wells screened in the uppermost aquifer and is displayed in **Figure 1**. No new monitoring wells were installed or decommissioned in 2022 as a part of the CCR Rule monitoring program for the LCPB. For more information on the groundwater monitoring network, details are provided in the previous Annual Groundwater Monitoring Reports for the LCPB.

2.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION

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

Table 2 – Summary of Groundwater Sampling Dates

Sampling Event	Groundwater Monitoring Wells										Monitoring Program
	BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S	
	Date of Sample Collection										
February 2022 Verification Sampling	-	-	2/10/2022	-	-	-	-	-	-	2/10/2022	Detection
April 2022 Detection Monitoring	4/6/2022	4/6/2022	4/8/2022	4/6/2022	4/8/2022	4/8/2022	4/8/2022	4/8/2022	4/8/2022	4/8/2022	Detection
June 2022 Verification Sampling	-	-	-	-	6/22/2022	6/22/2022	-	-	-	-	Detection
October 2022 Detection Monitoring	10/27/2022	10/27/2022	10/27/2022	10/25/2022	10/25/2022	10/25/2022	10/26/2022	10/28/2022	10/28/2022	10/27/2022	Detection
Total Number of Samples	2	2	3	2	3	3	2	2	2	3	NA

Notes:
1.) Detection Monitoring events tested for Appendix III parameters.
2.) Verification Sampling events tested for Appendix III parameters with initial exceedances that have not already been verified.
3.) "-" No sample collected.
4.) NA - Not applicable.

2.1 Detection Monitoring Program

A Detection Monitoring sampling event was completed November 1-5, 2021. Verification sampling and the statistical analysis to evaluate for SSIs for the November 2021 event were not completed until 2022 and are, therefore, included in this report. Detection of Appendix III analytes triggered a verification sampling event, which was completed on February 10, 2022 and verified SSIs. **Table 3** summarizes the results of the statistical analysis of the November 2021 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

As outlined in section 257.95(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 LCPB are not caused by the LCPB CCR unit and the LCPB CCR unit remains in Detection Monitoring.

A Detection Monitoring sampling event was completed April 6-8, 2022. Testing was completed for all Appendix III analytes as well as major cations and anions. Detections of Appendix III analytes triggered Verification sampling, which was completed June 22, 2022 and the testing results verified SSIs. **Table 4** summarizes the results of the statistical analysis of the April 2022 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**. As with the November 2021 sampling event, SSIs reported for the monitoring data are not caused by the LCPB CCR Unit and an ASD for this is provided in **Appendix C**.

A Detection Monitoring sampling event was completed October 25-28, 2022 and testing was performed for all Appendix III analytes, as well as major cations and anions. Statistical analyses to evaluate for SSIs in the October 2022 data were not completed in 2022 and will be included in the 2023 Annual Report. **Table 5** summarizes the results of the October 2022 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

2.2 Groundwater Elevation, Flow Rate and Direction

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

Groundwater elevations were used to generate potentiometric surface maps included in **Appendix D**. 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. During these times of high river stage and temporary flow direction changes, horizontal groundwater gradients generally decrease, and little net movement of groundwater occurs.

Groundwater flow direction and hydraulic gradient were estimated for the alluvial aquifer wells at the 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 0.0008 feet/foot with an estimated net annual groundwater movement of approximately 18 feet per year in the prevailing downgradient direction.

2.3 Sampling Issues

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

3.0 ACTIVITIES PLANNED FOR 2023

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

Tables

Table 3
November 2021 Detection Monitoring Results
LCPB Surface Impoundment
Labadie Energy Center, Franklin County, MO

			BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	PREDICTION LIMITS	BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
November 2021 Detection Monitoring Event												
DATE	NA	NA	11/1/2021	11/1/2021	11/4/2021	11/2/2021	11/3/2021	11/3/2021	11/2/2021	11/5/2021	11/5/2021	11/5/2021
pH	SU	6.239-7.394	6.68	6.97	6.93	9.48	7.21	6.97	6.80	6.75	6.73	7.12
BORON, TOTAL	µg/L	147	77.0 J	40.7 J	3,970	3,180	4,040	8,060	51.6 J	2,090	7,540	4,990
CALCIUM, TOTAL	µg/L	219,000	260,000	140,000	147,000	68,700	95,500 J	131,000	137,000	149,000	181,000	169,000
CHLORIDE, TOTAL	mg/L	7.654	13.7	1.7 J	2.5 J	17.8	20.7	22.8	3.6	3.6 J	18.6	12.0
FLUORIDE, TOTAL	mg/L	0.2606	ND	0.14 J	0.18 J	0.15 J	0.15 J	0.25 J	0.19 J	0.25	0.19 J	0.43
SULFATE, TOTAL	mg/L	75.37	146	46.2	114	255	196	208	11.8	50.9	215	383
TOTAL DISSOLVED SOLIDS	mg/L	792	953 J	475 J	547	473	640	722	423	534	799	850
February 2022 Verification Sampling Event												
DATE	NA	NA			2/10/2022							2/10/2022
pH	SU	6.239-7.394										
BORON, TOTAL	µg/L	147										
CALCIUM, TOTAL	µg/L	219,000										
CHLORIDE, TOTAL	mg/L	7.654										
FLUORIDE, TOTAL	mg/L	0.2606										0.42
SULFATE, TOTAL	mg/L	75.37			85.9							
TOTAL DISSOLVED SOLIDS	mg/L	792										

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

Prepared By: EMS
Checked By: LMS
Reviewed By: MNH

Table 4
April 2022 Detection Monitoring Results
LCPB Surface Impoundment
Labadie Energy Center, Franklin County, MO

			BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	PREDICTION LIMITS	BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
April 2022 Detection Monitoring Event												
DATE	NA	NA	4/6/2022	4/6/2022	4/8/2022	4/6/2022	4/8/2022	4/8/2022	4/8/2022	4/8/2022	4/8/2022	4/8/2022
pH	SU	6.239-7.394	7.10	7.06	6.95	9.28	7.45	7.09	7.04	6.97	6.80	7.00
BORON, TOTAL	µg/L	147	109	55.2 J	1,130	3,330	3,880	8,240	53.0 J	2,350	10,700	7,890
CALCIUM, TOTAL	µg/L	219,000	221,000	138,000	116,000	69,700	90,400	127,000	132,000	105,000	136,000	194,000
CHLORIDE, TOTAL	mg/L	7.654	2.5 J	2.5 J	3.5 J	17.4 J	20.9	23.3	4.4 J	2.8 J	20.8	17.6
FLUORIDE, TOTAL	mg/L	0.2606	0.20 J	0.19 J	0.22	0.16 J	0.37	0.29	0.18 J	ND	0.26	0.30
SULFATE, TOTAL	mg/L	75.37	38.6	45.7	65.5	263	220	220	10.1	30.5	274	537
TOTAL DISSOLVED SOLIDS	mg/L	792	828 J	513 J	492	474 J	640	765	442	453	795	1,080
June 2022 Verification Sampling Event												
DATE	NA	NA					6/22/2022	6/22/2022				
pH	SU	6.239-7.394										
BORON, TOTAL	µg/L	147										
CALCIUM, TOTAL	µg/L	219,000										
CHLORIDE, TOTAL	mg/L	7.654										
FLUORIDE, TOTAL	mg/L	0.2606					0.42 J	ND				
SULFATE, TOTAL	mg/L	75.37										
TOTAL DISSOLVED SOLIDS	mg/L	792										

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 and that had not already been verified were tested during Verification Sampling.

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

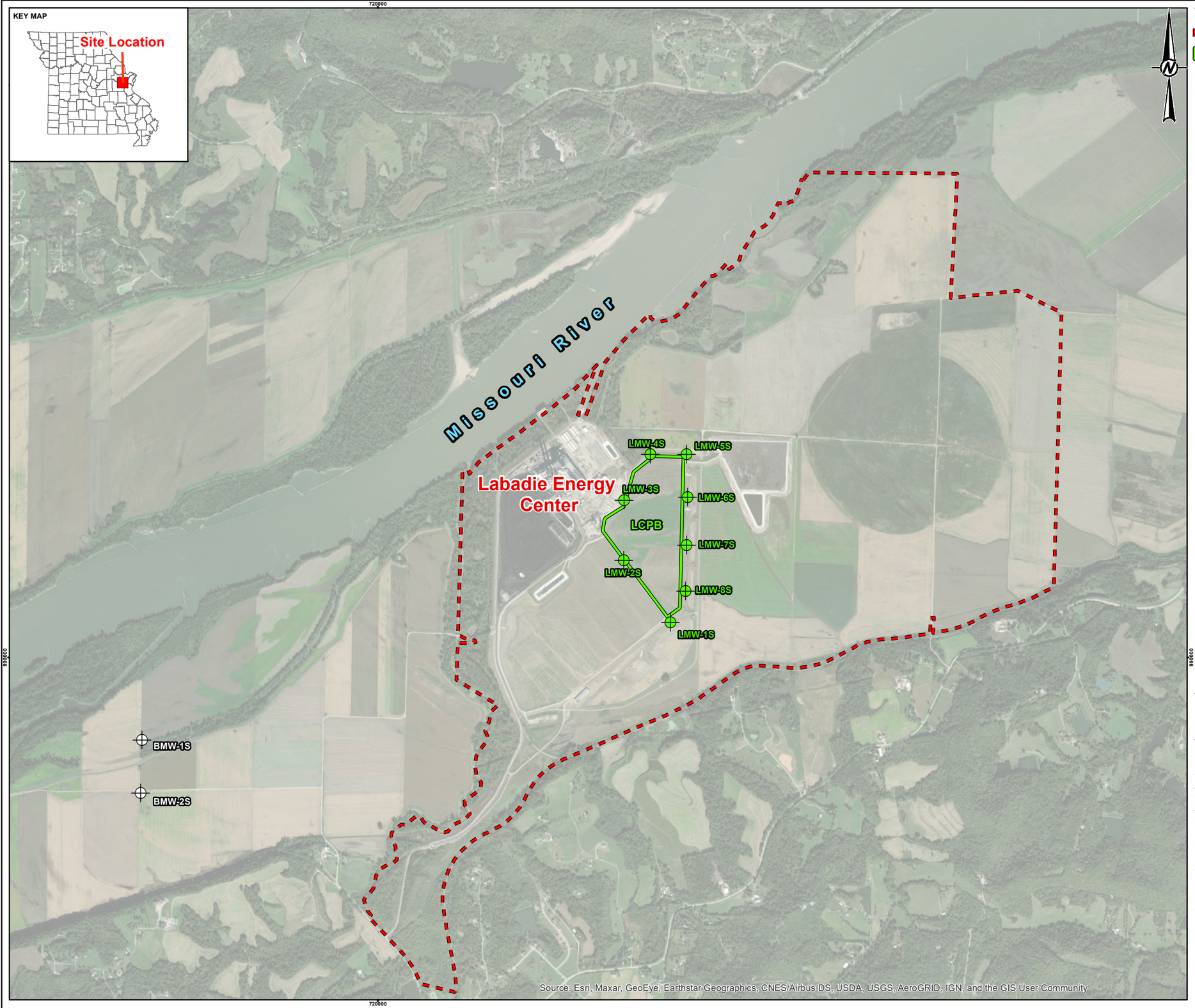
Table 5
October 2022 Detection Monitoring Results
LCPB Surface Impoundment
Labadie Energy Center, Franklin County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
October 2022 Detection Monitoring Event											
DATE	NA	10/27/2022	10/27/2022	10/27/2022	10/25/2022	10/25/2022	10/25/2022	10/26/2022	10/28/2022	10/28/2022	10/27/2022
pH	SU	6.68	6.95	6.97	9.52	7.10	6.80	6.70	6.81	6.57	7.10
BORON, TOTAL	µg/L	91.2 J	45.3 J	2,240	3,250	4,340	5,490	55.6 J	1,150	7,050	2,760
CALCIUM, TOTAL	µg/L	185,000	146,000	108,000	75,900	112,000	139,000	170,000	118,000	185,000	82,700
CHLORIDE, TOTAL	mg/L	5.9	1.4	4.9	15.8	20.8	39.5	1.9	3.1 J	17.5	3.2 J
FLUORIDE, TOTAL	mg/L	ND	ND	ND	ND	0.33 J	0.13 J	ND	0.26	ND	0.54
SULFATE, TOTAL	mg/L	66.5	34.4	74.3	299	198	174	12.3	29.0	202	93.1
TOTAL DISSOLVED SOLIDS	mg/L	710	496	430	556	700	756	501	450	829	404

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: GTM
Checked By: JAB
Reviewed By: MNH

Figures



LEGEND

- Approximate Property Boundary
- LCPB - Closed Fly Ash Surface Impoundment

Groundwater Monitoring Wells Used for LCPB CCR Rule Monitoring

- LCPB - Closed Fly Ash Surface Impoundment Monitoring Well
- Background Monitoring Well

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

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

REFERENCE(S)
1.) ZAHNER AND ASSOCIATES, INC. 2016. LOT CONSOLIDATION PLAT OF "LABADIE ENERGY CENTER" - PREPARED FOR AMEREN MISSOURI. REVISED JUNE 15, 2016.
2.) COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

PROJECT
GROUNDWATER MONITORING PROGRAM

TITLE
SITE LOCATION AERIAL MAP MONITORING WELL LOCATIONS

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-22
DESIGNED	JSI
PREPARED	BTT
REVIEWED	JSI
APPROVED	MNH

PROJECT NO. 153140604 | CONTROL 1240 | FIGURE 1

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

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PATH: C:\Users\EVForney\Golder Associates\153140602 - Ameren GW Monitoring Program 2020 - 5 Technical Work\0001-LEC\5-5-Figures-Drawings\PRODUCTION\Other Maps\Figure 1 - 2021 LEC All Wells Map - LCPB.mxd PRINTED ON: 2023-01-27 AT: 11:45:50 AM

APPENDIX A

Laboratory Analytical Data

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

February 22, 2022

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

RE: Project: AMEREN VS LCPB
Pace Project No.: 60392710

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on February 12, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: AMEREN VS LCPB
Pace Project No.: 60392710

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

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

SAMPLE SUMMARY

Project: AMEREN VS LCPB
Pace Project No.: 60392710

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60392710001	**L-LMW-1S**	Water	02/10/22 13:53	02/12/22 04:50
60392710002	**L-LMW-8S**	Water	02/10/22 15:15	02/12/22 04:50
60392710003	**L-LCPB-DUP-1**	Water	02/10/22 00:00	02/12/22 04:50
60392710004	**L-LCPB-FB-1**	Water	02/10/22 15:30	02/12/22 04:50

Pace Analytical Services, LLC
9608 Loiret Blvd.
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SAMPLE ANALYTE COUNT

Project: AMEREN VS LCPB
Pace Project No.: 60392710

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60392710001	**L-LMW-1S**	EPA 300.0	CRN2	2	PASI-K
60392710002	**L-LMW-8S**	EPA 300.0	CRN2	2	PASI-K
60392710003	**L-LCPB-DUP-1**	EPA 300.0	CRN2	2	PASI-K
60392710004	**L-LCPB-FB-1**	EPA 300.0	CRN2	2	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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

ANALYTICAL RESULTS

Project: AMEREN VS LCPB
Pace Project No.: 60392710

Sample: L-LMW-1S **Lab ID: 60392710001** Collected: 02/10/22 13:53 Received: 02/12/22 04:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.17J**	mg/L	0.20	0.12	1		02/21/22 16:34	16984-48-8	
Sulfate	**85.9**	mg/L	10.0	5.5	10		02/22/22 09:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: AMEREN VS LCPB
Pace Project No.: 60392710

Sample: L-LMW-8S **Lab ID: 60392710002** Collected: 02/10/22 15:15 Received: 02/12/22 04:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.42**	mg/L	0.20	0.12	1		02/21/22 18:25	16984-48-8	
Sulfate	**310**	mg/L	50.0	27.5	50		02/21/22 18:39	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 VS LCPB
Pace Project No.: 60392710

Sample: L-LCPB-DUP-1 **Lab ID: 60392710003** Collected: 02/10/22 00:00 Received: 02/12/22 04:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.19J**	mg/L	0.20	0.12	1		02/21/22 19:21	16984-48-8	
Sulfate	**86.3**	mg/L	10.0	5.5	10		02/22/22 10:40	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: AMEREN VS LCPB
Pace Project No.: 60392710

Sample: L-LCPB-FB-1 **Lab ID: 60392710004** Collected: 02/10/22 15:30 Received: 02/12/22 04:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**<0.12**	mg/L	0.20	0.12	1		02/21/22 19:49	16984-48-8	
Sulfate	**<0.55**	mg/L	1.0	0.55	1		02/21/22 19:49	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN VS LCPB
Pace Project No.: 60392710

QC Batch: 772030
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: 60392710001, 60392710002, 60392710003, 60392710004

METHOD BLANK: 3082522 Matrix: Water
Associated Lab Samples: 60392710001, 60392710002, 60392710003, 60392710004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.12	0.20	0.12	02/21/22 12:35	
Sulfate	mg/L	<0.55	1.0	0.55	02/21/22 12:35	

METHOD BLANK: 3083024 Matrix: Water
Associated Lab Samples: 60392710001, 60392710002, 60392710003, 60392710004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.12	0.20	0.12	02/22/22 09:17	
Sulfate	mg/L	<0.55	1.0	0.55	02/22/22 09:17	

LABORATORY CONTROL SAMPLE: 3082523

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

LABORATORY CONTROL SAMPLE: 3083025

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	106	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3082524 3082525

Parameter	Units	60392710001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.17J	2.5	2.5	2.9	3.0	108	111	80-120	3	15	
Sulfate	mg/L	85.9	50	50	132	134	93	96	80-120	1	15	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN VS LCPB
Pace Project No.: 60392710

SAMPLE DUPLICATE: 3082526

Parameter	Units	60392710001 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	0.17J	0.17J		15	
Sulfate	mg/L	85.9	85.8	0	15	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: AMEREN VS LCPB
Pace Project No.: 60392710

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.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN VS LCPB
Pace Project No.: 60392710

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60392710001	**L-LMW-1S**	EPA 300.0	772030		
60392710002	**L-LMW-8S**	EPA 300.0	772030		
60392710003	**L-LCPB-DUP-1**	EPA 300.0	772030		
60392710004	**L-LCPB-FB-1**	EPA 300.0	772030		

WO# : 60392710

60392710

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

Client Name: Golder

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** 1.4 **Corr. Factor** -0.2 **Corrected** 1.2

Temperature should be above freezing to 6°C 0.7 0.5

Date and initials of person examining contents: 02-12-2022 HZ

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

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder, Ryan Feldman, Brendan Talbert
Purchase Order No.:	
Project Name:	Ameren - Verification Sampling - LCPB
Project Number:	153140603

Section C Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

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	Chloride	Fluoride	Sulfate	TDS	Calcium	Boron					Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																			N	N	N	N	N	N	N	N	N	N	60392710
1	L - LMW-1S	WT	G			2-10-22	1353		1	1										/	/								
2	L - LMW-8S	WT	G				1515																						
3	L - LCPB-DUP-1	WT	G				—																						
4	L - LCPB-FB-1	WT	G				1530																						
5	L - LMW-1S-MS	WT	G				1353																						
6	L - LMW-1S-MSD	WT	G			↓	1353		↓	↓										↓	↓								
7		WT	G																										
8		WT	G																										
9		WT	G																										
10		WT	G																										
11		WT	G																										
12		WT	G																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Brendan Talbert	2-11-22	1515	Angela Mar	2-11	1530				
	Angela Mar	2-11	1530	[illegible]	2-12-22	0450	1.2	Y	Y	Y
							0.5	1	1	1

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brendan Talbert

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 02/11/22

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

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

MEMORANDUM

DATE March 2, 2022 **Project No.** 153140604

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

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

DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCPB – VERIFICATION SAMPLING - DATA PACKAGE 60392710

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates USA Inc / WSP
Project Manager: J. Ingram
Project Name: Ameren- Labadie - LCPB
Project Number: 153140604
Reviewer: A. Muehlfarth
Validation Date: 3/2/2022

Laboratory: Pace Analytical Services - Kansas City
SDG #: 60392710
Analytical Method (type and no.): EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐ _____
Sample Names L-LMW-1S, L-LMW-8S, L-LCPB-DUP-1, L-LCPB-FB-1

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			2/10/2022
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			
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies: _____

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

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

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)?	☐	☒	☐	L-LCPB-FB-1 @ L-LMW-8S
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-LCPB-DUP-1 @ L-LMW-1S
b) Were field dup. precision criteria met (note RPD)?	☒	☐	☐	Max RPD: 11.1% [<20%]
c) Were lab duplicates analyzed (note original and duplicate samples)?	☒	☐	☐	
d) Were lab dup. precision criteria met (note RPD)?	☒	☐	☐	Max RPD: 0% [<15%]

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

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

Comments/Notes:

Sulfate analyzed at a dilution in samples -001 through -003. No qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason

Signature: _____ Ann Muehlfarth _____ Date: 3/2/2022

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

June 05, 2022

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

RE: Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory between April 08, 2022 and April 09, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

Lab Note: TDS required analyzed out of hold for DUP reporting, analyst missed that is was required. Both in hold and out of hold data reported.

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

Sincerely,

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

Enclosures

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

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 2000302021-3
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-21-15
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60397479001	**L-LMW-3S**	Water	04/08/22 15:20	04/09/22 04:16
60397479002	**L-LMW-5S**	Water	04/08/22 11:16	04/09/22 04:16
60397479003	**L-LMW-6S**	Water	04/08/22 09:57	04/09/22 04:16
60397479004	**L-LMW-DUP-1**	Water	04/08/22 08:00	04/09/22 04:16
60397479005	**L-LMW-FB-1**	Water	04/08/22 15:30	04/09/22 04:16
60397347027	**L-LMW-1S**	Water	04/08/22 11:15	04/09/22 04:16
60397347001	**L-LMW-2S**	Water	04/06/22 09:11	04/08/22 05:28
60397347026	**L-LMW-4S**	Water	04/08/22 14:35	04/09/22 04:16
60397347030	**L-LMW-7S**	Water	04/08/22 15:04	04/09/22 04:16
60397347031	**L-LMW-8S**	Water	04/08/22 12:51	04/09/22 04:16
60397347013	**L-BMW-1S**	Water	04/06/22 11:18	04/08/22 05:28
60397347014	**L-BMW-2S**	Water	04/06/22 13:27	04/08/22 05:28

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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60397479001	L-LMW-3S	EPA 200.7	JLH	7	PASI-K
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60397479002	L-LMW-5S	EPA 200.7	JLH	7	PASI-K
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60397479003	L-LMW-6S	EPA 200.7	JLH	7	PASI-K
		SM 2320B	KB	1	PASI-K
		SM 2540C	SK, TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
60397479004	L-LMW-DUP-1	EPA 200.7	JLH	7	PASI-K
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
60397479005	L-LMW-FB-1	EPA 200.7	JLH	7	PASI-K
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
60397347027	L-LMW-1S	EPA 200.7	JLH	7	PASI-K
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60397347001	L-LMW-2S	EPA 200.7	JLH	7	PASI-K
		SM 2320B	KB	1	PASI-K
		SM 2540C	SK	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60397347026	L-LMW-4S	EPA 200.7	JLH	7	PASI-K
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60397347030	L-LMW-7S	EPA 200.7	JLH	7	PASI-K
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60397347031	L-LMW-8S	EPA 200.7	JLH	7	PASI-K

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60397347013	**L-BMW-1S**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60397347014	**L-BMW-2S**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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

ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-LMW-3S **Lab ID: 60397479001** Collected: 04/08/22 15:20 Received: 04/09/22 04:16 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	**3880**	ug/L	100	7.1	1	04/21/22 15:13	04/22/22 17:31	7440-42-8	
Calcium	**90400**	ug/L	200	71.3	1	04/21/22 15:13	04/22/22 17:31	7440-70-2	
Iron	**5990**	ug/L	50.0	21.1	1	04/21/22 15:13	04/22/22 17:31	7439-89-6	
Magnesium	**9360**	ug/L	50.0	11.7	1	04/21/22 15:13	04/22/22 17:31	7439-95-4	
Manganese	**603**	ug/L	5.0	1.1	1	04/21/22 15:13	04/22/22 17:31	7439-96-5	
Potassium	**8100**	ug/L	500	224	1	04/21/22 15:13	04/22/22 17:31	7440-09-7	
Sodium	**99900**	ug/L	500	166	1	04/21/22 15:13	04/22/22 17:31	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
	Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**233**	mg/L	20.0	4.6	1		04/18/22 13:19		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
	Pace Analytical Services - Kansas City								
Total Dissolved Solids	**640**	mg/L	10.0	10.0	1		04/15/22 16:10		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
	Pace Analytical Services - Kansas City								
Chloride	**20.9**	mg/L	5.0	2.6	5		04/27/22 05:47	16887-00-6	B
Fluoride	**0.37**	mg/L	0.20	0.12	1		04/27/22 05:33	16984-48-8	
Sulfate	**220**	mg/L	20.0	11.0	20		04/27/22 06:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-LMW-5S **Lab ID: 60397479002** Collected: 04/08/22 11:16 Received: 04/09/22 04:16 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	**53.0J**	ug/L	100	7.1	1	04/21/22 15:13	04/22/22 17:34	7440-42-8	
Calcium	**132000**	ug/L	200	38.2	1	04/21/22 15:13	04/25/22 16:26	7440-70-2	
Iron	**43.1J**	ug/L	50.0	21.1	1	04/21/22 15:13	04/22/22 17:34	7439-89-6	
Magnesium	**13600**	ug/L	50.0	11.7	1	04/21/22 15:13	04/22/22 17:34	7439-95-4	
Manganese	**13.1**	ug/L	5.0	1.1	1	04/21/22 15:13	04/22/22 17:34	7439-96-5	
Potassium	**2990**	ug/L	500	224	1	04/21/22 15:13	04/22/22 17:34	7440-09-7	
Sodium	**7810**	ug/L	500	166	1	04/21/22 15:13	04/22/22 17:34	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**359**	mg/L	20.0	4.6	1		04/18/22 13:26		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**442**	mg/L	10.0	10.0	1		04/15/22 16:10		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**4.4**	mg/L	1.0	0.53	1		04/27/22 06:14	16887-00-6	B
Fluoride	**0.18J**	mg/L	0.20	0.12	1		04/27/22 06:14	16984-48-8	
Sulfate	**10.1**	mg/L	1.0	0.55	1		04/27/22 06:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-LMW-6S **Lab ID: 60397479003** Collected: 04/08/22 09:57 Received: 04/09/22 04:16 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	**2350**	ug/L	100	7.1	1	04/21/22 15:13	04/22/22 17:36	7440-42-8	
Calcium	**105000**	ug/L	200	38.2	1	04/21/22 15:13	04/25/22 16:29	7440-70-2	
Iron	**11200**	ug/L	50.0	21.1	1	04/21/22 15:13	04/22/22 17:36	7439-89-6	
Magnesium	**20200**	ug/L	50.0	11.7	1	04/21/22 15:13	04/22/22 17:36	7439-95-4	
Manganese	**1310**	ug/L	5.0	1.1	1	04/21/22 15:13	04/22/22 17:36	7439-96-5	
Potassium	**5200**	ug/L	500	224	1	04/21/22 15:13	04/22/22 17:36	7440-09-7	
Sodium	**17100**	ug/L	500	166	1	04/21/22 15:13	04/22/22 17:36	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
	Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**372**	mg/L	20.0	4.6	1		04/18/22 13:32		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
	Pace Analytical Services - Kansas City								
Total Dissolved Solids	**453**	mg/L	10.0	10.0	1		04/15/22 16:10		
Total Dissolved Solids	**433**	mg/L	10.0	10.0	1		05/16/22 18:13		H5
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
	Pace Analytical Services - Kansas City								
Chloride	**2.8**	mg/L	1.0	0.53	1		04/26/22 20:29	16887-00-6	B
Fluoride	**<0.12**	mg/L	0.20	0.12	1		04/26/22 20:29	16984-48-8	
Sulfate	**30.5**	mg/L	5.0	2.8	5		04/27/22 23:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-LMW-DUP-1 **Lab ID: 60397479004** Collected: 04/08/22 08:00 Received: 04/09/22 04:16 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	**52.7J**	ug/L	100	7.1	1	04/21/22 15:13	04/22/22 17:43	7440-42-8	
Calcium	**133000**	ug/L	200	38.2	1	04/21/22 15:13	04/25/22 16:37	7440-70-2	
Iron	**41.3J**	ug/L	50.0	21.1	1	04/21/22 15:13	04/22/22 17:43	7439-89-6	
Magnesium	**13400**	ug/L	50.0	11.7	1	04/21/22 15:13	04/22/22 17:43	7439-95-4	
Manganese	**12.2**	ug/L	5.0	1.1	1	04/21/22 15:13	04/22/22 17:43	7439-96-5	
Potassium	**2940**	ug/L	500	224	1	04/21/22 15:13	04/22/22 17:43	7440-09-7	
Sodium	**7690**	ug/L	500	166	1	04/21/22 15:13	04/22/22 17:43	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**404**	mg/L	20.0	4.6	1		04/18/22 13:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**437**	mg/L	10.0	10.0	1		04/15/22 16:10		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**4.2**	mg/L	1.0	0.53	1		04/26/22 22:22	16887-00-6	B
Fluoride	**<0.12**	mg/L	0.20	0.12	1		04/26/22 22:22	16984-48-8	
Sulfate	**9.2**	mg/L	1.0	0.55	1		04/26/22 22:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-LMW-FB-1 **Lab ID: 60397479005** Collected: 04/08/22 15:30 Received: 04/09/22 04:16 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	**<7.1**	ug/L	100	7.1	1	04/21/22 15:13	04/22/22 17:45	7440-42-8	
Calcium	**<71.3**	ug/L	200	71.3	1	04/21/22 15:13	04/22/22 17:45	7440-70-2	
Iron	**<21.1**	ug/L	50.0	21.1	1	04/21/22 15:13	04/22/22 17:45	7439-89-6	
Magnesium	**<11.7**	ug/L	50.0	11.7	1	04/21/22 15:13	04/22/22 17:45	7439-95-4	
Manganese	**<1.1**	ug/L	5.0	1.1	1	04/21/22 15:13	04/22/22 17:45	7439-96-5	
Potassium	**<224**	ug/L	500	224	1	04/21/22 15:13	04/22/22 17:45	7440-09-7	
Sodium	**<166**	ug/L	500	166	1	04/21/22 15:13	04/22/22 17:45	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**<4.6**	mg/L	20.0	4.6	1		04/18/22 13:51		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**8.0**	mg/L	5.0	5.0	1		04/15/22 16:10		
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		04/26/22 23:19	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		04/26/22 23:19	16984-48-8	
Sulfate	**<0.55**	mg/L	1.0	0.55	1		04/26/22 23:19	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-LMW-1S **Lab ID: 60397347027** Collected: 04/08/22 11:15 Received: 04/09/22 04:16 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	**1130**	ug/L	100	7.1	1	04/21/22 14:08	04/22/22 16:42	7440-42-8	
Calcium	**116000**	ug/L	200	38.2	1	04/21/22 14:08	04/25/22 18:10	7440-70-2	
Iron	**3560**	ug/L	50.0	21.1	1	04/21/22 14:08	04/22/22 16:42	7439-89-6	
Magnesium	**20900**	ug/L	50.0	11.7	1	04/21/22 14:08	04/22/22 16:42	7439-95-4	
Manganese	**878**	ug/L	5.0	1.1	1	04/21/22 14:08	04/22/22 16:42	7439-96-5	
Potassium	**3730**	ug/L	500	224	1	04/21/22 14:08	04/22/22 16:42	7440-09-7	
Sodium	**7600**	ug/L	500	166	1	04/21/22 14:08	04/22/22 16:42	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**335**	mg/L	20.0	4.6	1		04/16/22 10:40		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**492**	mg/L	10.0	10.0	1		04/14/22 16:04		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.5**	mg/L	1.0	0.53	1		04/27/22 00:56	16887-00-6	B
Fluoride	**0.22**	mg/L	0.20	0.12	1		04/27/22 00:56	16984-48-8	
Sulfate	**65.5**	mg/L	10.0	5.5	10		04/27/22 01:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-LMW-2S **Lab ID: 60397347001** Collected: 04/06/22 09:11 Received: 04/08/22 05:28 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	**3330**	ug/L	100	13.5	1	04/19/22 13:10	04/21/22 18:38	7440-42-8	
Calcium	**69700**	ug/L	200	38.2	1	04/19/22 13:10	04/21/22 18:38	7440-70-2	M1
Iron	**<23.9**	ug/L	50.0	23.9	1	04/19/22 13:10	04/21/22 18:38	7439-89-6	
Magnesium	**89.9**	ug/L	50.0	43.0	1	04/19/22 13:10	04/21/22 18:38	7439-95-4	
Manganese	**<3.8**	ug/L	5.0	3.8	1	04/19/22 13:10	04/21/22 18:38	7439-96-5	
Potassium	**9260**	ug/L	500	167	1	04/19/22 13:10	04/21/22 18:38	7440-09-7	
Sodium	**64000**	ug/L	500	64.8	1	04/19/22 13:10	04/21/22 18:38	7440-23-5	M1
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**34.3**	mg/L	20.0	4.6	1		04/15/22 17:15		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**474**	mg/L	5.0	5.0	1		05/16/22 18:13		H1
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**17.4**	mg/L	1.0	0.53	1		04/26/22 13:52	16887-00-6	M1
Fluoride	**0.16J**	mg/L	0.20	0.12	1		04/26/22 13:52	16984-48-8	M1,R1
Sulfate	**263**	mg/L	50.0	27.5	50		04/26/22 14:48	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-LMW-4S **Lab ID: 60397347026** Collected: 04/08/22 14:35 Received: 04/09/22 04:16 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	**8240**	ug/L	100	7.1	1	04/21/22 14:08	04/22/22 16:40	7440-42-8	
Calcium	**127000**	ug/L	200	38.2	1	04/21/22 14:08	04/25/22 18:07	7440-70-2	
Iron	**12000**	ug/L	50.0	21.1	1	04/21/22 14:08	04/22/22 16:40	7439-89-6	
Magnesium	**27100**	ug/L	50.0	11.7	1	04/21/22 14:08	04/22/22 16:40	7439-95-4	
Manganese	**1880**	ug/L	5.0	1.1	1	04/21/22 14:08	04/22/22 16:40	7439-96-5	
Potassium	**6960**	ug/L	500	224	1	04/21/22 14:08	04/22/22 16:40	7440-09-7	
Sodium	**92400**	ug/L	500	166	1	04/21/22 14:08	04/22/22 16:40	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**397**	mg/L	20.0	4.6	1		04/16/22 10:34		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**765**	mg/L	10.0	10.0	1		04/14/22 16:04		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**23.3**	mg/L	2.0	1.1	2		04/27/22 00:28	16887-00-6	
Fluoride	**0.29**	mg/L	0.20	0.12	1		04/27/22 00:14	16984-48-8	
Sulfate	**220**	mg/L	20.0	11.0	20		04/27/22 00:42	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-LMW-7S **Lab ID: 60397347030** Collected: 04/08/22 15:04 Received: 04/09/22 04:16 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	**10700**	ug/L	100	7.1	1	04/21/22 14:08	04/22/22 16:49	7440-42-8	
Calcium	**136000**	ug/L	200	38.2	1	04/21/22 14:08	04/25/22 18:15	7440-70-2	
Iron	**4910**	ug/L	50.0	21.1	1	04/21/22 14:08	04/22/22 16:49	7439-89-6	
Magnesium	**30500**	ug/L	50.0	11.7	1	04/21/22 14:08	04/22/22 16:49	7439-95-4	
Manganese	**1410**	ug/L	5.0	1.1	1	04/21/22 14:08	04/22/22 16:49	7439-96-5	
Potassium	**6860**	ug/L	500	224	1	04/21/22 14:08	04/22/22 16:49	7440-09-7	
Sodium	**59000**	ug/L	500	166	1	04/21/22 14:08	04/22/22 16:49	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
	Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**287**	mg/L	20.0	4.6	1		04/18/22 11:39		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
	Pace Analytical Services - Kansas City								
Total Dissolved Solids	**795**	mg/L	10.0	10.0	1		04/14/22 16:04		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
	Pace Analytical Services - Kansas City								
Chloride	**20.8**	mg/L	2.0	1.1	2		04/27/22 03:14	16887-00-6	
Fluoride	**0.26**	mg/L	0.20	0.12	1		04/27/22 03:00	16984-48-8	
Sulfate	**274**	mg/L	20.0	11.0	20		04/27/22 03:28	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-LMW-8S **Lab ID: 60397347031** Collected: 04/08/22 12:51 Received: 04/09/22 04:16 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	**7890**	ug/L	100	7.1	1	04/21/22 14:08	04/22/22 16:51	7440-42-8	
Calcium	**194000**	ug/L	200	38.2	1	04/21/22 14:08	04/25/22 18:18	7440-70-2	
Iron	**7050**	ug/L	50.0	21.1	1	04/21/22 14:08	04/22/22 16:51	7439-89-6	
Magnesium	**33800**	ug/L	50.0	11.7	1	04/21/22 14:08	04/22/22 16:51	7439-95-4	
Manganese	**2550**	ug/L	5.0	1.1	1	04/21/22 14:08	04/22/22 16:51	7439-96-5	
Potassium	**7960**	ug/L	500	224	1	04/21/22 14:08	04/22/22 16:51	7440-09-7	
Sodium	**90900**	ug/L	500	166	1	04/21/22 14:08	04/22/22 16:51	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**340**	mg/L	20.0	4.6	1		04/18/22 11:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**1080**	mg/L	13.3	13.3	1		04/15/22 16:10		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**17.6**	mg/L	1.0	0.53	1		04/27/22 03:42	16887-00-6	
Fluoride	**0.30**	mg/L	0.20	0.12	1		04/27/22 03:42	16984-48-8	
Sulfate	**537**	mg/L	50.0	27.5	50		04/27/22 04:37	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-BMW-1S **Lab ID: 60397347013** Collected: 04/06/22 11:18 Received: 04/08/22 05:28 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	**109**	ug/L	100	13.5	1	04/19/22 13:10	04/21/22 19:39	7440-42-8	
Calcium	**221000**	ug/L	200	38.2	1	04/19/22 13:10	04/21/22 19:39	7440-70-2	
Iron	**24800**	ug/L	50.0	23.9	1	04/19/22 13:10	04/21/22 19:39	7439-89-6	
Magnesium	**53100**	ug/L	50.0	43.0	1	04/19/22 13:10	04/21/22 19:39	7439-95-4	
Manganese	**2740**	ug/L	5.0	3.8	1	04/19/22 13:10	04/21/22 19:39	7439-96-5	
Potassium	**5920**	ug/L	500	167	1	04/19/22 13:10	04/21/22 19:39	7440-09-7	
Sodium	**20700**	ug/L	500	64.8	1	04/19/22 13:10	04/21/22 19:39	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**<4.6**	mg/L	20.0	4.6	1		04/16/22 07:31		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**828**	mg/L	10.0	10.0	1		04/14/22 16:02		H1
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.5**	mg/L	1.0	0.53	1		04/26/22 22:09	16887-00-6	B
Fluoride	**0.20J**	mg/L	0.20	0.12	1		04/26/22 22:09	16984-48-8	
Sulfate	**38.6**	mg/L	10.0	5.5	10		04/26/22 22:23	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Sample: L-BMW-2S **Lab ID: 60397347014** Collected: 04/06/22 13:27 Received: 04/08/22 05:28 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	**55.2J**	ug/L	100	13.5	1	04/19/22 13:10	04/21/22 19:41	7440-42-8	
Calcium	**138000**	ug/L	200	38.2	1	04/19/22 13:10	04/21/22 19:41	7440-70-2	
Iron	**<23.9**	ug/L	50.0	23.9	1	04/19/22 13:10	04/21/22 19:41	7439-89-6	
Magnesium	**20900**	ug/L	50.0	43.0	1	04/19/22 13:10	04/21/22 19:41	7439-95-4	
Manganese	**6.4**	ug/L	5.0	3.8	1	04/19/22 13:10	04/21/22 19:41	7439-96-5	
Potassium	**5790**	ug/L	500	167	1	04/19/22 13:10	04/21/22 19:41	7440-09-7	
Sodium	**4340**	ug/L	500	64.8	1	04/19/22 13:10	04/21/22 19:41	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**403**	mg/L	20.0	4.6	1		04/16/22 07:35		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**513**	mg/L	10.0	10.0	1		04/14/22 16:02		H1
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.5**	mg/L	1.0	0.53	1		04/26/22 22:37	16887-00-6	B
Fluoride	**0.19J**	mg/L	0.20	0.12	1		04/26/22 22:37	16984-48-8	
Sulfate	**45.7**	mg/L	5.0	2.8	5		04/27/22 10:05	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

QC Batch: 782070
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: 60397347001, 60397347013, 60397347014

METHOD BLANK: 3119106 Matrix: Water
Associated Lab Samples: 60397347001, 60397347013, 60397347014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<13.5	100	13.5	04/21/22 18:32	
Calcium	ug/L	<38.2	200	38.2	04/21/22 18:32	
Iron	ug/L	<23.9	50.0	23.9	04/21/22 18:32	
Magnesium	ug/L	<43.0	50.0	43.0	04/21/22 18:32	
Manganese	ug/L	<3.8	5.0	3.8	04/21/22 18:32	
Potassium	ug/L	<167	500	167	04/21/22 18:32	
Sodium	ug/L	<64.8	500	64.8	04/22/22 11:39	

LABORATORY CONTROL SAMPLE: 3119107

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1020	102	85-115	
Calcium	ug/L	10000	10400	104	85-115	
Iron	ug/L	10000	9940	99	85-115	
Magnesium	ug/L	10000	10400	104	85-115	
Manganese	ug/L	1000	1060	106	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	9980	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3119108 3119109

Parameter	Units	60397347001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	3330	1000	1000	4050	4310	71	97	70-130	6	20	
Calcium	ug/L	69700	10000	10000	74400	78800	47	91	70-130	6	20	M1
Iron	ug/L	<23.9	10000	10000	9200	9670	92	97	70-130	5	20	
Magnesium	ug/L	89.9	10000	10000	9540	10000	94	100	70-130	5	20	
Manganese	ug/L	<3.8	1000	1000	970	1020	97	102	70-130	5	20	
Potassium	ug/L	9260	10000	10000	17900	18900	86	96	70-130	5	20	
Sodium	ug/L	64000	10000	10000	68200	72400	42	84	70-130	6	20	M1

MATRIX SPIKE SAMPLE: 3119110

Parameter	Units	60397347011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	<13.5	1000	1030	102	70-130	
Calcium	ug/L	<38.2	10000	10300	103	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

MATRIX SPIKE SAMPLE: 3119110

Parameter	Units	60397347011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	<23.9	10000	9670	97	70-130	
Magnesium	ug/L	<43.0	10000	10300	103	70-130	
Manganese	ug/L	<3.8	1000	1050	105	70-130	
Potassium	ug/L	<167	10000	9960	100	70-130	
Sodium	ug/L	<64.8	10000	9780	97	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

QC Batch: 782570
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: 60397347026, 60397347027, 60397347030, 60397347031

METHOD BLANK: 3120868 Matrix: Water
Associated Lab Samples: 60397347026, 60397347027, 60397347030, 60397347031

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<7.1	100	7.1	04/22/22 16:33	
Calcium	ug/L	<38.2	200	38.2	04/22/22 16:33	
Iron	ug/L	<21.1	50.0	21.1	04/22/22 16:33	
Magnesium	ug/L	<11.7	50.0	11.7	04/22/22 16:33	
Manganese	ug/L	<1.1	5.0	1.1	04/22/22 16:33	
Potassium	ug/L	<224	500	224	04/22/22 16:33	
Sodium	ug/L	<166	500	166	04/22/22 16:33	

LABORATORY CONTROL SAMPLE: 3120869

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	967	97	85-115	
Calcium	ug/L	10000	9920	99	85-115	
Iron	ug/L	10000	10100	101	85-115	
Magnesium	ug/L	10000	10300	103	85-115	
Manganese	ug/L	1000	1000	100	85-115	
Potassium	ug/L	10000	9970	100	85-115	
Sodium	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3120870 3120871

Parameter	Units	60397347017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	8050	1000	1000	9030	9220	98	117	70-130	2	20	
Calcium	ug/L	109000	10000	10000	118000	120000	87	108	70-130	2	20	
Iron	ug/L	5150	10000	10000	14900	15100	98	99	70-130	1	20	
Magnesium	ug/L	13700	10000	10000	22800	23100	92	94	70-130	1	20	
Manganese	ug/L	282	1000	1000	1270	1270	98	99	70-130	1	20	
Potassium	ug/L	8630	10000	10000	18800	19200	102	106	70-130	2	20	
Sodium	ug/L	115000	10000	10000	125000	128000	100	132	70-130	2	20	M1

MATRIX SPIKE SAMPLE: 3120872

Parameter	Units	60397347023 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	306	1000	1270	97	70-130	
Calcium	ug/L	194000	10000	203000	83	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

MATRIX SPIKE SAMPLE: 3120872

Parameter	Units	60397347023 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	4400	10000	14200	98	70-130	
Magnesium	ug/L	37400	10000	44600	72	70-130	
Manganese	ug/L	1390	1000	2380	98	70-130	
Potassium	ug/L	7200	10000	17500	103	70-130	
Sodium	ug/L	59500	10000	69400	99	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

QC Batch: 782602
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: 60397479001, 60397479002, 60397479003, 60397479004, 60397479005

METHOD BLANK: 3120948 Matrix: Water
Associated Lab Samples: 60397479001, 60397479002, 60397479003, 60397479004, 60397479005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<7.1	100	7.1	04/22/22 17:27	
Calcium	ug/L	<71.3	200	71.3	04/22/22 17:27	
Iron	ug/L	<21.1	50.0	21.1	04/22/22 17:27	
Magnesium	ug/L	<11.7	50.0	11.7	04/22/22 17:27	
Manganese	ug/L	<1.1	5.0	1.1	04/22/22 17:27	
Potassium	ug/L	<224	500	224	04/22/22 17:27	
Sodium	ug/L	<166	500	166	04/22/22 17:27	

LABORATORY CONTROL SAMPLE: 3120949

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	2000	1830	92	85-115	
Calcium	ug/L	20000	18900	94	85-115	
Iron	ug/L	20000	18900	95	85-115	
Magnesium	ug/L	20000	19000	95	85-115	
Manganese	ug/L	2000	1910	96	85-115	
Potassium	ug/L	20000	19100	95	85-115	
Sodium	ug/L	20000	19100	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3120950 3120951

Parameter	Units	60397479003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	2350	1000	1000	3370	3360	102	101	70-130	0	20	
Calcium	ug/L	105000	10000	10000	116000	116000	106	110	70-130	0	20	
Iron	ug/L	11200	10000	10000	21300	20900	101	97	70-130	2	20	
Magnesium	ug/L	20200	10000	10000	29400	29000	92	88	70-130	1	20	
Manganese	ug/L	1310	1000	1000	2340	2300	103	100	70-130	1	20	
Potassium	ug/L	5200	10000	10000	15500	15400	103	102	70-130	1	20	
Sodium	ug/L	17100	10000	10000	27700	27500	106	104	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3120952 3120953

Parameter	Units	60397403002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	110	1000	1000	1080	1080	97	97	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3120952 3120953

Parameter	Units	60397403002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	220000	10000	10000	228000	226000	77	59	70-130	1	20	M1
Iron	ug/L	466	10000	10000	10000	10100	96	96	70-130	0	20	
Magnesium	ug/L	56300	10000	10000	65000	65000	87	87	70-130	0	20	
Manganese	ug/L	3200	1000	1000	4100	4150	90	95	70-130	1	20	
Potassium	ug/L	7050	10000	10000	17500	17400	105	104	70-130	0	20	
Sodium	ug/L	12500	10000	10000	22800	22900	103	104	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

QC Batch: 781580
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60397347001, 60397347013, 60397347014

METHOD BLANK: 3117114 Matrix: Water
Associated Lab Samples: 60397347001, 60397347013, 60397347014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	04/15/22 16:07	

LABORATORY CONTROL SAMPLE: 3117115

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	496	99	90-110	

SAMPLE DUPLICATE: 3117116

Parameter	Units	60397346006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	408	406	0	10	

SAMPLE DUPLICATE: 3117118

Parameter	Units	60397347001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	34.3	35.0	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

QC Batch: 781581
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60397347026, 60397347027, 60397347030, 60397347031, 60397479001, 60397479002, 60397479003, 60397479004, 60397479005

METHOD BLANK: 3117119 Matrix: Water
Associated Lab Samples: 60397347026, 60397347027, 60397347030, 60397347031, 60397479001, 60397479002, 60397479003, 60397479004, 60397479005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	04/16/22 08:47	

LABORATORY CONTROL SAMPLE: 3117120

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

SAMPLE DUPLICATE: 3117121

Parameter	Units	60397347007 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	122	120	2	10	

SAMPLE DUPLICATE: 3117123

Parameter	Units	60397479003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	372	375	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

QC Batch: 781487 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60397347013, 60397347014, 60397347026, 60397347027, 60397347030

METHOD BLANK: 3116838 Matrix: Water
Associated Lab Samples: 60397347013, 60397347014, 60397347026, 60397347027, 60397347030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	04/14/22 16:01	

LABORATORY CONTROL SAMPLE: 3116839

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	891	89	80-120	

SAMPLE DUPLICATE: 3116840

Parameter	Units	60397347029 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	14.0	11.0	24	10	D6

SAMPLE DUPLICATE: 3116841

Parameter	Units	60397347030 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	795	784	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

QC Batch: 781721 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60397347031, 60397479001, 60397479002, 60397479003, 60397479004, 60397479005

METHOD BLANK: 3117705 Matrix: Water
Associated Lab Samples: 60397347031, 60397479001, 60397479002, 60397479003, 60397479004, 60397479005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	04/15/22 16:10	

LABORATORY CONTROL SAMPLE: 3117706

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	873	87	80-120	

SAMPLE DUPLICATE: 3117707

Parameter	Units	60397403002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	975	939	4	10	

SAMPLE DUPLICATE: 3117708

Parameter	Units	60397683001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	374	363	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

QC Batch: 787090
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60397347001, 60397479003

METHOD BLANK: 3137539 Matrix: Water
Associated Lab Samples: 60397347001, 60397479003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/16/22 18:12	

LABORATORY CONTROL SAMPLE: 3137540

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 3137541

Parameter	Units	60396337010 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1170	1180	1	10	H1

SAMPLE DUPLICATE: 3137542

Parameter	Units	60396735001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	530	517	2	10	H1

SAMPLE DUPLICATE: 3137543

Parameter	Units	60397347001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	474	489	3	10	H1

SAMPLE DUPLICATE: 3137544

Parameter	Units	60397479003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	433	444	3	10	H1

SAMPLE DUPLICATE: 3137545

Parameter	Units	60397347017 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	815	821	1	10	H1

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 LABADIE LCPB
Pace Project No.: 60397479

QC Batch: 782513
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: 60397347001, 60397347013, 60397347014, 60397347026, 60397347027

METHOD BLANK: 3120630 Matrix: Water
Associated Lab Samples: 60397347001, 60397347013, 60397347014, 60397347026, 60397347027

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.63J	1.0	0.53	04/26/22 12:57	
Fluoride	mg/L	<0.12	0.20	0.12	04/26/22 12:57	
Sulfate	mg/L	<0.55	1.0	0.55	04/26/22 12:57	

METHOD BLANK: 3124994 Matrix: Water
Associated Lab Samples: 60397347001, 60397347013, 60397347014, 60397347026, 60397347027

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.61J	1.0	0.53	04/27/22 09:06	
Fluoride	mg/L	<0.12	0.20	0.12	04/27/22 09:06	
Sulfate	mg/L	<0.55	1.0	0.55	04/27/22 09:06	

LABORATORY CONTROL SAMPLE: 3120631

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	2.5	99	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

LABORATORY CONTROL SAMPLE: 3124995

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3120632 3120633

Parameter	Units	60397347001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	17.4	5	5	25.3	22.7	157	105	80-120	11	15	E,M1
Fluoride	mg/L	0.16J	2.5	2.5	4.0	2.6	153	98	80-120	42	15	M1,R1
Sulfate	mg/L	263	250	250	505	506	97	97	80-120	0	15	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

SAMPLE DUPLICATE: 3120634

Parameter	Units	60397347001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	17.4	17.5	0	15	
Fluoride	mg/L	0.16J	<0.12		15	
Sulfate	mg/L	263	266	1	15	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

QC Batch: 782517
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: 60397347030, 60397347031, 60397479001, 60397479002, 60397479003, 60397479004, 60397479005

METHOD BLANK: 3120651 Matrix: Water
Associated Lab Samples: 60397347030, 60397347031, 60397479001, 60397479002, 60397479003, 60397479004, 60397479005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.60J	1.0	0.53	04/27/22 01:51	
Fluoride	mg/L	<0.12	0.20	0.12	04/27/22 01:51	
Sulfate	mg/L	<0.55	1.0	0.55	04/27/22 01:51	

METHOD BLANK: 3125964 Matrix: Water
Associated Lab Samples: 60397347030, 60397347031, 60397479001, 60397479002, 60397479003, 60397479004, 60397479005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	04/27/22 12:39	
Fluoride	mg/L	<0.12	0.20	0.12	04/27/22 12:39	
Sulfate	mg/L	<0.55	1.0	0.55	04/27/22 12:39	

METHOD BLANK: 3125967 Matrix: Water
Associated Lab Samples: 60397347030, 60397347031, 60397479001, 60397479002, 60397479003, 60397479004, 60397479005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	04/26/22 11:12	
Fluoride	mg/L	<0.12	0.20	0.12	04/26/22 11:12	
Sulfate	mg/L	<0.55	1.0	0.55	04/26/22 11:12	

LABORATORY CONTROL SAMPLE: 3120652

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 3125965

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	104	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	5	5.2	104	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 LABADIE LCPB
Pace Project No.: 60397479

LABORATORY CONTROL SAMPLE: 3125968

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	103	90-110	
Fluoride	mg/L	2.5	2.7	106	90-110	
Sulfate	mg/L	5	4.7	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3120653 3120654

Parameter	Units	60397479003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.8	5	5	7.5	7.4	94	92	80-120	1	15	
Fluoride	mg/L	<0.12	2.5	2.5	2.3	2.3	91	91	80-120	0	15	
Sulfate	mg/L	30.5	25	25	55.4	55.4	100	99	80-120	0	15	

SAMPLE DUPLICATE: 3120655

Parameter	Units	60397479003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	2.8	2.8	0	15	
Fluoride	mg/L	<0.12	<0.12		15	
Sulfate	mg/L	30.5	30.7	1	15	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
H1	Analysis conducted outside the EPA method holding time.
H5	Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60397347001	L-LMW-2S	EPA 200.7	782070	EPA 200.7	782144
60397347013	L-BMW-1S	EPA 200.7	782070	EPA 200.7	782144
60397347014	L-BMW-2S	EPA 200.7	782070	EPA 200.7	782144
60397347026	L-LMW-4S	EPA 200.7	782570	EPA 200.7	782653
60397347027	L-LMW-1S	EPA 200.7	782570	EPA 200.7	782653
60397347030	L-LMW-7S	EPA 200.7	782570	EPA 200.7	782653
60397347031	L-LMW-8S	EPA 200.7	782570	EPA 200.7	782653
60397479001	L-LMW-3S	EPA 200.7	782602	EPA 200.7	782675
60397479002	L-LMW-5S	EPA 200.7	782602	EPA 200.7	782675
60397479003	L-LMW-6S	EPA 200.7	782602	EPA 200.7	782675
60397479004	L-LMW-DUP-1	EPA 200.7	782602	EPA 200.7	782675
60397479005	L-LMW-FB-1	EPA 200.7	782602	EPA 200.7	782675
60397347001	L-LMW-2S	SM 2320B	781580		
60397347013	L-BMW-1S	SM 2320B	781580		
60397347014	L-BMW-2S	SM 2320B	781580		
60397347026	L-LMW-4S	SM 2320B	781581		
60397347027	L-LMW-1S	SM 2320B	781581		
60397347030	L-LMW-7S	SM 2320B	781581		
60397347031	L-LMW-8S	SM 2320B	781581		
60397479001	L-LMW-3S	SM 2320B	781581		
60397479002	L-LMW-5S	SM 2320B	781581		
60397479003	L-LMW-6S	SM 2320B	781581		
60397479004	L-LMW-DUP-1	SM 2320B	781581		
60397479005	L-LMW-FB-1	SM 2320B	781581		
60397347001	L-LMW-2S	SM 2540C	787090		
60397347013	L-BMW-1S	SM 2540C	781487		
60397347014	L-BMW-2S	SM 2540C	781487		
60397347026	L-LMW-4S	SM 2540C	781487		
60397347027	L-LMW-1S	SM 2540C	781487		
60397347030	L-LMW-7S	SM 2540C	781487		
60397347031	L-LMW-8S	SM 2540C	781721		
60397479001	L-LMW-3S	SM 2540C	781721		
60397479002	L-LMW-5S	SM 2540C	781721		
60397479003	L-LMW-6S	SM 2540C	781721		
60397479003	L-LMW-6S	SM 2540C	787090		
60397479004	L-LMW-DUP-1	SM 2540C	781721		
60397479005	L-LMW-FB-1	SM 2540C	781721		
60397347001	L-LMW-2S	EPA 300.0	782513		
60397347013	L-BMW-1S	EPA 300.0	782513		
60397347014	L-BMW-2S	EPA 300.0	782513		
60397347026	L-LMW-4S	EPA 300.0	782513		
60397347027	L-LMW-1S	EPA 300.0	782513		
60397347030	L-LMW-7S	EPA 300.0	782517		

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE LCPB
Pace Project No.: 60397479

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60397347031	**L-LMW-8S**	EPA 300.0	782517		
60397479001	**L-LMW-3S**	EPA 300.0	782517		
60397479002	**L-LMW-5S**	EPA 300.0	782517		
60397479003	**L-LMW-6S**	EPA 300.0	782517		
60397479004	**L-LMW-DUP-1**	EPA 300.0	782517		
60397479005	**L-LMW-FB-1**	EPA 300.0	782517		

WO# : 60397479

60397479

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

Client Name: Golder Assoc

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

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

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

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

Thermometer Used: ~~T299~~ T301 VRB 9/12/22 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): As-read 2.3, 8.1, 3.2 Corr. Factor -1.0 Corrected 1.3, 7.1, 2.2

Date and initials of person examining contents: VRB 9/12/22

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	Cooler out of temp Compliance only Contained RAD samples
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#: 55192, 55193	☑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: _____

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical
www.pacelabs.com

Section A Required Client Information:

Company:	Golder Associates
Address:	701 Emerson Road, Suite 250
	Creve Coeur, Missouri, 63141
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder, Ryan Feldman, Brendan Talbert
Purchase Order No.:	COC #3
Project Name:	Ameren Labadie Energy Center LCPB
Project Number:	153140604. 0001

Section C Invoice Information:

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

REGULATORY AGENCY

NPDES ☑ GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location STATE: MO

Section D Required Client Information

Valid Matrix Codes

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

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride/Fluoride/Sulfate	App III and Cat/An Metals	Alkalinity	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Requested Analysis Filtered (Y/N)	N	N	N	N		60397479
1	L-LMW-1S	WT	G			4-8-22	1115		2	1		1							X	X	X	X		
2	~~L-LMW-2S~~	WT	G																					
3	L-LMW-3S	WT	G			4-8-22	1520		2	1		1							X	X	X	X		BP1U, BP3N
4	L-LMW-4S	WT	G				1435																	
5	L-LMW-5S	WT	G				1116																	BP1U, BP3N
6	L-LMW-6S	WT	G				0957																	BP1U, BP3N
7	L-LMW-7S	WT	G				1504																	
8	L-LMW-8S	WT	G				1251																	
9	~~L-BMW-1S~~ L-LMW-MS-1	WT	G			4-8-22	0957		2	1		1												BP1U, BP3N
10	L-BMW-2S L-LMW-MSD-1	WT	G				0957																	
11	L-LMW-DUP-1	WT	G			4-8-22	—																	
12	L-LMW-FB-1	WT	G			4-8-22	1530																	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
App III and Cat/An Metals - EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B		4-8-22	~~1715~~ 1715	Victor B Pace	4/9/22	0916	1.3 1.1 2.2	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schneider

SIGNATURE of SAMPLER:

DATE Signed (MM/DD/YY): 04-08-22

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

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company:	Golder Associates
Address:	701 Emerson Road, Suite 250
	Creve Coeur, Missouri, 63141
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schneider, Ryan Feldman, Brendan Talbert
Purchase Order No.:	COC #N 3
Project Name:	Ameren ~~Sioux~~ Labadie Energy Center ~~SCL4A~~ LCP3
Project Number:	153140604. ~~0003~~ 0001

Section C Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	App III and Cat/An Metals	Chloride/Fluoride/Sulfate	TDS	Alkalinity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	~~S-TMW-1~~ L-LMW-2S	WT	G			4-6-22	0911		2	1		1							1	1	1	1		60397347
2	~~S-TMW-2~~ L-BMW-1S	WT	G			1	1118		1	1		1							1	1	1	1		
3	~~S-TMW-3~~ L-BMW-2S	WT	G			1	1327		1	1		1							1	1	1	1		
4	S-UG-3	WT	G																						
5	S-SCL4A-DUP-1	WT	G																						
6	S-SCL4A-FB-1	WT	G																						
7	S-SCL4A-MS-1	WT	G																						
8	S-SCL4A-MSD-1	WT	G																						
9	S-BMW-1S	WT	G																						
10	S-BMW-3S	WT	G																						
11		WT	G																						
12		WT	G																						

Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
*EPA 200.7: B, Ca, Fe, Mn, Mg, K, Na	Brendan Talbert/Golder	4-7-22	1720				

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brendan Talbert

SIGNATURE of SAMPLER: Brendan Talbert

DATE Signed (MM/DD/YY): 04/07/22

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

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

MEMORANDUM

DATE June 7, 2022 **Project No.** 153140604.0001

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Annie Muehlfarth **EMAIL ann.muehlfarth@wsp.com**

DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCPB – DETECTION MONITORING - DATA PACKAGE 60397479

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

- When a compound was detected in a blank (i.e. method, field), and the blank comparison criterion was not met, associated sample results were qualified as estimates (J) or non-detects (U).
- When a compound was detected in a sample result between the MDL and the PQL the results were recorded at the detection value and qualified as estimates (J).
- When duplicate criterion was not met, the associated sample result was qualified as an estimate (J for detects, UJ for non-detects).
- When a compound was analyzed outside of hold time, associated sample results were qualified as estimates (J for detects, UJ for non-detects).
- When matrix spike/matrix spike duplicate (MS/MSD) criterion was not met, the associated sample result was qualified as an estimate (J, J+ for estimates biased high, and J- for estimates biased low).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates USA Inc
Project Manager: J. Ingram
Project Name: Ameren - LEC - LCPB
Project Number: GL153140604.0001
Reviewer: A. Muehlfarth
Validation Date: 6/7/2022

Laboratory: Pace Analytical
SDG #: 60397479
Analytical Method (type and no.): EPA 200.7 (Total Metals); SM2320B (Alkalinity); SM2540C (TDS); EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names L-LMW-3S, L-LMW-5S, L-LMW-6S, L-LMW-DUP-1, L-LMW-FB-1, L-LMW-1S, L-LMW-2S, L-LMW-4S, L-LMW-7S, L-LMW-8S, 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			4/6/2022 - 4/8/2022
b) Sampling team indicated?	x			EMS/GTM/
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See Notes
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies:

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

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

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			L-LMW-DUP-1 @ L-LMW-5S
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:

TDS analyzed outside of hold time in several samples, results qualified as estimates.

Chloride and sulfate analyzed at a dilution in several samples, no qualification necessary.

Blanks:

MB 3120630/3124994: Chloride (0.63J/0.61J), associated with samples -47001, -47013, -47014, -47026, -47027.

Results >RL and 10x blank not qualified. Results >RL but <10x blank qualified as estimates.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

MB 3120651: Chloride (0.60J), associated with samples -47030, -47031, -79001 through -79005.
Results >RL and 10x blank not qualified. Results >RL but <10x blank qualified as estimates. NDs not qualified.

L-LMW-FB-1 @ L-LMW-3S: TDS (8.0). Result in associated sample >10x blank, no qualification necessary.

Duplicates:
L-LMW-DUP-1 @ L-LMW-5S: Fluoride detected in parent sample, ND in dup

Lab Sample Duplicate 3116840: Dup RPD (24%) exceeds limit (10%) for TDS. Associated with unrelated sample, no qualification necessary.

MS/MSD:
3119108/3119109: MS % recovery low for calcium, sodium. Associated with sample -47001. Only 1 QC indicator outside of control limits, no qualification necessary.

3120870/3120871: MSD % recovery high for sodium. MS/MSD performed on unrelated sample, no qualification necessary.

3120952/3120953: MSD % recovery low for calcium. MS/MSD performed on unrelated sample, no qualification necessary.

3120632/3120633: MS % recovery high for chloride, only 1 QC indicator outside of control limits, no qualification necessary.
MS % recovery and RPD high for fluoride, associated with sample -47001.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-LMW-6S (re-analysis)	TDS	433	J	Analyzed outside of hold time
L-LMW-2S	"	474	J	"
L-BMW-1S	"	828	J	"
L-BMW-2S	"	513	J	"
L-BMW-1S	Chloride	2.5	J	Detected in MB, 10x blank > result > RL
L-BMW-2S	"	2.5	J	"
L-LMW-1S	"	3.5	J	"
L-LMW-5S	"	4.4	J	"
L-LMW-6S	"	2.8	J	"
L-LMW-DUP-1	"	4.2	J	"
L-LMW-5S	Fluoride	0.18	J	Detected in parent, ND in dup
L-LMW-DUP-1	"	0.12	UJ	"
L-LMW-2S	"	0.16	J	MS % recovery and RPD high

Signature: Ann Muhlfeith Date: 6/7/2022

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

July 08, 2022

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

RE: Project: AMEREN VERIFICATION LCPB
Pace Project No.: 60403836

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on June 23, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

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

Sincerely,

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

Enclosures

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

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CERTIFICATIONS

Project: AMEREN VERIFICATION LCPB
Pace Project No.: 60403836

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 22-031-0
Arkansas Drinking Water
Illinois Certification #: 2000302021-3
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-21-15
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

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(913)599-5665

SAMPLE SUMMARY

Project: AMEREN VERIFICATION LCPB
Pace Project No.: 60403836

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60403836001	**L-LMW-3S**	Water	06/22/22 11:45	06/23/22 03:57
60403836002	**L-LMW-4S**	Water	06/22/22 10:43	06/23/22 03:57
60403836003	**L-LCPB-DUP-1**	Water	06/22/22 10:43	06/23/22 03:57
60403836004	**L-LCPB-FB-1**	Water	06/22/22 10:55	06/23/22 03:57

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SAMPLE ANALYTE COUNT

Project: AMEREN VERIFICATION LCPB
Pace Project No.: 60403836

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60403836001	**L-LMW-3S**	EPA 300.0	KB	1	PASI-K
60403836002	**L-LMW-4S**	EPA 300.0	KB	1	PASI-K
60403836003	**L-LCPB-DUP-1**	EPA 300.0	KB	1	PASI-K
60403836004	**L-LCPB-FB-1**	EPA 300.0	KB	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: AMEREN VERIFICATION LCPB
Pace Project No.: 60403836

Sample: L-LMW-3S **Lab ID: 60403836001** Collected: 06/22/22 11:45 Received: 06/23/22 03:57 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.42**	mg/L	0.20	0.12	1		07/01/22 00:35	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN VERIFICATION LCPB
Pace Project No.: 60403836

Sample: L-LMW-4S **Lab ID: 60403836002** Collected: 06/22/22 10:43 Received: 06/23/22 03:57 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**<0.12**	mg/L	0.20	0.12	1		07/01/22 14:43	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN VERIFICATION LCPB
Pace Project No.: 60403836

Sample: L-LCPB-DUP-1 **Lab ID: 60403836003** Collected: 06/22/22 10:43 Received: 06/23/22 03:57 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.21**	mg/L	0.20	0.12	1		07/01/22 14:57	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
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ANALYTICAL RESULTS

Project: AMEREN VERIFICATION LCPB
Pace Project No.: 60403836

Sample: L-LCPB-FB-1 **Lab ID: 60403836004** Collected: 06/22/22 10:55 Received: 06/23/22 03:57 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**<0.12**	mg/L	0.20	0.12	1		07/01/22 15:10	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
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QUALITY CONTROL DATA

Project: AMEREN VERIFICATION LCPB
Pace Project No.: 60403836

QC Batch: 795226
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: 60403836001

METHOD BLANK: 3167850 Matrix: Water
Associated Lab Samples: 60403836001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.12	0.20	0.12	06/30/22 11:57	

METHOD BLANK: 3171058 Matrix: Water
Associated Lab Samples: 60403836001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.12	0.20	0.12	07/01/22 11:45	

LABORATORY CONTROL SAMPLE: 3167851

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3167855 3167856

Parameter	Units	60403654004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.36	2.5	2.5	3.2	3.2	113	114	80-120	1	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3167858 3167859

Parameter	Units	60403818001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.46	2.5	2.5	3.1	3.1	105	106	80-120	1	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3167861 3167862

Parameter	Units	60403836001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.42	2.5	2.5	3.0	3.0	101	103	80-120	1	15	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN VERIFICATION LCPB
Pace Project No.: 60403836

SAMPLE DUPLICATE: 3167857

Parameter	Units	60403654004 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	0.36	0.34	5	15	

SAMPLE DUPLICATE: 3167860

Parameter	Units	60403818001 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	0.46	0.46	2	15	

SAMPLE DUPLICATE: 3167863

Parameter	Units	60403836001 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	0.42	0.43	2	15	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN VERIFICATION LCPB
Pace Project No.: 60403836

QC Batch: 795227
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: 60403836002, 60403836003, 60403836004

METHOD BLANK: 3167864 Matrix: Water
Associated Lab Samples: 60403836002, 60403836003, 60403836004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.12	0.20	0.12	07/01/22 12:22	

METHOD BLANK: 3172952 Matrix: Water
Associated Lab Samples: 60403836002, 60403836003, 60403836004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.12	0.20	0.12	07/06/22 09:29	

LABORATORY CONTROL SAMPLE: 3167865

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	96	90-110	

LABORATORY CONTROL SAMPLE: 3172953

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3167868 3167869

Parameter	Units	60403836010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	<0.12	2.5	2.5	1.9	2.0	75	79	80-120	5	15	M1

SAMPLE DUPLICATE: 3167870

Parameter	Units	60403836010 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	<0.12	<0.12		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 VERIFICATION LCPB
Pace Project No.: 60403836

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 VERIFICATION LCPB
Pace Project No.: 60403836

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60403836001	**L-LMW-3S**	EPA 300.0	795226		
60403836002	**L-LMW-4S**	EPA 300.0	795227		
60403836003	**L-LCPB-DUP-1**	EPA 300.0	795227		
60403836004	**L-LCPB-FB-1**	EPA 300.0	795227		

Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-LENE-0009_Sam	WO# : 60403836
	Revision: 2	Effective Date: 01/12/2

Client Name: Holder

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

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

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

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

Thermometer Used: T-299 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 3.4, 3.0 **Corr. Factor** -1.0 **Corrected** 2.4, 2.0

Date and initials of person examining contents: 6/25/22 SB

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#:** 55192	☑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: _____

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical

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

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company: Golder	Billing Information:
Address: 701 Emerson Rd, Ste 250, Creve Coeur, MO, 63141	
Report To: J. Ingram	Email To:
Copy To: B. Talbert, E. Schneider	Site Collection Info/Address:
Customer Project Name/Number: 153140604	State: / County/City: Time Zone Collected: [ ] PT [ ] MT [ ] CT [ ] ET
Phone: Email: jeffrey.ingram@aecom.com	Site/Facility ID #: LCPB VS
Collected By (print): Brendan Talbert	Purchase Order #: Quote #:
Collected By (signature):	Turnaround Date Required: STANDARD
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold:	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply)

Container Preservative Type **: NA

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Analyses

Lab Profile/Line: 9285-1

Compliance Monitoring? [ ] Yes [ ] No

DW PWS ID #: DW Location Code:

Immediately Packed on Ice: [✓] Yes [ ] No

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

Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Fluoride
L-LMW-3S	GW	G			6-22-22	1145		1	/
L-LMW-4S						1043			/
L-LCPB-DUP-1						—			/
L-LCPB-FB-1						1055			/
L-LCPB-MS-1						1145			/
L-LCPB-MSD-1						1145			/

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signature Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOA - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips: _____			
Sample pH Acceptable	Y	N	NA
pH Strips: _____			
Sulfide Present	Y	N	NA
Lead Acetate Strips: _____			

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2568343

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: T-299
Cooler 1 Temp Upon Receipt: 3.4, 3.0 oC
Cooler 1 Therm Corr. Factor: -1.0 oC
Cooler 1 Corrected Temp: 2.4, 2.0 oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Brendan Talbert (Golder)	6-22-22/1510	Angie McMillan	6-22 1510
Angie McMillan	6-22 1510	E Brackett/Pace	6-23-22 0357

MTJL LAB USE ONLY
Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____ of: _____

Client: Koller 153146604 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																				1												
2																																
3																																
4																																
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:

MEMORANDUM

DATE July 8, 2022 153140604.0001

TO Project Files
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Annie Muehlfarth **EMAIL ann.muehlfarth@wsp.com**

DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCPB – VERIFICATION SAMPLING - DATA PACKAGE 60403836

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

- When duplicate criterion was not met, the associated sample result was qualified as an estimate (J for detects, UJ for non-detects).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates USA Inc
Project Manager: J. Ingram
Project Name: Ameren - LEC - LCPB
Project Number: GL153140604.0001
Reviewer: A. Muehlfarth
Validation Date: 7/8/2022

Laboratory: Pace Analytical
SDG #: 60403836
Analytical Method (type and no.): EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names L-LMW-3S, L-LMW-4S, L-LCPB-DUP-1, L-LCPB-FB-1

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			6/22/2022
b) Sampling team indicated?	x			BTT
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See Notes
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies:

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☐	☒	☐	
b) Were analytes detected in the field blank(s)?	☐	☒	☐	L-LCPB-FB-1 @ L-LMW-4S
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-LCPB-DUP-1 @ L-LMW-3S
b) Were field dup. precision criteria met (note RPD)?	☐	☒	☐	See Notes
c) Were lab duplicates analyzed (note original and duplicate samples)?	☒	☐	☐	
d) Were lab dup. precision criteria met (note RPD)?	☒	☐	☐	Max RPD: 5% [<15%]

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

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

Comments/Notes:

L-LCPB-DUP-1 @ L-LMW-3S: RPD for fluoride (66.7%) exceeds limit (20%).

MS/MSD:

3167868/3167869: MS.MSD % recovery low for fluoride. MS/MSD performed on unrelated sample, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-LMW-3S	Fluoride	0.42	J	Dup RPD exceeds limit
L-LCPB-DUP-1	"	0.21	J	"

Signature: Ann Muehlfarth Date: 7/8/2022

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

January 13, 2023

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

RE: Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory between October 26, 2022 and October 29, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

REV-1, 1/13/23: Sample collection date updated from 10/28/22 to 10/27/22 for sample L-LMW-8S.

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

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

CERTIFICATIONS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

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

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

SAMPLE SUMMARY

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60413960001	**L-LMW-3S**	Water	10/25/22 10:56	10/26/22 03:51
60413960002	**L-LMW-5S**	Water	10/26/22 11:35	10/28/22 03:43
60413960003	**L-LMW-DUP-1**	Water	10/26/22 08:00	10/28/22 03:43
60413960004	**L-LMW-6S**	Water	10/28/22 12:00	10/29/22 03:41
60413960005	**L-LMW-FB-1**	Water	10/28/22 12:10	10/29/22 03:41
60413956009	**L-LMW-2S**	Water	10/25/22 12:58	10/26/22 03:51
60413956010	**L-LMW-4S**	Water	10/25/22 14:17	10/26/22 03:51
60413956023	**L-LMW-1S**	Water	10/27/22 13:12	10/28/22 03:43
60413956024	**L-BMW-1S**	Water	10/27/22 10:36	10/28/22 03:43
60413956025	**L-BMW-2S**	Water	10/27/22 11:35	10/28/22 03:43
60413956031	**L-LMW-7S**	Water	10/28/22 11:14	10/29/22 03:41
60413956032	**L-LMW-8S**	Water	10/27/22 17:15	10/29/22 03:41

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SAMPLE ANALYTE COUNT

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60413960001	**L-LMW-3S**	EPA 200.7	JDS	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	CRN2, RKA	3	PASI-K
60413960002	**L-LMW-5S**	EPA 200.7	JDS	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	KJD	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60413960003	**L-LMW-DUP-1**	EPA 200.7	JDS	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	KJD	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60413960004	**L-LMW-6S**	EPA 200.7	JDS	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60413960005	**L-LMW-FB-1**	EPA 200.7	JDS	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60413956009	**L-LMW-2S**	EPA 200.7	JDS	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413956010	**L-LMW-4S**	EPA 200.7	JDS	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413956023	**L-LMW-1S**	EPA 200.7	JDS	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413956024	**L-BMW-1S**	EPA 200.7	JDS	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413956025	**L-BMW-2S**	EPA 200.7	JDS	7	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413956031	**L-LMW-7S**	EPA 200.7	JDS	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60413956032	**L-LMW-8S**	EPA 200.7	JDS	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	CRN2, RKA	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 LEC LCPB
Pace Project No.: 60413960

Sample: L-LMW-3S **Lab ID: 60413960001** Collected: 10/25/22 10:56 Received: 10/26/22 03:51 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	**4340**	ug/L	100	7.6	1	11/15/22 14:22	11/18/22 15:06	7440-42-8	
Calcium	**112000**	ug/L	200	26.5	1	11/15/22 14:22	11/18/22 15:06	7440-70-2	
Iron	**11500**	ug/L	50.0	7.4	1	11/15/22 14:22	11/18/22 15:06	7439-89-6	
Magnesium	**14200**	ug/L	50.0	24.1	1	11/15/22 14:22	11/18/22 15:06	7439-95-4	
Manganese	**1140**	ug/L	5.0	0.38	1	11/15/22 14:22	11/18/22 15:06	7439-96-5	
Potassium	**7060**	ug/L	500	90.1	1	11/15/22 14:22	11/18/22 15:06	7440-09-7	
Sodium	**95100**	ug/L	500	38.8	1	11/15/22 14:22	11/18/22 15:06	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**326**	mg/L	20.0	4.6	1		11/02/22 14:30		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**700**	mg/L	10.0	10.0	1		11/01/22 14:18		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**20.8**	mg/L	5.0	2.6	5		11/15/22 23:10	16887-00-6	B
Fluoride	**0.33**	mg/L	0.20	0.12	1		11/12/22 01:42	16984-48-8	M1
Sulfate	**198**	mg/L	20.0	11.0	20		11/16/22 00:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Sample: L-LMW-5S **Lab ID: 60413960002** Collected: 10/26/22 11:35 Received: 10/28/22 03:43 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	**55.6J**	ug/L	100	7.6	1	10/31/22 14:20	11/04/22 12:01	7440-42-8	
Calcium	**170000**	ug/L	200	26.5	1	10/31/22 14:20	11/04/22 12:01	7440-70-2	M1
Iron	**92.2**	ug/L	50.0	7.4	1	10/31/22 14:20	11/04/22 12:01	7439-89-6	
Magnesium	**15900**	ug/L	50.0	24.1	1	10/31/22 14:20	11/04/22 12:01	7439-95-4	
Manganese	**15.4**	ug/L	5.0	0.38	1	10/31/22 14:20	11/04/22 12:01	7439-96-5	
Potassium	**3670**	ug/L	500	90.1	1	10/31/22 14:20	11/04/22 12:01	7440-09-7	
Sodium	**7320**	ug/L	500	38.8	1	10/31/22 14:20	11/04/22 12:01	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**466**	mg/L	20.0	4.6	1		11/03/22 20:10		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**501**	mg/L	10.0	10.0	1		11/02/22 11:38		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**1.9**	mg/L	1.0	0.53	1		10/31/22 13:02	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		10/31/22 13:02	16984-48-8	
Sulfate	**12.3**	mg/L	1.0	0.55	1		10/31/22 13:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Sample: L-LMW-DUP-1 **Lab ID: 60413960003** Collected: 10/26/22 08:00 Received: 10/28/22 03:43 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	**54.5J**	ug/L	100	7.6	1	10/31/22 14:20	11/04/22 12:08	7440-42-8	
Calcium	**163000**	ug/L	200	26.5	1	10/31/22 14:20	11/04/22 12:08	7440-70-2	
Iron	**97.8**	ug/L	50.0	7.4	1	10/31/22 14:20	11/04/22 12:08	7439-89-6	
Magnesium	**15300**	ug/L	50.0	24.1	1	10/31/22 14:20	11/04/22 12:08	7439-95-4	
Manganese	**15.2**	ug/L	5.0	0.38	1	10/31/22 14:20	11/04/22 12:08	7439-96-5	
Potassium	**3470**	ug/L	500	90.1	1	10/31/22 14:20	11/04/22 12:08	7440-09-7	
Sodium	**6900**	ug/L	500	38.8	1	10/31/22 14:20	11/04/22 12:08	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**467**	mg/L	20.0	4.6	1		11/03/22 20:17		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**511**	mg/L	10.0	10.0	1		11/02/22 11:38		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**1.9**	mg/L	1.0	0.53	1		10/31/22 13:31	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		10/31/22 13:31	16984-48-8	
Sulfate	**11.1**	mg/L	1.0	0.55	1		10/31/22 13:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Sample: L-LMW-6S **Lab ID: 60413960004** Collected: 10/28/22 12:00 Received: 10/29/22 03:41 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	**1150**	ug/L	100	7.6	1	11/15/22 14:22	11/18/22 15:12	7440-42-8	
Calcium	**118000**	ug/L	200	26.5	1	11/15/22 14:22	11/18/22 15:12	7440-70-2	
Iron	**5370**	ug/L	50.0	7.4	1	11/15/22 14:22	11/18/22 15:12	7439-89-6	
Magnesium	**21000**	ug/L	50.0	24.1	1	11/15/22 14:22	11/18/22 15:12	7439-95-4	
Manganese	**1520**	ug/L	5.0	0.38	1	11/15/22 14:22	11/18/22 15:12	7439-96-5	
Potassium	**5220**	ug/L	500	90.1	1	11/15/22 14:22	11/18/22 15:12	7440-09-7	
Sodium	**13200**	ug/L	500	38.8	1	11/15/22 14:22	11/18/22 15:12	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**387**	mg/L	20.0	4.6	1		11/11/22 16:12		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**450**	mg/L	10.0	10.0	1		11/04/22 13:27		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.1**	mg/L	1.0	0.53	1		11/11/22 14:29	16887-00-6	B
Fluoride	**0.26**	mg/L	0.20	0.12	1		11/11/22 14:29	16984-48-8	
Sulfate	**29.0**	mg/L	10.0	5.5	10		11/11/22 14:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Sample: L-LMW-FB-1 **Lab ID: 60413960005** Collected: 10/28/22 12:10 Received: 10/29/22 03:41 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	**<7.6**	ug/L	100	7.6	1	11/15/22 14:22	11/18/22 15:14	7440-42-8	
Calcium	**<26.5**	ug/L	200	26.5	1	11/15/22 14:22	11/18/22 15:14	7440-70-2	
Iron	**<7.4**	ug/L	50.0	7.4	1	11/15/22 14:22	11/18/22 15:14	7439-89-6	
Magnesium	**<24.1**	ug/L	50.0	24.1	1	11/15/22 14:22	11/18/22 15:14	7439-95-4	
Manganese	**<0.38**	ug/L	5.0	0.38	1	11/15/22 14:22	11/18/22 15:14	7439-96-5	
Potassium	**<90.1**	ug/L	500	90.1	1	11/15/22 14:22	11/18/22 15:14	7440-09-7	
Sodium	**<38.8**	ug/L	500	38.8	1	11/15/22 14:22	11/18/22 15:14	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**6.7J**	mg/L	20.0	4.6	1		11/11/22 16:12		B
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		11/04/22 13:27		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**0.63J**	mg/L	1.0	0.53	1		11/11/22 15:01	16887-00-6	B
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/11/22 15:01	16984-48-8	
Sulfate	**<0.55**	mg/L	1.0	0.55	1		11/11/22 15:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Sample: L-LMW-2S **Lab ID: 60413956009** Collected: 10/25/22 12:58 Received: 10/26/22 03:51 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	**3250**	ug/L	100	7.6	1	11/15/22 14:08	11/18/22 12:47	7440-42-8	
Calcium	**75900**	ug/L	200	26.5	1	11/15/22 14:08	11/18/22 12:47	7440-70-2	
Iron	**17.4J**	ug/L	50.0	7.4	1	11/15/22 14:08	11/18/22 12:47	7439-89-6	
Magnesium	**103**	ug/L	50.0	24.1	1	11/15/22 14:08	11/18/22 12:47	7439-95-4	
Manganese	**2.0J**	ug/L	5.0	0.38	1	11/15/22 14:08	11/18/22 12:47	7439-96-5	B
Potassium	**9690**	ug/L	500	90.1	1	11/15/22 14:08	11/18/22 12:47	7440-09-7	
Sodium	**69000**	ug/L	500	38.8	1	11/15/22 14:08	11/18/22 12:47	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**35.1**	mg/L	20.0	4.6	1		11/02/22 19:30		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**556**	mg/L	10.0	10.0	1		11/01/22 14:15		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**15.8**	mg/L	1.0	0.53	1		11/11/22 22:17	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/11/22 22:17	16984-48-8	
Sulfate	**299**	mg/L	20.0	11.0	20		11/11/22 22:32	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Sample: L-LMW-4S **Lab ID: 60413956010** Collected: 10/25/22 14:17 Received: 10/26/22 03:51 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	**5490**	ug/L	100	7.6	1	11/15/22 14:08	11/18/22 12:56	7440-42-8	
Calcium	**139000**	ug/L	200	26.5	1	11/15/22 14:08	11/18/22 12:56	7440-70-2	
Iron	**6370**	ug/L	50.0	7.4	1	11/15/22 14:08	11/18/22 12:56	7439-89-6	
Magnesium	**24000**	ug/L	50.0	24.1	1	11/15/22 14:08	11/18/22 12:56	7439-95-4	
Manganese	**1380**	ug/L	5.0	0.38	1	11/15/22 14:08	11/18/22 12:56	7439-96-5	
Potassium	**6150**	ug/L	500	90.1	1	11/15/22 14:08	11/18/22 12:56	7440-09-7	
Sodium	**67700**	ug/L	500	38.8	1	11/15/22 14:08	11/18/22 12:56	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**398**	mg/L	20.0	4.6	1		11/02/22 19:35		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**756**	mg/L	10.0	10.0	1		11/01/22 14:15		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**39.5**	mg/L	10.0	5.3	10		11/11/22 23:01	16887-00-6	B
Fluoride	**0.13J**	mg/L	0.20	0.12	1		11/11/22 22:47	16984-48-8	
Sulfate	**174**	mg/L	10.0	5.5	10		11/11/22 23:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Sample: L-LMW-1S **Lab ID: 60413956023** Collected: 10/27/22 13:12 Received: 10/28/22 03:43 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	**2240**	ug/L	100	7.6	1	11/15/22 14:08	11/18/22 13:25	7440-42-8	
Calcium	**108000**	ug/L	200	26.5	1	11/15/22 14:08	11/18/22 13:25	7440-70-2	
Iron	**1270**	ug/L	50.0	7.4	1	11/15/22 14:08	11/21/22 11:15	7439-89-6	
Magnesium	**18300**	ug/L	50.0	24.1	1	11/15/22 14:08	11/18/22 13:25	7439-95-4	
Manganese	**647**	ug/L	5.0	0.38	1	11/15/22 14:08	11/18/22 13:25	7439-96-5	
Potassium	**3600**	ug/L	500	90.1	1	11/15/22 14:08	11/18/22 13:25	7440-09-7	
Sodium	**8040**	ug/L	500	38.8	1	11/15/22 14:08	11/18/22 13:25	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**311**	mg/L	20.0	4.6	1		11/03/22 16:50		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**430**	mg/L	10.0	10.0	1		11/03/22 15:40		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**4.9**	mg/L	1.0	0.53	1		11/14/22 12:46	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/14/22 12:46	16984-48-8	
Sulfate	**74.3**	mg/L	20.0	11.0	20		11/14/22 13:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Sample: L-BMW-1S **Lab ID: 60413956024** Collected: 10/27/22 10:36 Received: 10/28/22 03:43 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	**91.2J**	ug/L	100	7.6	1	11/15/22 14:08	11/18/22 13:27	7440-42-8	
Calcium	**185000**	ug/L	200	26.5	1	11/15/22 14:08	11/18/22 13:27	7440-70-2	
Iron	**30500**	ug/L	50.0	7.4	1	11/15/22 14:08	11/21/22 11:17	7439-89-6	
Magnesium	**37200**	ug/L	50.0	24.1	1	11/15/22 14:08	11/18/22 13:27	7439-95-4	
Manganese	**2320**	ug/L	5.0	0.38	1	11/15/22 14:08	11/18/22 13:27	7439-96-5	
Potassium	**4940**	ug/L	500	90.1	1	11/15/22 14:08	11/18/22 13:27	7440-09-7	
Sodium	**15500**	ug/L	500	38.8	1	11/15/22 14:08	11/18/22 13:27	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**625**	mg/L	20.0	4.6	1		11/03/22 16:57		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**710**	mg/L	10.0	10.0	1		11/03/22 15:40		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**5.9**	mg/L	1.0	0.53	1		11/14/22 13:44	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/14/22 13:44	16984-48-8	
Sulfate	**66.5**	mg/L	5.0	2.8	5		11/14/22 13:59	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Sample: L-BMW-2S **Lab ID: 60413956025** Collected: 10/27/22 11:35 Received: 10/28/22 03:43 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	**45.3J**	ug/L	100	7.6	1	11/15/22 14:08	11/18/22 13:47	7440-42-8	
Calcium	**146000**	ug/L	200	26.5	1	11/15/22 14:08	11/18/22 13:47	7440-70-2	
Iron	**16.0J**	ug/L	50.0	7.4	1	11/15/22 14:08	11/21/22 11:35	7439-89-6	
Magnesium	**21300**	ug/L	50.0	24.1	1	11/15/22 14:08	11/18/22 13:47	7439-95-4	
Manganese	**4.9J**	ug/L	5.0	0.38	1	11/15/22 14:08	11/18/22 13:47	7439-96-5	
Potassium	**5400**	ug/L	500	90.1	1	11/15/22 14:08	11/18/22 13:47	7440-09-7	
Sodium	**4130**	ug/L	500	38.8	1	11/15/22 14:08	11/18/22 13:47	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**404**	mg/L	20.0	4.6	1		11/03/22 17:04		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**496**	mg/L	10.0	10.0	1		11/03/22 15:40		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**1.4**	mg/L	1.0	0.53	1		11/14/22 14:47	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/14/22 14:47	16984-48-8	
Sulfate	**34.4**	mg/L	5.0	2.8	5		11/14/22 15:01	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Sample: L-LMW-7S **Lab ID: 60413956031** Collected: 10/28/22 11:14 Received: 10/29/22 03:41 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	**7050**	ug/L	100	7.6	1	11/15/22 14:08	11/18/22 13:59	7440-42-8	
Calcium	**185000**	ug/L	200	26.5	1	11/15/22 14:08	11/18/22 13:59	7440-70-2	
Iron	**2430**	ug/L	50.0	7.4	1	11/15/22 14:08	11/21/22 11:48	7439-89-6	
Magnesium	**38800**	ug/L	50.0	24.1	1	11/15/22 14:08	11/18/22 13:59	7439-95-4	
Manganese	**1840**	ug/L	5.0	0.38	1	11/15/22 14:08	11/18/22 13:59	7439-96-5	
Potassium	**7900**	ug/L	500	90.1	1	11/15/22 14:08	11/18/22 13:59	7440-09-7	
Sodium	**44200**	ug/L	500	38.8	1	11/15/22 14:08	11/18/22 13:59	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**493**	mg/L	20.0	4.6	1		11/11/22 16:12		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**829**	mg/L	13.3	13.3	1		11/04/22 13:26		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**17.5**	mg/L	1.0	0.53	1		11/11/22 09:52	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/11/22 09:52	16984-48-8	
Sulfate	**202**	mg/L	20.0	11.0	20		11/11/22 10:40	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Sample: L-LMW-8S **Lab ID: 60413956032** Collected: 10/27/22 17:15 Received: 10/29/22 03:41 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	**2760**	ug/L	100	7.6	1	11/15/22 14:08	11/18/22 14:02	7440-42-8	
Calcium	**82700**	ug/L	200	26.5	1	11/15/22 14:08	11/18/22 14:02	7440-70-2	
Iron	**2310**	ug/L	50.0	7.4	1	11/15/22 14:08	11/21/22 11:50	7439-89-6	
Magnesium	**14000**	ug/L	50.0	24.1	1	11/15/22 14:08	11/18/22 14:02	7439-95-4	
Manganese	**389**	ug/L	5.0	0.38	1	11/15/22 14:08	11/18/22 14:02	7439-96-5	
Potassium	**4450**	ug/L	500	90.1	1	11/15/22 14:08	11/18/22 14:02	7440-09-7	
Sodium	**38200**	ug/L	500	38.8	1	11/15/22 14:08	11/18/22 14:02	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
	Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**266**	mg/L	20.0	4.6	1		11/11/22 16:12		H3
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
	Pace Analytical Services - Kansas City								
Total Dissolved Solids	**404**	mg/L	10.0	10.0	1		11/04/22 13:26		H3
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
	Pace Analytical Services - Kansas City								
Chloride	**3.2**	mg/L	1.0	0.53	1		11/11/22 11:27	16887-00-6	B
Fluoride	**0.54**	mg/L	0.20	0.12	1		11/11/22 11:27	16984-48-8	
Sulfate	**93.1**	mg/L	20.0	11.0	20		11/14/22 23:48	14808-79-8	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 815641
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: 60413960002, 60413960003

METHOD BLANK: 3243867 Matrix: Water
Associated Lab Samples: 60413960002, 60413960003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<7.6	100	7.6	11/04/22 11:59	
Calcium	ug/L	<26.5	200	26.5	11/04/22 11:59	
Iron	ug/L	<7.4	50.0	7.4	11/04/22 11:59	
Magnesium	ug/L	<24.1	50.0	24.1	11/04/22 11:59	
Manganese	ug/L	<0.38	5.0	0.38	11/04/22 11:59	
Potassium	ug/L	<90.1	500	90.1	11/04/22 11:59	
Sodium	ug/L	<38.8	500	38.8	11/04/22 11:59	

LABORATORY CONTROL SAMPLE: 3243868

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1000	100	85-115	
Calcium	ug/L	10000	10700	107	85-115	
Iron	ug/L	10000	10600	106	85-115	
Magnesium	ug/L	10000	10600	106	85-115	
Manganese	ug/L	1000	1060	106	85-115	
Potassium	ug/L	10000	10500	105	85-115	
Sodium	ug/L	10000	10700	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3243869 3243870

Parameter	Units	60413960002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	55.6J	1000	1000	1060	1060	101	100	70-130	1	20	
Calcium	ug/L	170000	10000	10000	178000	174000	81	48	70-130	2	20	M1
Iron	ug/L	92.2	10000	10000	10800	10500	107	104	70-130	3	20	
Magnesium	ug/L	15900	10000	10000	26200	25700	102	98	70-130	2	20	
Manganese	ug/L	15.4	1000	1000	1080	1060	107	104	70-130	2	20	
Potassium	ug/L	3670	10000	10000	14300	14200	106	105	70-130	0	20	
Sodium	ug/L	7320	10000	10000	18000	17700	107	104	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 818348
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: 60413956009, 60413956010, 60413956023, 60413956024

METHOD BLANK: 3254663 Matrix: Water
Associated Lab Samples: 60413956009, 60413956010, 60413956023, 60413956024

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<7.6	100	7.6	11/18/22 12:19	
Calcium	ug/L	57.2J	200	26.5	11/18/22 12:19	
Iron	ug/L	<7.4	50.0	7.4	11/18/22 12:19	
Magnesium	ug/L	<24.1	50.0	24.1	11/18/22 12:19	
Manganese	ug/L	0.71J	5.0	0.38	11/18/22 12:19	
Potassium	ug/L	<90.1	500	90.1	11/18/22 12:19	
Sodium	ug/L	<38.8	500	38.8	11/21/22 11:09	

LABORATORY CONTROL SAMPLE: 3254664

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	960	96	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Iron	ug/L	10000	10000	100	85-115	
Magnesium	ug/L	10000	10000	100	85-115	
Manganese	ug/L	1000	1000	100	85-115	
Potassium	ug/L	10000	9940	99	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3254665 3254666

Parameter	Units	60413956008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	68.3J	1000	1000	1010	990	94	92	70-130	2	20	
Calcium	ug/L	128000	10000	10000	141000	139000	132	115	70-130	1	20	M1
Iron	ug/L	7.5J	10000	10000	9930	9660	99	97	70-130	3	20	
Magnesium	ug/L	23200	10000	10000	33300	33000	101	98	70-130	1	20	
Manganese	ug/L	68.9	1000	1000	1040	1020	97	95	70-130	2	20	
Potassium	ug/L	4180	10000	10000	14300	13900	101	97	70-130	3	20	
Sodium	ug/L	5270	10000	10000	15500	15200	102	99	70-130	2	20	

MATRIX SPIKE SAMPLE: 3254667

Parameter	Units	60413956016 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	316	1000	1240	92	70-130	
Calcium	ug/L	166000	10000	178000	120	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

MATRIX SPIKE SAMPLE: 3254667

Parameter	Units	60413956016 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	14200	10000	24400	102	70-130	
Magnesium	ug/L	33700	10000	43500	98	70-130	
Manganese	ug/L	2780	1000	3680	90	70-130	
Potassium	ug/L	6180	10000	16000	98	70-130	
Sodium	ug/L	50300	10000	60800	105	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 818353
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: 60413956025, 60413956031, 60413956032

METHOD BLANK: 3254702 Matrix: Water
Associated Lab Samples: 60413956025, 60413956031, 60413956032

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<7.6	100	7.6	11/18/22 13:30	
Calcium	ug/L	<26.5	200	26.5	11/18/22 13:30	
Iron	ug/L	19.1J	50.0	7.4	11/21/22 11:19	
Magnesium	ug/L	<24.1	50.0	24.1	11/18/22 13:30	
Manganese	ug/L	0.76J	5.0	0.38	11/18/22 13:30	
Potassium	ug/L	<90.1	500	90.1	11/18/22 13:30	
Sodium	ug/L	<38.8	500	38.8	11/18/22 13:30	

LABORATORY CONTROL SAMPLE: 3254703

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	896	90	85-115	
Calcium	ug/L	10000	9510	95	85-115	
Iron	ug/L	10000	9980	100	85-115	
Magnesium	ug/L	10000	9300	93	85-115	
Manganese	ug/L	1000	940	94	85-115	
Potassium	ug/L	10000	9370	94	85-115	
Sodium	ug/L	10000	9530	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3254704 3254705

Parameter	Units	60413956017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	8070	1000	1000	9180	9250	111	117	70-130	1	20	
Calcium	ug/L	97400	10000	10000	109000	110000	117	123	70-130	1	20	
Iron	ug/L	4830	10000	10000	14900	14800	101	99	70-130	1	20	
Magnesium	ug/L	11900	10000	10000	21200	21300	93	94	70-130	0	20	
Manganese	ug/L	248	1000	1000	1170	1200	92	95	70-130	3	20	
Potassium	ug/L	8950	10000	10000	18900	19200	100	103	70-130	2	20	
Sodium	ug/L	104000	10000	10000	115000	115000	109	113	70-130	0	20	

MATRIX SPIKE SAMPLE: 3254706

Parameter	Units	60413956026 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	9220	1000	7710	-151	70-130	M1
Calcium	ug/L	108000	10000	84800	-232	70-130	M1

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

MATRIX SPIKE SAMPLE: 3254706

Parameter	Units	60413956026 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	5240	10000	10400	51	70-130	M1
Magnesium	ug/L	22000	10000	9740	-122	70-130	M1
Manganese	ug/L	275	1000	995	72	70-130	
Potassium	ug/L	7390	10000	22600	152	70-130	M1
Sodium	ug/L	99400	10000	89100	-103	70-130	M1

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 818360
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: 60413960001, 60413960004, 60413960005

METHOD BLANK: 3254735 Matrix: Water
Associated Lab Samples: 60413960001, 60413960004, 60413960005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<7.6	100	7.6	11/18/22 14:25	
Calcium	ug/L	<26.5	200	26.5	11/18/22 14:25	
Iron	ug/L	<7.4	50.0	7.4	11/18/22 14:25	
Magnesium	ug/L	<24.1	50.0	24.1	11/18/22 14:25	
Manganese	ug/L	<0.38	5.0	0.38	11/18/22 14:25	
Potassium	ug/L	<90.1	500	90.1	11/18/22 14:25	
Sodium	ug/L	41.0J	500	38.8	11/18/22 14:25	

LABORATORY CONTROL SAMPLE: 3254736

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	955	96	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Iron	ug/L	10000	10500	105	85-115	
Magnesium	ug/L	10000	9920	99	85-115	
Manganese	ug/L	1000	998	100	85-115	
Potassium	ug/L	10000	10000	100	85-115	
Sodium	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3254737 3254738

Parameter	Units	60413959007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	10000	1000	1000	11100	10900	113	94	70-130	2	20	
Calcium	ug/L	152000	10000	10000	164000	161000	112	85	70-130	2	20	
Iron	ug/L	1280	10000	10000	11800	11600	105	103	70-130	1	20	
Magnesium	ug/L	15400	10000	10000	25300	25100	99	97	70-130	1	20	
Manganese	ug/L	377	1000	1000	1380	1370	100	100	70-130	0	20	
Potassium	ug/L	10600	10000	10000	21200	20800	107	102	70-130	2	20	
Sodium	ug/L	63200	10000	10000	74100	73000	108	98	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3254739 3254740

Parameter	Units	60413960001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	4340	1000	1000	5230	5330	89	99	70-130	2	20	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3254739 3254740

Parameter	Units	60413960001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	112000	10000	10000	120000	123000	76	104	70-130	2	20	
Iron	ug/L	11500	10000	10000	21300	21700	98	102	70-130	2	20	
Magnesium	ug/L	14200	10000	10000	23500	24200	93	100	70-130	3	20	
Manganese	ug/L	1140	1000	1000	2070	2140	93	100	70-130	3	20	
Potassium	ug/L	7060	10000	10000	17100	17400	101	103	70-130	1	20	
Sodium	ug/L	95100	10000	10000	104000	105000	86	103	70-130	2	20	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 816115
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413956009, 60413956010

METHOD BLANK: 3245813 Matrix: Water
Associated Lab Samples: 60413956009, 60413956010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	11/02/22 17:08	

LABORATORY CONTROL SAMPLE: 3245814

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

SAMPLE DUPLICATE: 3245815

Parameter	Units	60414372001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	331	332	0	10	

SAMPLE DUPLICATE: 3245816

Parameter	Units	60414372006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	246	247	0	10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 816118
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60413960001

METHOD BLANK: 3245823 Matrix: Water
Associated Lab Samples: 60413960001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	11/02/22 14:01	

LABORATORY CONTROL SAMPLE: 3245824

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

SAMPLE DUPLICATE: 3245825

Parameter	Units	60413959002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	66.6	63.3	5	10	

SAMPLE DUPLICATE: 3245826

Parameter	Units	60413960001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	326	327	0	10	

SAMPLE DUPLICATE: 3245827

Parameter	Units	60413961001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	651	659	1	10	

SAMPLE DUPLICATE: 3245828

Parameter	Units	60414104002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	508	505	1	10	

SAMPLE DUPLICATE: 3245829

Parameter	Units	60414104004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	392	383	3	10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 816349
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413960002, 60413960003

METHOD BLANK: 3246752 Matrix: Water
Associated Lab Samples: 60413960002, 60413960003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	11/03/22 17:58	

LABORATORY CONTROL SAMPLE: 3246753

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

SAMPLE DUPLICATE: 3246754

Parameter	Units	60413956013 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	6.6J	<4.6		10	

SAMPLE DUPLICATE: 3246755

Parameter	Units	60413956017 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	147	143	3	10	

SAMPLE DUPLICATE: 3246756

Parameter	Units	60413959012 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	<4.6		10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 816350
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413956023, 60413956024, 60413956025

METHOD BLANK: 3246761 Matrix: Water
Associated Lab Samples: 60413956023, 60413956024, 60413956025

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	11/03/22 15:09	

LABORATORY CONTROL SAMPLE: 3246762

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

SAMPLE DUPLICATE: 3246763

Parameter	Units	60414155002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	81.3	77.4	5	10	

SAMPLE DUPLICATE: 3246764

Parameter	Units	60414190001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	297	299	1	10	

SAMPLE DUPLICATE: 3246765

Parameter	Units	60413959007 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	158	152	4	10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 817839 | Analysis Method: SM 2320B
QC Batch Method: SM 2320B | Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413956031, 60413956032, 60413960004, 60413960005

METHOD BLANK: 3252545 Matrix: Water
Associated Lab Samples: 60413956031, 60413956032, 60413960004, 60413960005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	8.0J	20.0	4.6	11/11/22 16:12	

LABORATORY CONTROL SAMPLE: 3252546

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	483	97	90-110	

SAMPLE DUPLICATE: 3252547

Parameter	Units	60413956031 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	493	496	0	10	

SAMPLE DUPLICATE: 3252548

Parameter	Units	60414790006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	325	322	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 815775
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413956009, 60413956010, 60413960001

METHOD BLANK: 3244259 Matrix: Water
Associated Lab Samples: 60413956009, 60413956010, 60413960001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/01/22 14:13	

LABORATORY CONTROL SAMPLE: 3244260

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 3244261

Parameter	Units	60413960001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	700	707	1	10	

SAMPLE DUPLICATE: 3244262

Parameter	Units	60413961001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1070	1080	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 815993
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413960002, 60413960003

METHOD BLANK: 3245280 Matrix: Water
Associated Lab Samples: 60413960002, 60413960003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/02/22 11:26	

LABORATORY CONTROL SAMPLE: 3245281

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 3245282

Parameter	Units	60413956020 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	5.0	<5.0		10	

SAMPLE DUPLICATE: 3245283

Parameter	Units	60413960003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	511	561	9	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 816279
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413956023, 60413956024, 60413956025

METHOD BLANK: 3246425 Matrix: Water
Associated Lab Samples: 60413956023, 60413956024, 60413956025

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/03/22 15:39	

LABORATORY CONTROL SAMPLE: 3246426

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

SAMPLE DUPLICATE: 3246427

Parameter	Units	60414192001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3930	4030	3	10	

SAMPLE DUPLICATE: 3246428

Parameter	Units	60413959007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	762	794	4	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 816527
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413956031, 60413956032, 60413960004, 60413960005

METHOD BLANK: 3247566 Matrix: Water
Associated Lab Samples: 60413956031, 60413956032, 60413960004, 60413960005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/04/22 13:24	

LABORATORY CONTROL SAMPLE: 3247959

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 3247568

Parameter	Units	60414267001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2770	3010	8	10	

SAMPLE DUPLICATE: 3247569

Parameter	Units	60413959016 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	181	176	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 815479
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: 60413960002, 60413960003

METHOD BLANK: 3243131 Matrix: Water
Associated Lab Samples: 60413960002, 60413960003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	10/31/22 08:42	
Fluoride	mg/L	<0.12	0.20	0.12	10/31/22 08:42	
Sulfate	mg/L	<0.55	1.0	0.55	10/31/22 08:42	

METHOD BLANK: 3245892 Matrix: Water
Associated Lab Samples: 60413960002, 60413960003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	11/01/22 08:58	
Fluoride	mg/L	<0.12	0.20	0.12	11/01/22 08:58	
Sulfate	mg/L	<0.55	1.0	0.55	11/01/22 08:58	

LABORATORY CONTROL SAMPLE: 3243132

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	98	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

LABORATORY CONTROL SAMPLE: 3245893

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	2.5	99	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3243133 3243134

Parameter	Units	60413633010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	239	100	100	466	506	227	267	80-120	8	15	E,M1
Fluoride	mg/L	ND	50	50	59.6	64.4	119	129	80-120	8	15	M1
Sulfate	mg/L	21.5	100	100	143	141	121	120	80-120	1	15	M1

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 817445
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: 60413956031, 60413956032, 60413960004, 60413960005

METHOD BLANK: 3250964 Matrix: Water
Associated Lab Samples: 60413956031, 60413956032, 60413960004, 60413960005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	11/11/22 08:59	
Fluoride	mg/L	<0.12	0.20	0.12	11/11/22 08:59	
Sulfate	mg/L	<0.55	1.0	0.55	11/11/22 08:59	

METHOD BLANK: 3254907 Matrix: Water
Associated Lab Samples: 60413956031, 60413956032, 60413960004, 60413960005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.77J	1.0	0.53	11/15/22 01:16	
Fluoride	mg/L	<0.12	0.20	0.12	11/15/22 01:16	
Sulfate	mg/L	<0.55	1.0	0.55	11/15/22 01:16	

LABORATORY CONTROL SAMPLE: 3250965

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	90-110	
Fluoride	mg/L	2.5	2.7	107	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

LABORATORY CONTROL SAMPLE: 3254908

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	90-110	
Fluoride	mg/L	2.5	2.6	102	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3250966 3250967

Parameter	Units	60413956031 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	17.5	100	100	114	111	97	94	80-120	3	15	
Fluoride	mg/L	<0.12	2.5	2.5	2.3	2.2	90	87	80-120	4	15	
Sulfate	mg/L	202	100	100	322	293	120	91	80-120	9	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 817771
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: 60413956009, 60413956010, 60413960001

METHOD BLANK: 3252261 Matrix: Water
Associated Lab Samples: 60413956009, 60413956010, 60413960001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.59J	1.0	0.53	11/11/22 17:54	
Fluoride	mg/L	<0.12	0.20	0.12	11/11/22 17:54	
Sulfate	mg/L	<0.55	1.0	0.55	11/11/22 17:54	

METHOD BLANK: 3255749 Matrix: Water
Associated Lab Samples: 60413956009, 60413956010, 60413960001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	11/15/22 09:48	
Fluoride	mg/L	<0.12	0.20	0.12	11/15/22 09:48	
Sulfate	mg/L	<0.55	1.0	0.55	11/15/22 09:48	

LABORATORY CONTROL SAMPLE: 3252262

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	4.7	94	90-110	

LABORATORY CONTROL SAMPLE: 3255750

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	90-110	
Fluoride	mg/L	2.5	2.6	106	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3252263 3252264

Parameter	Units	60413956008 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	5	5	16.5	16.3	124	121	80-120	1	15	M1
Fluoride	mg/L	<0.12	2.5	2.5	3.2	3.1	125	122	80-120	2	15	M1
Sulfate	mg/L	31.3	50	50	88.8	86.5	115	110	80-120	3	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3252266 3252267

Parameter	Units	60413960001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	20.8	25	25	46.5	46.1	103	101	80-120	1	15	
Fluoride	mg/L	0.33	2.5	2.5	3.4	3.4	124	125	80-120	0	15	M1
Sulfate	mg/L	198	100	100	307	305	109	107	80-120	1	15	

SAMPLE DUPLICATE: 3252265

Parameter	Units	60413956008 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	10.3	10.4	1	15	
Fluoride	mg/L	<0.12	<0.12		15	
Sulfate	mg/L	31.3	30.3	3	15	

SAMPLE DUPLICATE: 3252268

Parameter	Units	60413960001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	20.8	21.4	3	15	
Fluoride	mg/L	0.33	0.33	0	15	
Sulfate	mg/L	198	188	5	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

QC Batch: 817968
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: 60413956023, 60413956024, 60413956025

METHOD BLANK: 3253027 Matrix: Water
Associated Lab Samples: 60413956023, 60413956024, 60413956025

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	11/14/22 08:48	
Fluoride	mg/L	<0.12	0.20	0.12	11/14/22 08:48	
Sulfate	mg/L	<0.55	1.0	0.55	11/14/22 08:48	

LABORATORY CONTROL SAMPLE: 3253028

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3253029 3253030

Parameter	Units	60413959007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	17.9	5	5	24.0	23.8	121	118	80-120	1	15	E,M1
Fluoride	mg/L	<0.12	2.5	2.5	2.6	2.5	102	98	80-120	4	15	
Sulfate	mg/L	413	250	250	685	685	108	108	80-120	0	15	

SAMPLE DUPLICATE: 3253031

Parameter	Units	60413959007 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	17.9	18.0	0	15	
Fluoride	mg/L	<0.12	<0.12		15	
Sulfate	mg/L	413	409	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

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.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
H3	Sample was received or analysis requested beyond the recognized method holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60413956009	L-LMW-2S	EPA 200.7	818348	EPA 200.7	818468
60413956010	L-LMW-4S	EPA 200.7	818348	EPA 200.7	818468
60413960001	L-LMW-3S	EPA 200.7	818360	EPA 200.7	818495
60413956023	L-LMW-1S	EPA 200.7	818348	EPA 200.7	818468
60413956024	L-BMW-1S	EPA 200.7	818348	EPA 200.7	818468
60413956025	L-BMW-2S	EPA 200.7	818353	EPA 200.7	818470
60413960002	L-LMW-5S	EPA 200.7	815641	EPA 200.7	815737
60413960003	L-LMW-DUP-1	EPA 200.7	815641	EPA 200.7	815737
60413956031	L-LMW-7S	EPA 200.7	818353	EPA 200.7	818470
60413956032	L-LMW-8S	EPA 200.7	818353	EPA 200.7	818470
60413960004	L-LMW-6S	EPA 200.7	818360	EPA 200.7	818495
60413960005	L-LMW-FB-1	EPA 200.7	818360	EPA 200.7	818495
60413956009	L-LMW-2S	SM 2320B	816115		
60413956010	L-LMW-4S	SM 2320B	816115		
60413960001	L-LMW-3S	SM 2320B	816118		
60413956023	L-LMW-1S	SM 2320B	816350		
60413956024	L-BMW-1S	SM 2320B	816350		
60413956025	L-BMW-2S	SM 2320B	816350		
60413960002	L-LMW-5S	SM 2320B	816349		
60413960003	L-LMW-DUP-1	SM 2320B	816349		
60413956031	L-LMW-7S	SM 2320B	817839		
60413956032	L-LMW-8S	SM 2320B	817839		
60413960004	L-LMW-6S	SM 2320B	817839		
60413960005	L-LMW-FB-1	SM 2320B	817839		
60413956009	L-LMW-2S	SM 2540C	815775		
60413956010	L-LMW-4S	SM 2540C	815775		
60413960001	L-LMW-3S	SM 2540C	815775		
60413956023	L-LMW-1S	SM 2540C	816279		
60413956024	L-BMW-1S	SM 2540C	816279		
60413956025	L-BMW-2S	SM 2540C	816279		
60413960002	L-LMW-5S	SM 2540C	815993		
60413960003	L-LMW-DUP-1	SM 2540C	815993		
60413956031	L-LMW-7S	SM 2540C	816527		
60413956032	L-LMW-8S	SM 2540C	816527		
60413960004	L-LMW-6S	SM 2540C	816527		
60413960005	L-LMW-FB-1	SM 2540C	816527		
60413956009	L-LMW-2S	EPA 300.0	817771		
60413956010	L-LMW-4S	EPA 300.0	817771		
60413960001	L-LMW-3S	EPA 300.0	817771		
60413956023	L-LMW-1S	EPA 300.0	817968		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LEC LCPB
Pace Project No.: 60413960

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60413956024	**L-BMW-1S**	EPA 300.0	817968		
60413956025	**L-BMW-2S**	EPA 300.0	817968		
60413960002	**L-LMW-5S**	EPA 300.0	815479		
60413960003	**L-LMW-DUP-1**	EPA 300.0	815479		
60413956031	**L-LMW-7S**	EPA 300.0	817445		
60413956032	**L-LMW-8S**	EPA 300.0	817445		
60413960004	**L-LMW-6S**	EPA 300.0	817445		
60413960005	**L-LMW-FB-1**	EPA 300.0	817445		

WO# : 60413960

60413960

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

Client Name: WSP Golder

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** 1.4/1.4 **Corr. Factor** 0.0 **Corrected** 1.4/1.4/1.1

Date and initials of person examining contents: AV 10/26/22

Temperature should be above freezing to 6°C 1.1

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#: 55192	☐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

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company:	WSP Golder
Address:	701 Emerson Road, Suite 250
	Creve Coeur, Missouri, 63141
Email To:	jeffrey ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder
Purchase Order No.:	COC #3
Project Name:	Ameren Labadie Energy Center LCPB
Project Number:	153140604. 0001

Section C Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride/Fluoride/Sulfate	App III and Cat/An Metals	Alkalinity	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	L-LMW-1S	WT	G															N	N	N	N	N		60413960
2	L-LMW-2S	WT	G			10-25-22	1254		4	1		~~1~~ 2						✓	✓	✓	✓			2 containers
3	L-LMW-3S	WT	G			10-25-22	1056		3	1		1						✓	✓	✓	✓			3BMN 3BDU
4	~~L-LMW-4S~~ L-LMW-4S	WT	G			10-25-22	1417		2	1		1						✓	✓	✓	✓			
5	~~L-LMW-5S~~ L-LMW-MS-1	WT	G			10-25-22	1056		2	1		1						✓	✓	✓	✓			
6	~~L-LMW-6S~~ L-LMW-MSD-1	WT	G			10-25-22	1056		2	1		1						✓	✓	✓	✓			
7	L-LMW-7S	WT	G																					
8	L-LMW-8S	WT	G																					
9	L-BMW-1S	WT	G																					
10	L-BMW-2S	WT	G																					
11	L-LMW-DUP-1	WT	G																					
12	L-LMW-FB-1	WT	G																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
"App III and Cat/An Metals" - EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B	Grant Mosey / Golder	10-25-22	1343		10/26	0351	1.1	X	X	Y
							1.4	X	X	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Grant Mosey

SIGNATURE of SAMPLER: Grant Mosey DATE Signed (MM/DD/YY): 10/25/22

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.

WO# : 60413960

60413960

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

Client Name: WSP Golder

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: TL99 **Type of Ice:** Wet ☑ Blue None

Cooler Temperature (°C): **As-read** 1.0 **Corr. Factor** 0.0 **Corrected** 1.0

Date and initials of person examining contents: PM 10/28/22

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#:** 55192	☑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: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 2

Section A Required Client Information:

Company:	WSP Golder
Address:	701 Emerson Road, Suite 250
	Creve Coeur, Missouri, 63141
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder
Purchase Order No.:	COC #3
Project Name:	Ameren Labadie Energy Center LCPB
Project Number:	153140604. 0001

Section C Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: Chloride/Fluoride/Sulfate	App III and Cat/An Metals	Alkalinity	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	~~L-LMW-MS-1~~ L-LMW-5S	WT	G			10-26-22	1135		2	1		1						✓	✓	✓	✓		60413960
2	~~L-LMW-MSD-1~~ L-LMW-DUP-1	WT	G			"	—		2	1		1						✓	✓	✓	✓		BP3N BP1U
3	L-BMW-1S	WT	G			10-27-22	1036		2	1		1						✓	✓	✓	✓		↓ ↓
4	L-BMW-2S	WT	G			"	1135		2	1		1						✓	✓	✓	✓		
5	L-LMW-1S	WT	G			10-27-22	1312		2	1		1						✓	✓	✓	✓		
6		WT	G																				
7		WT	G																				
8		WT	G																				
9		WT	G																				
10		WT	G																				
11		WT	G																				
12		WT	G																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
App III and Cat/An Metals - EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B	Payton Spohn / WSP	10/27/22	3:42		10/28	0343	1.0	X	X	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Grant Morey

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10/27/22

*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.

WO# : 60413960

60413960

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

Client Name: WSP Golder

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: T199 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.7 **Corr. Factor** 0.0 **Corrected** 0.7

Date and initials of person examining contents: W 10/31/22

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#:** 55192	☑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: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company:	WSP Golder
Address:	701 Emerson Road, Suite 250
	Creve Coeur, Missouri, 63141
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder
Purchase Order No.:	COC ~~#2~~ 3
Project Name:	Ameren Labadie Energy Center ~~LCPA-GA~~ LCPB
Project Number:	153140604. 0001

Section C Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride/Fluoride/Sulfate	App III and Cat/An Metals	Alkalinity	TDS	~~Appendix IV Metals **~~	~~Radium 226~~	~~Radium 228~~	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60413960
	Analysis Test →																	Y/N →	N	N	N	N	N	N	N		
1	~~L-MW-26~~	WT	G																								
2	~~L-LMW-1S~~	WT	G																								
3	~~L-LMW-2S~~	WT	G																								
4	~~L-LMW-4S~~ L-LMW-6S	WT	G			10-28-22	1200		2	1		1						✓	✓	✓						BP3N	BP1U
5	L-LMW-7S	WT	G			10-28-22	1114		2	1		1						✓	✓	✓							
6	L-LMW-8S	WT	G			10-27-22	1715		2	1		1						✓	✓	✓							
7	~~L-DMW-1S~~ L-LMW-FB-1	WT	G			10-28-22	1210		2	1		1						✓	✓	✓						↓	↓
8	~~L-BMW-2S~~	WT	G																								
9		WT	G																								
10		WT	G																								
11		WT	G																								
12		WT	G																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
App III and Cat/An Metals - EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B	Payton Spohn / WSP	10/28/22	3:16	amg	10/29/22	0341	0.7	Y	Y	Y
**- App IV Metals - EPA 200.7 - Ba, Co, Li, Mo 200.8 Metals - As, Se										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Grant Morey

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10/28/22

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

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

MEMORANDUM

DATE January 18, 2023 **Project No.** 153140604.0001

TO Project File
WSP USA Inc.

CC Amanda Derhake, Jeff Ingram

FROM Rahel Pommerenke **EMAIL rahel.pommerenke@wsp.com**

DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCPB – DETECTION MONITORING – DATA PACKAGE 60413960REV1

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

- When a compound was detected in a blank (i.e. method, field), and the blank comparison criterion was not met, associated sample results were qualified as estimates (J) or non-detects (U).
- When a compound was detected in a sample result between the MDL and the PQL the results were recorded at the detection value and qualified as estimates (J).
- When matrix spike/matrix spike duplicate (MS/MSD) criterion was not met, the associated sample result was qualified as an estimate (J, J+ for estimates biased high, and J- for estimates biased low).
- When a compound was analyzed outside of hold time, the associated sample result was qualified as an estimate (J for detects, UJ for non-detects).

WSP USA Inc.
701 Emerson Road, Suite 250,
Creve Coeur, Missouri, USA 63141
T: +1 314 984-8800 F: +1 314 984-8770

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: WSP USA Inc.
Project Manager: J. Ingram
Project Name: Ameren LEC - LCPB
Project Number: 153140604
Reviewer: R.Pommerenke
Validation Date: 1/18/2023

Laboratory: Pace Analytical Services
SDG #: 60413960rev1
Analytical Method (type and no.): EPA 200.7(Total Metals); SM2320B (Alkalinity); SM2540C (TDS); EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names L-LMW-3S, L-LMW-5S, L-LMW-DUP-1, L-LMW-6S, L-LMW-FB-1, L-LMW-1S, L-LMW-2S, L-LMW-4S, L-LMW-7S, L-LMW-8S, 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			10/25/2022 - 10/28/2022
b) Sampling team indicated?	x			GTM/PCS/SMA
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See notes.
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?		x		See notes.
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies:

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

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

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			L-LMW-DUP-1 @ L-LMW-5S
b) Were field dup. precision criteria met (note RPD)?	x			RPD Max (10.3%) < 20%
c) Were lab duplicates analyzed (note original and duplicate samples)?	x			
d) Were lab dup. precision criteria met (note RPD)?		x		See notes.

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

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

Comments/Notes:

Sample collection date updated from 10/28/22 to 10/27/22 for sample L-LMW-8S.

Total Dissolved Solids and Alkalinity analyzed out of hold time for L-LMW-8S: qualified as estimates.

Dilutions:

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

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

Blanks:

3254663: Calcium (57.2J) and Manganese (0.71J). Associated with samples -009, -010, -023, and -024.

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

3254702: Iron (19.1J), Manganese (0.76J). Associated with samples -025, -031, and -032.

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

MB3254735: Sodium (41.0J). Associated with samples -001, -004, and -005.

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

MB3252545: Alkalinity (8.0J). Associated with samples -031, -032, -004, and -005.

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

MB3254907: Chloride (0.77J). Associated with samples -031, -032, -004, and -005.

Results > 10 x blank and > RL: no qualification necessary. Results < RL reported as ND at RL. Results < 10x blank result but > RL, qualified as estimate.

MB3242261: Chloride (0.59J). Associated with samples -009, -0010, -001. Results >10x blank and RL, no qualification necessary.

L-LMW-FB-1 @ L-LMW-6S: Alkalinity (6.7J), Chloride (0.63J).

Result > 10 x blank and > RL: no qualification necessary. Results < 10x blank result but > RL, qualified as estimate.

Duplicates:

Sample Duplicate 3246754: Alkalinity detected in parent sample but not in duplicate result. Performed on unrelated sample: no qualification necessary.

Sample Duplicate 3245282: Total Dissolved Solids detected in parent sample but no in duplicate result. Performed on unrelated sample: no qualification necessary.

MS/MSD:

3243869/3243870: MSD % recovery low for Calcium. Associated with L-LMW-5S. Only one QC indicator out of control limits: no qualification necessary.

3243133/3243134: MS/MSD % recovery high for Chloride. MSD % recovery high for Fluoride.

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

3252263/3252264: MS/MSD % recovery high for Chloride and Fluoride.

Performed on unrelated sample: no qualification necessary.

3252266/3252267: MS/MSD % recovery high for Fluoride. Associated with L-LMW-3S.

3253029/3253030: MS % recovery high for Chloride. Performed on unrelated sample: no qualification necessary.

3254665/3254666: MS % recovery high for calcium. MS/MSD performed on unrelated sample, no qualification necessary.

3254706: MS% recovery low (<10%) for boron, calcium, magnesium, and sodium. MS performed on unrelated sample,

no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-LMW-2S	Manganese	5.0	U	Detected in MB, Result < RL.
L-BMW-2S	Iron	50.0	U	"
"	Manganese	5.0	U	"
L-LMW-FB-1	Alkalinity	20.0	U	"
"	Chloride	1.0	U	"
L-LMW-6S	Chloride	3.1	J	Detected in MB/FB, 10x blank > result > RL.
L-LMW-8S	Chloride	3.2	J	Detected in MB, 10x blank > result > RL.
L-LMW-3S	Fluoride	0.33	J+	MS/MSD % recovery outside control limits.
L-LMW-8S	Total Dissolved Solids	404	J	Analyzed out of hold time.
"	Alkalinity	266	J	"

Signature: _____ _____ Date: 1/18/2023

APPENDIX B

Alternative Source Demonstration - November 2021 Sampling Event

TECHNICAL MEMORANDUM

DATE June 16, 2022 **Project No.** 153140604

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

FROM Mark Haddock, P.E., R.G., Jeffrey Ingram, R.G., Sean Paulsen **EMAIL Jeffrey.Ingram@WSP.com**

LCPB – ALTERNATIVE SOURCE DEMONSTRATION – NOVEMBER 2021 SAMPLING EVENT

1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (CCR Rule or The Rule), Golder Associates USA Inc. ("Golder") has prepared this Technical Memorandum to show that Statistically Significant Increases (SSIs) identified at Ameren Missouri's (Ameren) Labadie Energy Center (LEC) fly ash surface impoundment (LCPB) are the result from an alternative source and are not related to impacts from LCPB. This LCPB Alternative Source Demonstration (ASD) 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 BACKGROUND

The first round of Detection Monitoring was completed during November 2017 at the LEC's LCPB CCR Unit in Franklin County, Missouri. This sampling was completed in accordance with the CCR Rule and SSIs were identified and verified. In February/March 2018, additional drilling and a detailed analysis of results were completed, and it was determined that the SSIs in the CCR Rule groundwater monitoring wells at the LCPB were not caused by impacts from the LCPB. The ASD report for the November 2017 monitoring results indicated that the SSIs observed in the LCPB wells were caused by the adjacent LCPA surface impoundment. This conclusion was supported by lines of evidence (LOEs) as follows.

- **Geochemical Signatures** - As reflected on the piper diagrams of the November 2017 ASD, LCPA pore-water has a distinctly different signature than the pore-water from the LCPB. CCR Rule groundwater samples in monitoring wells with SSIs plot on the piper diagrams in a location between the LCPA pore-water zone and the background groundwater zone, indicating that well water chemistry is a mixture of unaffected groundwater and groundwater impacted by the LCPA. None of the downgradient monitoring wells plotted in the LCPB pore-water zone or in the area that is strictly the LCPB mixing zone.
- **USEPA FALCON Analysis** - The USEPA FALCON method compared constituent fingerprints between the downgradient monitoring wells and the background groundwater, LCPB pore-water, and LCPA pore-water sources. The results indicate that there are strong correlations between downgradient monitoring wells and

the LCPA pore-water or background groundwater, as compared to LCPB pore-water. These same correlations were found at depth within the alluvial aquifer in the temporary ASD piezometers.

- **Groundwater Flow Directions** - Potentiometric surface mapping demonstrates that groundwater flow directions onsite are variable and can flow in multiple directions, but generally with a northwest or northeast flow direction, depending on the river level in the Missouri River. This supports the conclusion that the unlined LCPA is the source of impacts at the downgradient monitoring wells because impacted monitoring wells around the LCPB are frequently downgradient from the LCPA.
- **LCPB Construction** - The LCPB was constructed with an engineered liner system with a bottom elevation of approximately 460 feet above mean sea level (FT MSL) at its lowest point. The LCPA was built in the early 1970s and has a bottom elevation estimated to be at approximately 410 FT MSL. This, along with key CCR indicators being present in the shallow, middle and deep zones of the alluvial aquifer; indicates that impacts present onsite are from the LCPA and not the LCPB.

A copy of the ASD report for the November 2017 sampling event is provided in Appendix B of the 2018 LCPB Annual Groundwater Monitoring and Corrective Action Report.

3.0 NOVEMBER 2021 SAMPLING EVENT

A summary of the November 2021 sampling results is provided in **Table 1**. As discussed in **Section 2.0**, there are several LOEs presented in the November 2017 ASD that demonstrate that impacts around the LCPB are caused by LCPA and not the LCPB. Although both CCR units are now capped and closed with a geomembrane cover system, the same LOEs are still present at the site, and impacts in the November 2021 sampling event around the LCPB are from the LCPA and not the LCPB. The following summarizes the LOEs using current monitoring data through the November 2021 sampling event.

- **Geochemical Signatures** - **Figure 1** of this Technical Memorandum is a Piper Diagram which displays a comparison of November 2021 LCPB CCR Rule groundwater monitoring well data to cation and anion data for the LCPA pore-water, LCPB pore-water, and background groundwater zones. As shown in **Figure 1**, and as expected, since the SSIs were a result of the LCPA, the November 2021 LCPB monitoring results plotted in and between the background groundwater quality (yellow section) and the LCPA pore-water (green hexagon) on the Piper diagram. The pattern shown in **Figure 1** indicates that the groundwater impacts from the LCPA are mixing with groundwater along the migration path and, thus, the LCPA is influencing groundwater quality around the LCPB, which is located hydraulically downgradient of the LCPA. As described in the ASD for the November 2017 Sampling Event, results displayed in **Figure 1** continue to demonstrate that groundwater quality in the monitoring wells around the LCPB are impacted by the LCPA and not the LCPB.
- **USEPA FALCON Analysis** - The USEPA FALCON method compared constituent fingerprints between the downgradient monitoring wells and the background groundwater, LCPB pore-water, and LCPA pore-water sources. A Technical Memorandum summarizing the calculations and results is provided in **Appendix A**. An updated calculation using data from the November 2021 sampling event was completed and a summary of the results is provided in **Table 5** of **Appendix A**. The results indicate that there is strong correlation between downgradient monitoring well chemistry and the LCPA pore-water or background groundwater, while there is a comparatively lower correlation between downgradient monitoring well data and LCPB pore-water.

- **Groundwater Flow Directions -** Potentiometric surface mapping from 2018 to 2021 continue to show that while groundwater conditions are variable, net groundwater flow is toward the north/northeast, flowing from the bluffs toward the Missouri River. This supports the conclusion that the unlined LCPA is the source of impacts at the LCPB downgradient monitoring wells because the impacted monitoring wells around the LCPB are generally located downgradient of the LCPA.
- **LCPB Construction** - The LCPB was constructed with an engineered liner system consisting of a 60-mil High Density Polyethylene (HDPE) geomembrane liner with a minimum bottom elevation of approximately 460 FT MSL. The low permeability HDPE liner system in the LCPB is a barrier to the migration of CCR influenced liquids and provides containment for CCR. The LCPA was built in the early 1970s and has a bottom elevation estimated at approximately 410 FT MSL, which is much deeper than the LCPB. In addition to the distinct pore-water fingerprint for LCPA relative to LCPB, there are elevated concentrations of CCR indicators in the intermediate and deep zones of groundwater in the alluvial aquifer surrounding the LCPA, as shown in the LCPA Annual Reports. Around the LCPA, impacts are present in the shallow, intermediate (middle), and deep alluvial zones, and are not isolated to the shallow zone, where LCPB impacts would most readily occur. The impacts to the intermediate and deep alluvial zones are most likely from the LCPA, where the base elevation extends into deeper groundwater zones in the aquifer.

In summary, groundwater chemistry, pore-water chemistry fingerprints, cell construction, and hydrogeological evidence all demonstrate that SSIs reported for the November 2021 Sampling Event for the LCPB CCR unit were not caused by impacts from the LCPB surface impoundment. The LCPA surface impoundment, located immediately adjacent to the LCPB, is the source of the SSIs for groundwater in the LCPB monitoring well network.

CERTIFICATION STATEMENT

This *LCPB – Alternative Source Demonstration – November 2021 Sampling Event has* been prepared to comply with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule under the direction of a licensed professional engineer with Golder Associates Inc.

I hereby certify that this *LCPB – Alternative Source Demonstration – November 2021 Sampling Event* located at 226 Labadie Power Plant Road, Labadie Missouri, 63055 has been prepared to meet the requirements of 40 CFR §257.94(e)(2).

Golder Associates USA Inc.

Mark Haddock, P.E., R.G.
Principal, Practice Leader

MNH

Attachments: Table 1 – November 2021 Detection Monitoring Results
Figure 1 – LCPB Piper Diagram for November 2021
Appendix A – FALCON Analysis Calculation Package

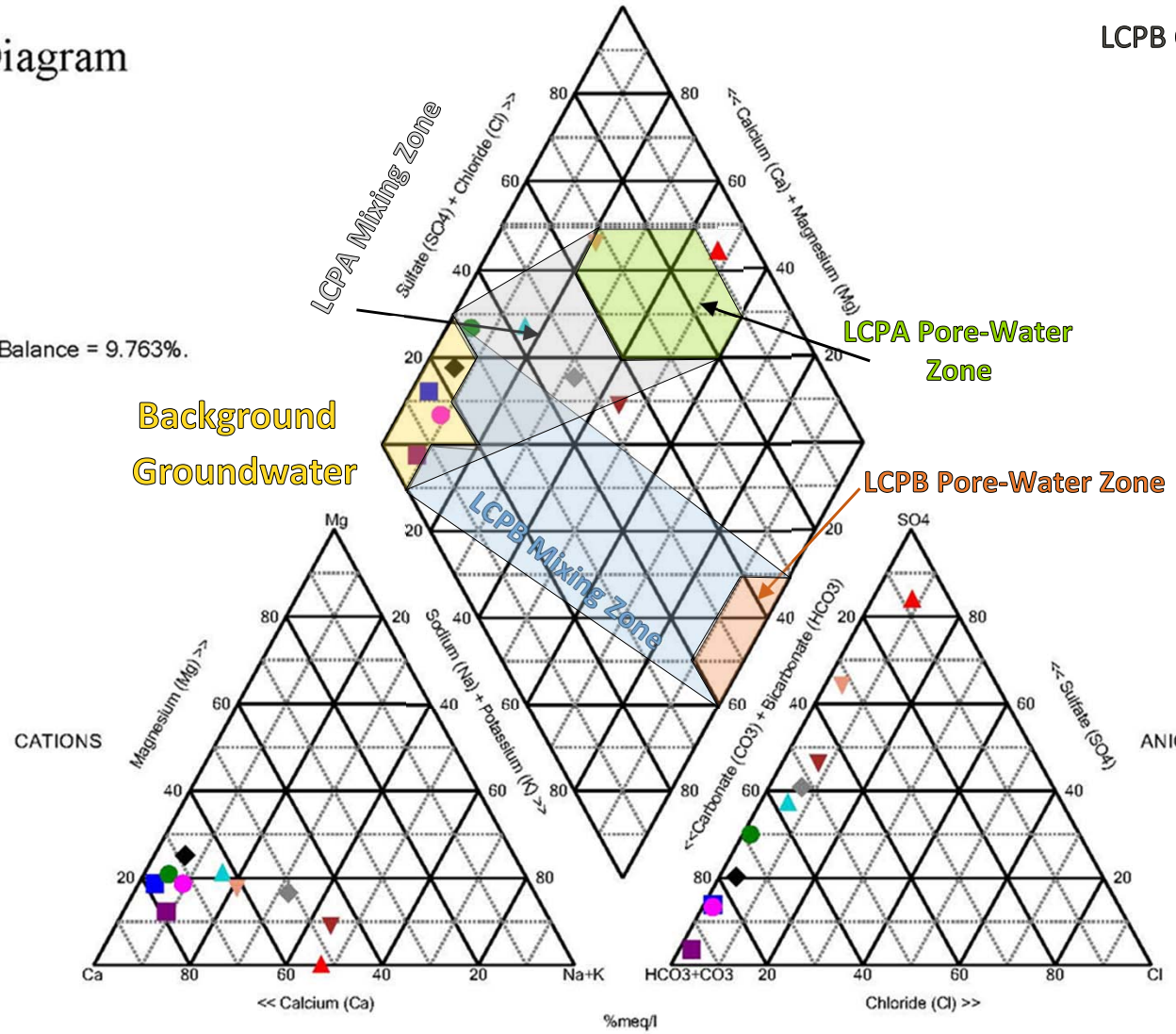
Table 1
November 2021 Detection Monitoring Results
LCPB Surface Impoundment
Labadie Energy Center, Franklin County, MO

			BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	PREDICTION LIMITS	BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
November 2021 Detection Monitoring Event												
DATE	NA	NA	11/1/2021	11/1/2021	11/4/2021	11/2/2021	11/3/2021	11/3/2021	11/2/2021	11/5/2021	11/5/2021	11/5/2021
pH	SU	6.239-7.394	6.68	6.97	6.93	9.48	7.21	6.97	6.80	6.75	6.73	7.12
BORON, TOTAL	µg/L	147	77.0 J	40.7 J	3,970	3,180	4,040	8,060	51.6 J	2,090	7,540	4,990
CALCIUM, TOTAL	µg/L	219,000	260,000	140,000	147,000	68,700	95,500 J	131,000	137,000	149,000	181,000	169,000
CHLORIDE, TOTAL	mg/L	7.654	13.7	1.7 J	2.5 J	17.8	20.7	22.8	3.6	3.6 J	18.6	12.0
FLUORIDE, TOTAL	mg/L	0.2606	ND	0.14 J	0.18 J	0.15 J	0.15 J	0.25 J	0.19 J	0.25	0.19 J	0.43
SULFATE, TOTAL	mg/L	75.37	146	46.2	114	255	196	208	11.8	50.9	215	383
TOTAL DISSOLVED SOLIDS	mg/L	792	953 J	475 J	547	473	640	722	423	534	799	850
February 2022 Verification Sampling Event												
DATE	NA	NA			2/10/2022							2/10/2022
pH	SU	6.239-7.394										
BORON, TOTAL	µg/L	147										
CALCIUM, TOTAL	µg/L	219000										
CHLORIDE, TOTAL	mg/L	7.654										
FLUORIDE, TOTAL	mg/L	0.2606										0.42
SULFATE, TOTAL	mg/L	75.37			85.9							
TOTAL DISSOLVED SOLIDS	mg/L	792										

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

Prepared By: EMS
Checked By: LMS
Reviewed By: MNH

Piper Diagram



Cation-Anion Balance = 9.763%.

LCPB CCR Rule Monitoring Wells

- L-BMW-1S* 11/1/2021
- L-BMW-2S* 11/1/2021
- L-LMW-1S 11/4/2021
- L-LMW-2S 11/2/2021
- L-LMW-3S 11/3/2021
- L-LMW-4S 11/3/2021
- L-LMW-5S 11/2/2021
- L-LMW-6S 11/5/2021
- L-LMW-7S 11/5/2021
- L-LMW-8S 11/5/2021

Notes
1) Piper diagram generated using Sanitas Software.
2) Data used to calculate diagrams provided in previous Annual Reports for the LCPB.
3) %mEq/l – milliequivalents per liter

CLIENT/PROJECT										
AMEREN MISSOURI **LABADIE ENERGY CENTER**				GOLDER			TITLE **LCPB Piper Diagram for November 2021**			
DRAWN EMS	CHECKED LMS	REVIEWED MNH	DATE 2022-06-07	SCALE N/A	FILE NO. N/A	JOB NO. 153140604.0001	DWG NO. N/A	SUBTITLE N/A	REV. NO. N/A	FIGURE **1**

APPENDIX A

Falcon Analysis Calculation Package

CALCULATION PACKAGE

DATE June 16, 2022 **Project No.** 153140604

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

CC

FROM Mark Haddock, P.E., R.G., Jeffrey Ingram, R.G., Sean Paulsen **EMAIL Jeffrey.Ingram@WSP.com**

APPENDIX A - LCPB FALCON ANALYSIS CALCULATION PACKAGE

1.0 OBJECTIVE

The objective of this calculation package is to determine if there is a correlation between the ion ratio fingerprints in the LCPA pore-water, LCPB pore-water, or background groundwater with the compliance monitoring wells in the alluvial aquifer the Labadie Energy Center (LEC).

2.0 FINGERPRINT ANALYSIS OF LEACHATE CONTAMINANTS (FALCON) METHOD

The Fingerprint Analysis of Leachate Contaminants (FALCON) method was developed in 2004 by the United States Environmental Protection Agency (USEPA) as a tool to identify the source of impacts within groundwater. The FALCON method compiles ion ratios for multiple constituents in order to develop a distinctive chemical fingerprint for each possible contaminant source and un-impacted background groundwater. These signatures are then correlated to data downgradient of the sources and are used to characterize the source of the contaminant plume. For this calculation, background groundwater quality will be based on background wells located approximately 2 to 2.5 miles west of the LCPB. Source data is from pore-water collected from temporary piezometers within the LCPA and LCPB. Fingerprints from these three sources (background groundwater, LCPA pore-water, and LCPB pore-water) will then be compared to data from alluvial aquifer sampling locations at the LEC. Data from the LCPA and LCPB pore-water is from the November 2017 ASD for the LCPB which is available in the 2018 Annual Report for the LCPB. Data from the background and compliance monitoring wells is from the November 2021 sampling event.

3.0 SELECTION OF CONSTITUENTS TO USE

The first step in completing the FALCON analysis is to select a subset of constituents that are representative of the potential source areas. When selecting these constituents, it is important to include constituents that are mobile in the hydrogeological environment and that can uniquely characterize each water type. Constituents selected included major cation and anion constituents that represent groundwater chemistry and selected key indicators of CCR impacts. Values of the three different sources were compared to see which constituents fit the criteria. A summary table of the values used for the three sources is provided in **Table 1**. The following constituents were selected to complete the FALCON analysis:

- Alkalinity
- Total Boron
- Total Calcium
- Total Chloride
- Total Fluoride
- Total Iron
- Total Magnesium
- Total Manganese
- Total Potassium
- Total Sodium
- Total Sulfate

4.0 DATA TABULATION AND NORMALIZATION

Once the constituents were selected, the data were tabulated, normalized, and a graphical presentation of the fingerprints were produced. The data used, along with the normalization percentages are provided in **Table 1** for the three different sources (background groundwater, LCPA pore-water, and LCPB pore-water) as well as each monitoring well evaluated. Correlations were then completed between the different sources to determine each source's reproducibility. Tables displaying these correlations are provided below in **Tables 2-4**.

Table 2 – Background Groundwater Correlations

Well ID	*L-BMW-1D*	*L-BMW-1S*	*L-BMW-2D*	*L-BMW-2S*
L-BMW-1D				
L-BMW-1S	98.8%			
L-BMW-2D	99.8%	99.4%		
L-BMW-2S	99.4%	99.9%	99.9%	
Average Fingerprint Reproducibility			99.5%	

Table 3 – LCPB Pore-water Correlations

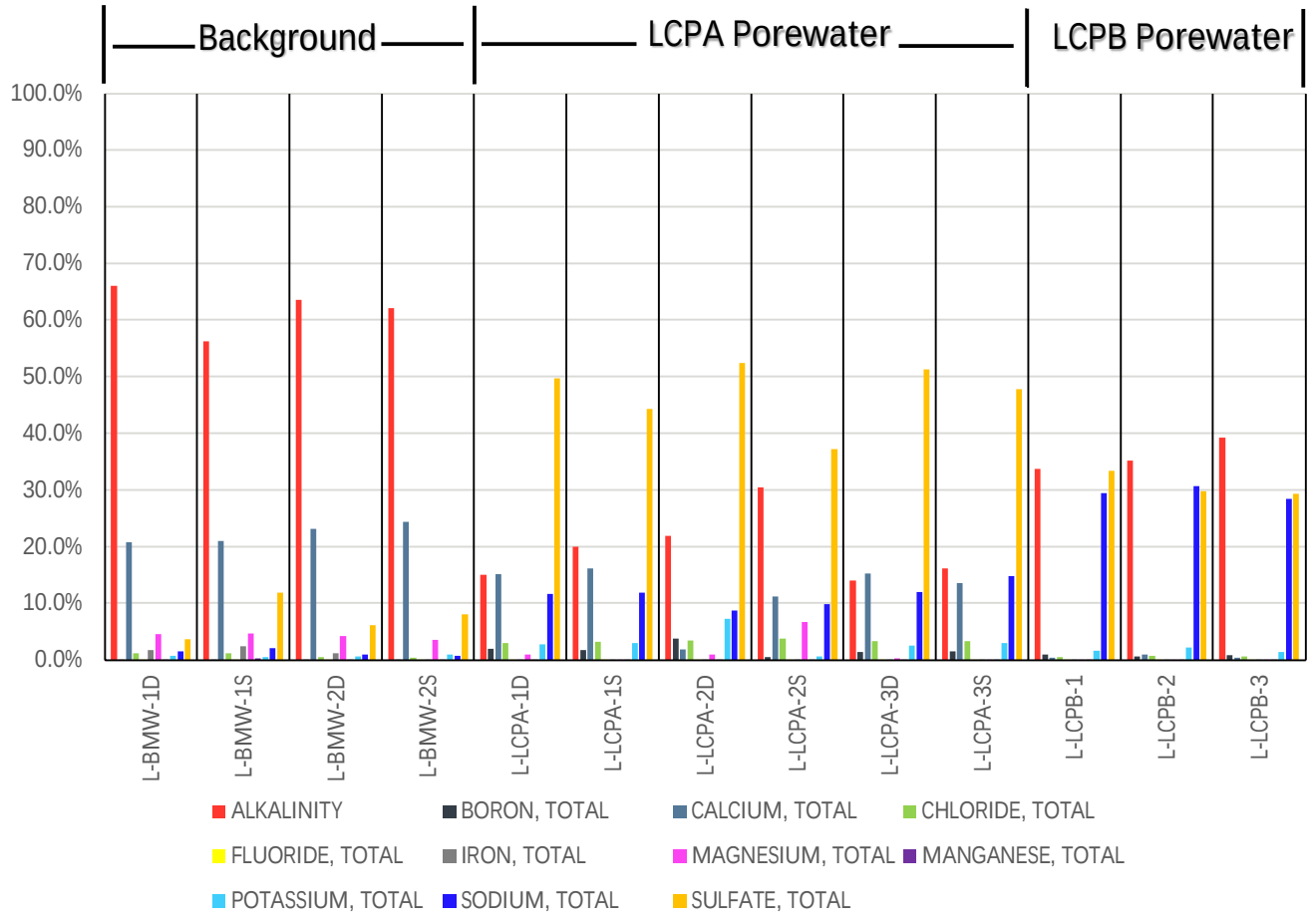
Well ID	*L-LCPB-1*	*L-LCPB-2*	*L-LCPB-3*
L-LCPB-1			
L-LCPB-2	99.6%		
L-LCPB-3	98.9%	99.5%	
Average Fingerprint Reproducibility			99.4%

Table 4 – LCPA Pore-water Correlations

Well ID	*L-LCPA-1D*	*L-LCPA-1S*	*L-LCPA-2D*	*L-LCPA-2S*	*L-LCPA-3D*	*L-LCPA-3S*
L-LCPA-1D						
L-LCPA-1S	98.9%					
L-LCPA-2D	94.5%	93.8%				
L-LCPA-2S	88.9%	93.3%	90.0%			
L-LCPA-3D	99.9%	98.5%	94.1%	87.6%		
L-LCPA-3S	99.6%	99.0%	94.8%	89.8%	99.5%	
Average Fingerprint Reproducibility						94.8%
Average Fingerprint Reproducibility with LCPA-1S, LCPA-1D, LCPA-2D, LCPA-3S and LCPA-3D						97.3%

Additionally, **Figure 1**, below, displays a histogram of the different source water normalizations.

Figure 1 – Histogram of Source Water Normalizations at the LEC



As described in the ASD report for the November 2017 monitoring results (provided in the 2018 Annual Report for the LCPB), samples collected within the LCPA unit displayed less correlation due to the spatial variation of sample locations and differing materials present in sample intervals. The LCPA has been in operation since the 1970s and there have been many changes to CCR the LCPA received during this time, including types of coal used onsite, types of CCR placed in the facility (pre-LCPB construction vs post-LCPB construction) and where different types of CCR have been placed within the unit. While not as evident using the constituents available for this evaluation (no Appendix IV testing because LCPB is in detection monitoring) when compared with the evaluation for the November 2017 ASD, LCPA-2S still appears to have a weaker correlation (<90% in this case) and is therefore evaluated separately. Separating the LCPA into two potential sources (one for LCPA 1S, 1D, 2D, 3S, 3D and one for LCPA-2S) more accurately reflects the conditions within the LCPA, due to its spatial variation.

5.0 CORRELATING DOWNGRADIENT GROUNDWATER SAMPLES WITH SOURCES

A correlation between the average groundwater concentration and the different source waters was completed to demonstrate which source better correlates with each alluvial aquifer groundwater sample. Results from this correlation are provided in **Table 5** and the values used for this correlation are provided in **Table 1**. The results demonstrate that groundwater in the alluvial aquifer correlates better with the LCPA pore-water or background groundwater than it does with the LCPB pore-water. In no case did a downgradient groundwater sample correlate better with the LCPB pore-water than with the LCPA pore-water or background groundwater.

Table 5 – Summary of November 2021 USEPA FALCON Evaluation

Piezometer or Well ID	Percent Correlation				Highest (Best) Correlation
	Background Groundwater	LCPB Average	LCPA Average (LCPA-1S/D, LCPA-2D & LCPA-3S/D)	LCPA-2S	
L-BMW-1D	100%	56%	24%	59%	Background
L-BMW-1S	100%	62%	38%	70%	Background
L-BMW-2D	100%	56%	28%	62%	Background
L-BMW-2S	100%	57%	32%	64%	Background
L-AM-1D	35%	77%	99%	92%	Average LCPA
L-AM-1S	95%	54%	21%	55%	Background
L-AMW-8	19%	70%	99%	86%	Average LCPA
L-LMW-1S	98%	65%	50%	77%	Background
L-LMW-2S	9%	61%	97%	80%	Average LCPA
L-LMW-3S	79%	90%	79%	95%	LCPA-2S
L-LMW-4S	88%	84%	70%	91%	LCPA-2S
L-LMW-5S	100%	55%	23%	58%	Background
L-LMW-6S	100%	59%	31%	64%	Background
L-LMW-7S	93%	74%	63%	87%	Background

Piezometer or Well ID	Percent Correlation				Highest (Best) Correlation
	Background Groundwater	LCPB Average	LCPA Average (LCPA-1S/D, LCPA-2D & LCPA-3S/D)	LCPA-2S	
L-LMW-8S	58%	75%	94%	97%	LCPA-2S
L-MW-24	100%	56%	26%	61%	Background
L-MW-26	100%	55%	27%	60%	Background
L-MW-33(D)	28%	74%	100%	91%	Average LCPA
L-MW-34(D)	50%	82%	97%	98%	LCPA-2S
L-MW-35(D)	35%	73%	99%	93%	Average LCPA
L-S-1	100%	54%	24%	58%	Background
L-TMW-1	100%	59%	31%	64%	Background
L-TMW-2	95%	69%	57%	83%	Background
L-TMW-3	100%	57%	27%	61%	Background
L-TP-1D	99%	55%	22%	57%	Background
L-TP-2D	87%	84%	73%	93%	LCPA-2S
L-TP-2M	84%	85%	76%	94%	LCPA-2S
L-TP-3D	19%	69%	99%	87%	Average LCPA
L-TP-3M	62%	84%	93%	99%	LCPA-2S
L-TP-4D	91%	74%	66%	89%	Background
L-UMW-1D	100%	58%	26%	61%	Background
L-UMW-2D	97%	74%	48%	77%	Background
L-UMW-3D	30%	65%	99%	89%	Average LCPA
L-UMW-4D	9%	66%	97%	81%	Average LCPA
L-UMW-5D	20%	69%	99%	86%	Average LCPA
L-UMW-6D	7%	58%	97%	79%	Average LCPA
L-UMW-7D	100%	60%	32%	65%	Background
L-UMW-8D	73%	83%	87%	98%	LCPA-2S
L-UMW-9D	99%	53%	18%	54%	Background

Notes

1) Values display percent correlation between each sampling point and the LCPA Average (LCPA-1S, -1D, -2D, -3S, and – 3D), LCPA-2S, LCPB, or Background fingerprints.

2) The higher values are shaded darker and indicate better correlation.

Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-BMW-1D	L-BMW-1S	L-BMW-2D	L-BMW-2S	L-AM-1D	L-AM-1S	L-AMW-8
ALKALINITY	mg/L	424	696	410	357	152	537	64.6
BORON, TOTAL	mg/L	0.073	0.077	0.063	0.0407	7.50	0.262	6.15
CALCIUM, TOTAL	mg/L	133	260	149	140	120	201	64.7
CHLORIDE, TOTAL	mg/L	7.4	13.7	3	1.7	44.8	164	19.7
FLUORIDE, TOTAL	mg/L	0.2	0.043	0.21	0.14	0.32	0.043	0.33
IRON, TOTAL	mg/L	11	29.8	7.17	0.0107	5.62	12.8	8.93
MAGNESIUM, TOTAL	mg/L	29	57.8	27.3	20.4	15.5	37.7	10.1
MANGANESE, TOTAL	mg/L	1	2.94	0.282	0.0043	0.305	2.5	0.313
POTASSIUM, TOTAL	mg/L	4	5.85	3.74	5.46	8.65	7.29	5.88
SODIUM, TOTAL	mg/L	10	24.9	5.66	3.99	121	81.6	79
SULFATE, TOTAL	mg/L	23.5	146	39.2	46.2	377	24.9	271
Sum		642.6	1237.1	645.6	574.9	852.7	1069.1	530.7

Analyte	L-BMW-1D	L-BMW-1S	L-BMW-2D	L-BMW-2S	L-AM-1D	L-AM-1S	L-AMW-8
ALKALINITY	66%	56%	64%	62%	18%	50%	12%
BORON, TOTAL	0.011%	0.0062%	0.0098%	0.0071%	0.88%	0.025%	1.2%
CALCIUM, TOTAL	21%	21%	23%	24%	14%	19%	12%
CHLORIDE, TOTAL	1.2%	1.1%	0.46%	0.3%	5.3%	15%	3.7%
FLUORIDE, TOTAL	0.031%	0.0035%	0.033%	0.024%	0.038%	0.004%	0.062%
IRON, TOTAL	1.7%	2.4%	1.1%	0.0019%	0.66%	1.2%	1.7%
MAGNESIUM, TOTAL	4.5%	4.7%	4.2%	3.5%	1.8%	3.5%	1.9%
MANGANESE, TOTAL	0.1%	0.24%	0.044%	0.00075%	0.036%	0.23%	0.059%
POTASSIUM, TOTAL	0.67%	0.47%	0.58%	0.95%	1%	0.68%	1.1%
SODIUM, TOTAL	1.5%	2%	0.88%	0.69%	14%	7.6%	15%
SULFATE, TOTAL	3.7%	12%	6.1%	8%	44%	2.3%	51%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes
1) Values for CCR Rule monitoring wells from November 2021 samples collected for the CCR Rule.
2) Unit abbreviations - mg/L - milligrams per liter.
3) Half (1/2) the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

Prepared By: JSI
Checked By: EMS
Reviewed By: MNH

Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-LMW-1S	L-LMW-2S	L-LMW-3S	L-LMW-4S	L-LMW-5S	L-LMW-6S	L-LMW-7S
ALKALINITY	mg/L	332	30.9	253	344	378	411	416
BORON, TOTAL	mg/L	3.97	3.18	4.04	8.06	0.0516	2.09	7.54
CALCIUM, TOTAL	mg/L	147	68.7	95.5	131	137	149	181
CHLORIDE, TOTAL	mg/L	2.5	17.8	20.7	22.8	3.6	3.6	18.6
FLUORIDE, TOTAL	mg/L	0.18	0.15	0.15	0.25	0.19	0.25	0.19
IRON, TOTAL	mg/L	2.27	0.0107	8.07	8.51	0.0493	4.69	2.82
MAGNESIUM, TOTAL	mg/L	24.9	0.087	11.4	25.5	13	23.2	37.1
MANGANESE, TOTAL	mg/L	0.979	0.001	0.814	1.69	0.0061	0.688	1.57
POTASSIUM, TOTAL	mg/L	4.22	9.35	7.4	6.88	3.63	5.57	7.32
SODIUM, TOTAL	mg/L	9.43	66.3	101	91.3	15.4	18.2	48.7
SULFATE, TOTAL	mg/L	114	255	196	208	11.8	50.9	215
Sum		641.4	451.5	698.1	848.0	562.7	669.2	935.8

Analyte	L-LMW-1S	L-LMW-2S	L-LMW-3S	L-LMW-4S	L-LMW-5S	L-LMW-6S	L-LMW-7S
ALKALINITY	52%	6.8%	36%	41%	67%	61%	44%
BORON, TOTAL	0.62%	0.7%	0.58%	0.95%	0.0092%	0.31%	0.81%
CALCIUM, TOTAL	23%	15%	14%	15%	24%	22%	19%
CHLORIDE, TOTAL	0.39%	3.9%	3%	2.7%	0.64%	0.54%	2%
FLUORIDE, TOTAL	0.028%	0.033%	0.021%	0.029%	0.034%	0.037%	0.02%
IRON, TOTAL	0.35%	0.0024%	1.2%	1%	0.0088%	0.7%	0.3%
MAGNESIUM, TOTAL	3.9%	0.019%	1.6%	3%	2.3%	3.5%	4%
MANGANESE, TOTAL	0.15%	0.00022%	0.12%	0.2%	0.0011%	0.1%	0.17%
POTASSIUM, TOTAL	0.66%	2.1%	1.1%	0.81%	0.65%	0.83%	0.78%
SODIUM, TOTAL	1.5%	15%	14%	11%	2.7%	2.7%	5.2%
SULFATE, TOTAL	18%	56%	28%	25%	2.1%	7.6%	23%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes
1) Values for CCR Rule monitoring wells from November 2021 samples collected for the CCR Rule.
2) Unit abbreviations - mg/L - milligrams per liter.
3) Half (1/2) the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

Prepared By: JSI
Checked By: EMS
Reviewed By: MNH

Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-LMW-8S	L-MW-24	L-MW-26	L-MW-33(D)	L-MW-34(D)	L-MW-35(D)	L-S-1
ALKALINITY	mg/L	249	415	390	110	159	159	427
BORON, TOTAL	mg/L	4.99	0.0968	0.0687	9.64	10.1	8.7	0.074
CALCIUM, TOTAL	mg/L	169	141	146	84.1	87.5	130	146
CHLORIDE, TOTAL	mg/L	12	5	6.2	25.3	23.5	18.2	1.1
FLUORIDE, TOTAL	mg/L	0.43	0.14	0.24	0.31	0.27	0.25	0.15
IRON, TOTAL	mg/L	4.23	0.0819	0.0437	4.3	4.84	5.3	0.132
MAGNESIUM, TOTAL	mg/L	29	28	26.3	18.2	21.2	27.6	20.1
MANGANESE, TOTAL	mg/L	2.03	0.0602	0.464	0.219	0.219	0.383	0.664
POTASSIUM, TOTAL	mg/L	6.36	5.8	4.31	6.66	6.46	5.54	25.4
SODIUM, TOTAL	mg/L	63.7	8.42	6.07	91.8	78.2	97.5	3.33
SULFATE, TOTAL	mg/L	383	29.8	29.3	328	270	410	21.7
Sum		923.7	633.4	609.0	678.5	661.3	862.5	645.7

Analyte	L-LMW-8S	L-MW-24	L-MW-26	L-MW-33(D)	L-MW-34(D)	L-MW-35(D)	L-S-1
ALKALINITY	27%	66%	64%	16%	24%	18%	66%
BORON, TOTAL	0.54%	0.015%	0.011%	1.4%	1.5%	1%	0.011%
CALCIUM, TOTAL	18%	22%	24%	12%	13%	15%	23%
CHLORIDE, TOTAL	1.3%	0.79%	1%	3.7%	3.6%	2.1%	0.17%
FLUORIDE, TOTAL	0.047%	0.022%	0.039%	0.046%	0.041%	0.029%	0.023%
IRON, TOTAL	0.46%	0.013%	0.0072%	0.63%	0.73%	0.61%	0.02%
MAGNESIUM, TOTAL	3.1%	4.4%	4.3%	2.7%	3.2%	3.2%	3.1%
MANGANESE, TOTAL	0.22%	0.0095%	0.076%	0.032%	0.033%	0.044%	0.1%
POTASSIUM, TOTAL	0.69%	0.92%	0.71%	0.98%	0.98%	0.64%	3.9%
SODIUM, TOTAL	6.9%	1.3%	1%	14%	12%	11%	0.52%
SULFATE, TOTAL	41%	4.7%	4.8%	48%	41%	48%	3.4%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes
1) Values for CCR Rule monitoring wells from November 2021 samples collected for the CCR Rule.
2) Unit abbreviations - mg/L - milligrams per liter.
3) Half (1/2) the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

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Checked By: EMS
Reviewed By: MNH

Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-TMW-1	L-TMW-2	L-TMW-3	L-TP-1D	L-TP-2D	L-TP-2M	L-TP-3D
ALKALINITY	mg/L	504	593	502	472	232	222	110
BORON, TOTAL	mg/L	0.113	0.119	0.116	0.0796	1.93	2.58	10.4
CALCIUM, TOTAL	mg/L	161	240	161	143	94	94.3	108
CHLORIDE, TOTAL	mg/L	2.6	19.7	3.8	4.5	22.9	22.4	25.2
FLUORIDE, TOTAL	mg/L	0.27	0.25	0.2	0.17	0.39	0.42	0.043
IRON, TOTAL	mg/L	0.405	0.844	6.96	7.89	3.44	2.83	4.79
MAGNESIUM, TOTAL	mg/L	44.7	65.7	36.9	35.1	17.1	14.4	23.7
MANGANESE, TOTAL	mg/L	3.74	2.38	0.817	0.22	0.309	0.398	0.18
POTASSIUM, TOTAL	mg/L	5.76	7.72	6.36	4.17	5.62	6.52	6.91
SODIUM, TOTAL	mg/L	11.7	25.9	8.1	13.2	59.8	65.5	126
SULFATE, TOTAL	mg/L	61.4	259	40.3	12.9	152	158	469
Sum		795.7	1214.6	766.6	693.2	589.5	589.3	884.2

Analyte	L-TMW-1	L-TMW-2	L-TMW-3	L-TP-1D	L-TP-2D	L-TP-2M	L-TP-3D
ALKALINITY	63%	49%	65%	68%	39%	38%	12%
BORON, TOTAL	0.014%	0.0098%	0.015%	0.011%	0.33%	0.44%	1.2%
CALCIUM, TOTAL	20%	20%	21%	21%	16%	16%	12%
CHLORIDE, TOTAL	0.33%	1.6%	0.5%	0.65%	3.9%	3.8%	2.8%
FLUORIDE, TOTAL	0.034%	0.021%	0.026%	0.025%	0.066%	0.071%	0.0049%
IRON, TOTAL	0.051%	0.069%	0.91%	1.1%	0.58%	0.48%	0.54%
MAGNESIUM, TOTAL	5.6%	5.4%	4.8%	5.1%	2.9%	2.4%	2.7%
MANGANESE, TOTAL	0.47%	0.2%	0.11%	0.032%	0.052%	0.068%	0.02%
POTASSIUM, TOTAL	0.72%	0.64%	0.83%	0.6%	0.95%	1.1%	0.78%
SODIUM, TOTAL	1.5%	2.1%	1.1%	1.9%	10%	11%	14%
SULFATE, TOTAL	7.7%	21%	5.3%	1.9%	26%	27%	53%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes
1) Values for CCR Rule monitoring wells from November 2021 samples collected for the CCR Rule.
2) Unit abbreviations - mg/L - milligrams per liter.
3) Half (1/2) the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

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Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-TP-3M	L-TP-4D	L-UMW-1D	L-UMW-2D	L-UMW-3D	L-UMW-4D	L-UMW-5D
ALKALINITY	mg/L	188	291	498	385	123	52.2	64.7
BORON, TOTAL	mg/L	6.55	6.68	0.611	1.04	10.3	3.46	7.94
CALCIUM, TOTAL	mg/L	93.1	128	156	124	140	65.5	78.4
CHLORIDE, TOTAL	mg/L	18.9	14.3	11.1	26.6	19.1	21.7	18.8
FLUORIDE, TOTAL	mg/L	0.36	0.19	0.21	0.35	0.28	0.42	0.19
IRON, TOTAL	mg/L	6.75	5.58	18.9	3.58	0.656	0.215	0.032
MAGNESIUM, TOTAL	mg/L	20.5	33.1	37.7	25.3	12.5	7.68	0.0799
MANGANESE, TOTAL	mg/L	1.02	0.336	0.429	0.396	0.314	0.264	0.0094
POTASSIUM, TOTAL	mg/L	5.04	4.8	6.64	7.68	10.5	8.93	13.5
SODIUM, TOTAL	mg/L	73.7	28.5	25.9	67.8	60.5	107	79.8
SULFATE, TOTAL	mg/L	246	166	39.2	115	396	377	271
Sum		659.9	678.5	794.7	756.7	773.2	644.4	534.5

Analyte	L-TP-3M	L-TP-4D	L-UMW-1D	L-UMW-2D	L-UMW-3D	L-UMW-4D	L-UMW-5D
ALKALINITY	28%	43%	63%	51%	16%	8.1%	12%
BORON, TOTAL	0.99%	0.98%	0.077%	0.14%	1.3%	0.54%	1.5%
CALCIUM, TOTAL	14%	19%	20%	16%	18%	10%	15%
CHLORIDE, TOTAL	2.9%	2.1%	1.4%	3.5%	2.5%	3.4%	3.5%
FLUORIDE, TOTAL	0.055%	0.028%	0.026%	0.046%	0.036%	0.065%	0.036%
IRON, TOTAL	1%	0.82%	2.4%	0.47%	0.085%	0.033%	0.006%
MAGNESIUM, TOTAL	3.1%	4.9%	4.7%	3.3%	1.6%	1.2%	0.015%
MANGANESE, TOTAL	0.15%	0.05%	0.054%	0.052%	0.041%	0.041%	0.0018%
POTASSIUM, TOTAL	0.76%	0.71%	0.84%	1%	1.4%	1.4%	2.5%
SODIUM, TOTAL	11%	4.2%	3.3%	9%	7.8%	17%	15%
SULFATE, TOTAL	37%	24%	4.9%	15%	51%	59%	51%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes
1) Values for CCR Rule monitoring wells from November 2021 samples collected for the CCR Rule.
2) Unit abbreviations - mg/L - milligrams per liter.
3) Half (1/2) the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

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Table 1
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LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-UMW-6D	L-UMW-7D	L-UMW-8D	L-UMW-9D	L-LCPA-1D	L-LCPA-1S	L-LCPA-2D
ALKALINITY	mg/L	49.1	446	331	400	77.6	120	128
BORON, TOTAL	mg/L	13.2	2.22	6.17	0.0957	10	10.3	21.7
CALCIUM, TOTAL	mg/L	126	165	143	117	78.2	97.1	10.6
CHLORIDE, TOTAL	mg/L	19.9	5.7	8.4	24.8	15.2	18.9	19.8
FLUORIDE, TOTAL	mg/L	0.043	0.33	0.23	0.24	0.2	0.088	0.14
IRON, TOTAL	mg/L	0.568	9.75	22.5	21.8	0.178	0.138	0.0869
MAGNESIUM, TOTAL	mg/L	5.5	19.8	30.7	28	4.47	0.184	5.43
MANGANESE, TOTAL	mg/L	0.432	1.42	0.872	0.365	0.0041	0.0032	0.0025
POTASSIUM, TOTAL	mg/L	24.1	5.09	5.6	3.98	14	17.8	42.1
SODIUM, TOTAL	mg/L	108	25	80.1	13.5	60	71.1	50.5
SULFATE, TOTAL	mg/L	514	58.3	336	0.21	257	267	306
Sum		860.8	738.6	964.6	610.0	516.9	602.6	584.4

Analyte	L-UMW-6D	L-UMW-7D	L-UMW-8D	L-UMW-9D	L-LCPA-1D	L-LCPA-1S	L-LCPA-2D
ALKALINITY	5.7%	60%	34%	66%	15%	20%	22%
BORON, TOTAL	1.5%	0.3%	0.64%	0.016%	1.9%	1.7%	3.7%
CALCIUM, TOTAL	15%	22%	15%	19%	15%	16%	1.8%
CHLORIDE, TOTAL	2.3%	0.77%	0.87%	4.1%	2.9%	3.1%	3.4%
FLUORIDE, TOTAL	0.005%	0.045%	0.024%	0.039%	0.039%	0.015%	0.024%
IRON, TOTAL	0.066%	1.3%	2.3%	3.6%	0.034%	0.023%	0.015%
MAGNESIUM, TOTAL	0.64%	2.7%	3.2%	4.6%	0.86%	0.031%	0.93%
MANGANESE, TOTAL	0.05%	0.19%	0.09%	0.06%	0.00079%	0.00053%	0.00043%
POTASSIUM, TOTAL	2.8%	0.69%	0.58%	0.65%	2.7%	3%	7.2%
SODIUM, TOTAL	13%	3.4%	8.3%	2.2%	12%	12%	8.6%
SULFATE, TOTAL	60%	7.9%	35%	0.034%	50%	44%	52%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes
1) Values for CCR Rule monitoring wells from November 2021 samples collected for the CCR Rule.
2) Values for pore-water samples from 2018 LCPB ASD investigation.
3) Unit abbreviations - mg/L - milligrams per liter.
4) Half (1/2) the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

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Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-LCPA-2S	L-LCPA-3D	L-LCPA-3S	L-LCPB-1	L-LCPB-2	L-LCPB-3
ALKALINITY	mg/L	208	80.2	91.8	1070	861	1340
BORON, TOTAL	mg/L	3.36	8.1	8.44	28.2	14.8	25.7
CALCIUM, TOTAL	mg/L	76.5	87.7	76.9	11.4	22.6	11.4
CHLORIDE, TOTAL	mg/L	25.5	18.9	18.6	15.6	16.2	18.4
FLUORIDE, TOTAL	mg/L	0.17	0.16	0.16	2.4	1	1.9
IRON, TOTAL	mg/L	0.0279	0.122	0.112	0.0273	0.129	0.384
MAGNESIUM, TOTAL	mg/L	45.5	1.54	0.445	0.0844	0.0874	0.386
MANGANESE, TOTAL	mg/L	0.0392	0.0023	0.0025	0.0025	0.0025	0.0023
POTASSIUM, TOTAL	mg/L	3.54	14.2	16.6	51	52.6	48.2
SODIUM, TOTAL	mg/L	67.2	69	84	935	750	969
SULFATE, TOTAL	mg/L	254	295	272	1060	728	999
Sum		683.8	574.9	569.1	3173.7	2446.4	3414.4

Analyte	L-LCPA-2S	L-LCPA-3D	L-LCPA-3S	L-LCPB-1	L-LCPB-2	L-LCPB-3
ALKALINITY	30%	14%	16%	34%	35%	39%
BORON, TOTAL	0.49%	1.4%	1.5%	0.89%	0.6%	0.75%
CALCIUM, TOTAL	11%	15%	14%	0.36%	0.92%	0.33%
CHLORIDE, TOTAL	3.7%	3.3%	3.3%	0.49%	0.66%	0.54%
FLUORIDE, TOTAL	0.025%	0.028%	0.028%	0.076%	0.041%	0.056%
IRON, TOTAL	0.0041%	0.021%	0.02%	0.00086%	0.0053%	0.011%
MAGNESIUM, TOTAL	6.7%	0.27%	0.078%	0.0027%	0.0036%	0.011%
MANGANESE, TOTAL	0.0057%	0.0004%	0.00044%	0.000079%	0.0001%	0.000067%
POTASSIUM, TOTAL	0.52%	2.5%	2.9%	1.6%	2.2%	1.4%
SODIUM, TOTAL	9.8%	12%	15%	29%	31%	28%
SULFATE, TOTAL	37%	51%	48%	33%	30%	29%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes
1) Values for CCR Rule monitoring wells from November 2021 samples collected for the CCR Rule.
2) Values for pore-water samples from 2018 LCPB ASD investigation.
3) Unit abbreviations - mg/L - milligrams per liter.
4) Half (1/2) the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

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Checked By: EMS
Reviewed By: MNH

APPENDIX C

Alternative Source Demonstration - April 2022 Sampling Event

TECHNICAL MEMORANDUM

DATE November 18, 2022 **Project No.** 153140604

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

FROM Mark Haddock, P.E., R.G., Jeffrey Ingram, R.G. **EMAIL Jeffrey.Ingram@WSP.com**

LCPB – ALTERNATIVE SOURCE DEMONSTRATION – APRIL 2022 SAMPLING EVENT

1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (CCR Rule or The Rule), Golder Associates USA Inc. ("Golder") has prepared this Technical Memorandum to show that Statistically Significant Increases (SSIs) identified at Ameren Missouri's (Ameren) Labadie Energy Center (LEC) fly ash surface impoundment (LCPB) are the result from an alternative source and are not related to impacts from LCPB. This LCPB Alternative Source Demonstration (ASD) 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 BACKGROUND

The first round of Detection Monitoring was completed during November 2017 at the LEC's LCPB CCR Unit in Franklin County, Missouri. This sampling was completed in accordance with the CCR Rule and SSIs were identified and verified. In February/March 2018, additional drilling and a detailed analysis of results were completed, and it was determined that the SSIs in the CCR Rule groundwater monitoring wells at the LCPB were not caused by impacts from the LCPB. The ASD report for the November 2017 monitoring results indicated that the SSIs observed in the LCPB wells were caused by the adjacent LCPA surface impoundment. This conclusion was supported by lines of evidence (LOEs) as follows.

- **Geochemical Signatures** - As reflected on the piper diagrams of the November 2017 ASD, LCPA pore-water has a distinctly different signature than the pore-water from the LCPB. CCR groundwater samples in monitoring wells with SSIs plot on the piper diagrams in a location between the LCPA pore-water zone and the background groundwater zone, indicating that well water chemistry is a mixture of unaffected groundwater and groundwater impacted by the LCPA. None of the downgradient monitoring wells plotted in the LCPB pore-water zone, or in the area that is strictly the LCPB mixing zone.
- **USEPA FALCON Analysis** - The USEPA FALCON method compared constituent fingerprints between the downgradient monitoring wells and the background groundwater, LCPB pore-water, and LCPA pore-water sources. The results indicate that there are strong correlations between downgradient monitoring wells and

the LCPA pore-water, or background groundwater; as compared to LCPB pore-water. These same correlations were found at depth within the alluvial aquifer in the temporary ASD piezometers.

- **Groundwater Flow Directions** - Potentiometric surface mapping demonstrates that groundwater flow directions onsite are variable and can flow in multiple directions, but generally with a north-northeast flow direction, depending on the river level in the Missouri River. This supports the conclusion that the unlined LCPA is the source of impacts at the downgradient monitoring wells because impacted monitoring wells around the LCPB are frequently downgradient from the LCPA.
- **LCPB Construction** - The LCPB was constructed with an engineered liner system with a bottom elevation of approximately 460 feet above mean sea level (FT MSL) at its lowest point. The LCPA was built in the early 1970s and has a bottom elevation estimated to be at approximately 410 FT MSL. This, along with key CCR indicators being present in the shallow, middle and deep zones of the alluvial aquifer, indicates that impacts present onsite are from the LCPA and not the LCPB.

A copy of the ASD report for the November 2017 sampling event is provided in Appendix B of the 2018 LCPB Annual Groundwater Monitoring and Corrective Action Report.

3.0 APRIL 2022 SAMPLING EVENT

A summary of the April 2022 sampling results is provided in **Table 1**. As discussed in **Section 2.0**, there are several LOEs presented in the November 2017 ASD that demonstrate that impacts around the LCPB are caused by LCPA and not the LCPB. Although both CCR units are now capped and closed with a geomembrane cover system, the same LOEs are still present at the site, and impacts in the April 2022 sampling event around the LCPB are from the LCPA and not the LCPB. The following summarizes the LOEs using current monitoring data through the April 2022 sampling event.

- **Geochemical Signatures** - **Figure 1** of this Technical Memorandum is a Piper Diagram which displays a comparison of April 2022 LCPB CCR Rule groundwater monitoring well data to cation and anion data for the LCPA pore-water, LCPB pore-water, and background groundwater zones. As shown in **Figure 1**, and as expected, since the SSIs were a result of the LCPA, the April 2022 LCPB monitoring results plotted in and between the background groundwater quality (yellow section) and the LCPA pore-water (green hexagon) on the Piper diagram. The pattern, shown in **Figure 1**, indicates that the groundwater impacts from the LCPA are mixing with groundwater along the migration path and, thus; the LCPA is influencing groundwater quality around the LCPB, which is located hydraulically downgradient of the LCPA. Results displayed in **Figure 1** continue to demonstrate that groundwater quality in the monitoring wells around the LCPB are impacted by the LCPA and not the LCPB.
- **USEPA FALCON Analysis** - The USEPA FALCON method compared constituent fingerprints between the downgradient monitoring wells and the background groundwater, LCPB pore-water, and LCPA pore-water sources. A Technical Memorandum summarizing the Falcon analysis is provided in **Appendix A**. An updated calculation using data from the April 2022 sampling event was completed, and a summary of the results is provided in **Table 5** of **Appendix A**. The results indicate that there is stronger correlation between downgradient monitoring well chemistry and the LCPA pore-water or background groundwater, while there is a comparatively lower correlation between downgradient monitoring well data and LCPB pore-water.

- **Groundwater Flow Direction** - Potentiometric surface mapping from 2018 to 2022 continue to show that while groundwater conditions are variable, net groundwater flow is toward the north/northeast, flowing from the bluffs toward the Missouri River. This supports the conclusion that the unlined LCPA is the source of impacts at the LCPB downgradient monitoring wells because the impacted monitoring wells around the LCPB are generally located downgradient of the LCPA.
- **LCPB Construction** - The LCPB was constructed with an engineered liner system consisting of a 60-mil High Density Polyethylene (HDPE) geomembrane liner with a minimum bottom elevation of approximately 460 FT MSL. The low permeability HDPE liner system in the LCPB is a barrier to the migration of CCR influenced liquids and provides containment for CCR. The LCPA is unlined and was built in the early 1970s and has a bottom elevation estimated at approximately 410 FT MSL, which is much deeper than the LCPB. In addition to the distinct pore-water fingerprint for LCPA relative to LCPB, there are elevated concentrations of CCR indicators in the intermediate and deep zones of groundwater in the alluvial aquifer surrounding the LCPA, as shown in the LCPA Annual Reports. Around the LCPA, impacts are present in the shallow, intermediate (middle), and deep alluvial zones, and are not isolated to the shallow zone where LCPB impacts would most readily occur. The impacts to the intermediate and deep alluvial zones are most likely from the LCPA, where the base elevation extends into deeper groundwater zones in the aquifer.

In summary, groundwater chemistry, pore-water chemistry fingerprints, cell construction, and hydrogeological evidence all demonstrate that SSIs reported for the April 2022 Sampling Event for the LCPB CCR unit were not caused by impacts from the LCPB surface impoundment. The LCPA surface impoundment, located immediately adjacent to the LCPB, is the source of the SSIs for groundwater in the LCPB monitoring well network.

CERTIFICATION STATEMENT

This *LCPB – Alternative Source Demonstration – April 2022 Sampling Event has* been prepared to comply with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule under the direction of a licensed professional engineer with Golder Associates Inc.

I hereby certify that this *LCPB – Alternative Source Demonstration – April 2022 Sampling Event* located at 226 Labadie Power Plant Road, Labadie Missouri, 63055 has been prepared to meet the requirements of 40 CFR §257.94(e)(2).

Golder Associates USA Inc.

Mark Haddock, P.E., R.G.
Principal, Practice Leader

Attachments: Table 1 – April 2022 Detection Monitoring Results
Figure 1 – LCPB Piper Diagram for April 2022
Appendix A – FALCON Analysis Calculation Package

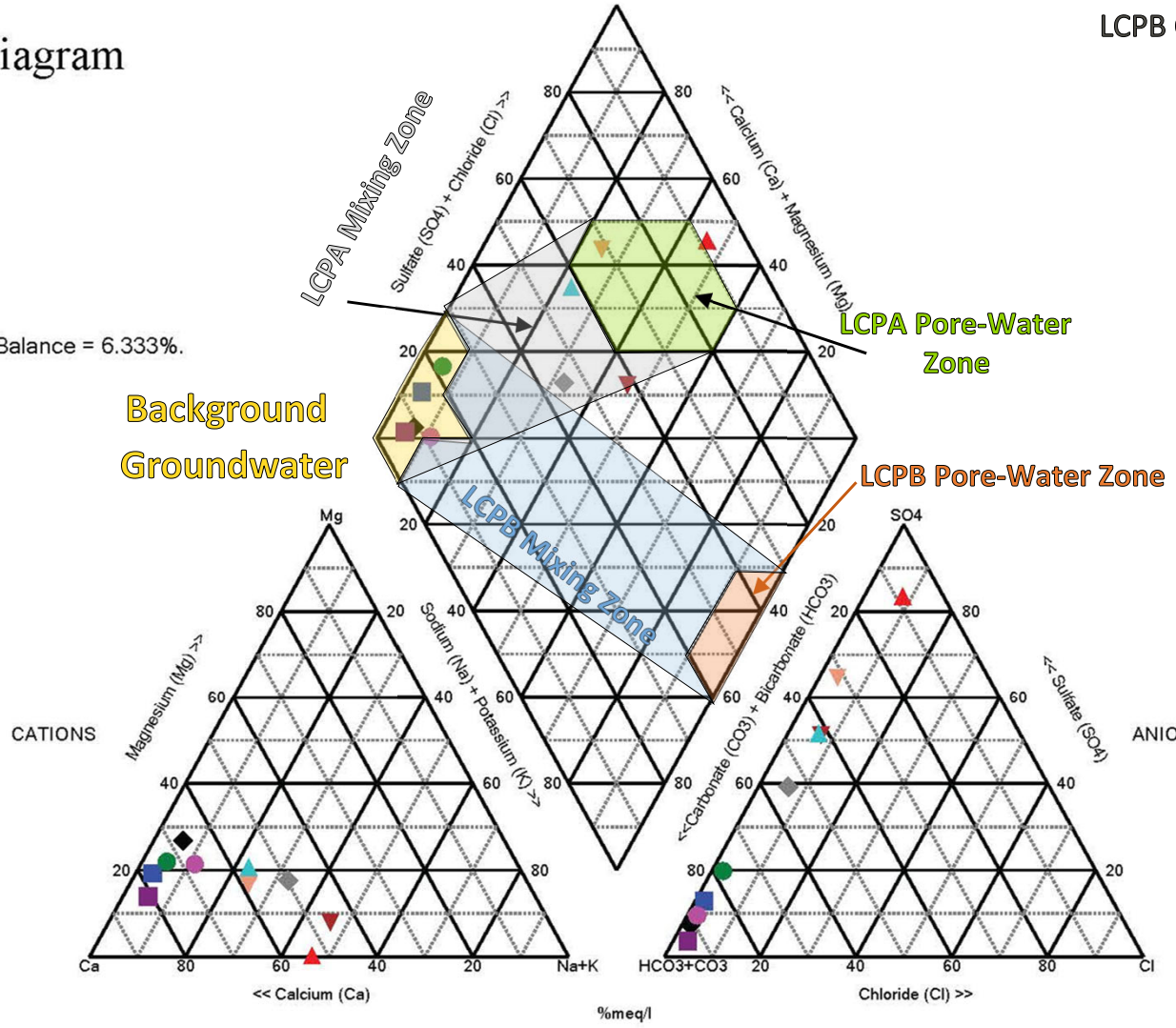
Table 1
April 2022 Detection Monitoring Results
LCPB Surface Impoundment
Labadie Energy Center, Franklin County, MO

			BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	PREDICTION LIMITS	BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
April 2022 Detection Monitoring Event												
DATE	NA	NA	4/6/2022	4/6/2022	4/8/2022	4/6/2022	4/8/2022	4/8/2022	4/8/2022	4/8/2022	4/8/2022	4/8/2022
pH	SU	6.239-7.394	7.10	7.06	6.95	9.28	7.45	7.09	7.04	6.97	6.80	7.00
BORON, TOTAL	µg/L	147	109	55.2 J	1,130	3,330	3,880	8,240	53.0 J	2,350	10,700	7,890
CALCIUM, TOTAL	µg/L	219,000	221,000	138,000	116,000	69,700	90,400	127,000	132,000	105,000	136,000	194,000
CHLORIDE, TOTAL	mg/L	7.654	2.5 J	2.5 J	3.5 J	17.4 J	20.9	23.3	4.4 J	2.8 J	20.8	17.6
FLUORIDE, TOTAL	mg/L	0.2606	0.20 J	0.19 J	0.22	0.16 J	0.37	0.29	0.18 J	ND	0.26	0.30
SULFATE, TOTAL	mg/L	75.37	38.6	45.7	65.5	263	220	220	10.1	30.5	274	537
TOTAL DISSOLVED SOLIDS	mg/L	792	828 J	513 J	492	474 J	640	765	442	453	795	1,080
June 2022 Verification Sampling Event												
DATE	NA	NA					6/22/2022	6/22/2022				
pH	SU	6.239-7.394										
BORON, TOTAL	µg/L	147										
CALCIUM, TOTAL	µg/L	219,000										
CHLORIDE, TOTAL	mg/L	7.654										
FLUORIDE, TOTAL	mg/L	0.2606					0.42 J	ND				
SULFATE, TOTAL	mg/L	75.37										
TOTAL DISSOLVED SOLIDS	mg/L	792										

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 and that had not already been verified were tested during Verification Sampling.

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

Piper Diagram



Cation-Anion Balance = 6.333%.

LCPB CCR Rule Monitoring Wells

- L-BMW-1S* 4/6/2022
- L-BMW-2S* 4/6/2022
- L-LMW-1S 4/8/2022
- L-LMW-2S 4/6/2022
- L-LMW-3S 4/8/2022
- L-LMW-4S 4/8/2022
- L-LMW-5S 4/8/2022
- L-LMW-6S 4/8/2022
- L-LMW-7S 4/8/2022
- L-LMW-8S 4/8/2022

Notes
1) Piper diagram generated using Sanitas Software.
2) %mEq/l – milliequivalents per liter
3) Alkalinity data used for BMW-1S represents an average of alkalinity values collected since 2016. April 2022 result is an anomalous outlier which does not accurately represent groundwater conditions at the well.

CLIENT/PROJECT										
AMEREN MISSOURI LABADIE ENERGY CENTER				GOLDER			TITLE **LCPB Piper Diagram for April 2022**			
DRAWN BTT	CHECKED EMS	REVIEWED MNH	DATE 2022-07-19	SCALE N/A	FILE NO. N/A	JOB NO. 153140604.0001	DWG NO. N/A	SUBTITLE N/A	REV. NO. N/A	FIGURE **1**

APPENDIX A

Falcon Analysis Calculation Package

CALCULATION PACKAGE

DATE November 18, 2022 **Project No.** 153140604

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

CC

FROM Mark Haddock, P.E., R.G., Jeffrey Ingram, R.G. **EMAIL Jeffrey.Ingram@WSP.com**

APPENDIX A - LCPB FALCON ANALYSIS CALCULATION PACKAGE

1.0 OBJECTIVE

The objective of this calculation package is to determine if there is a correlation between the ion ratio fingerprints in the LCPA pore-water, LCPB pore-water, or background groundwater with the compliance monitoring wells in the alluvial aquifer at the Labadie Energy Center (LEC).

2.0 FINGERPRINT ANALYSIS OF LEACHATE CONTAMINANTS (FALCON) METHOD

The Fingerprint Analysis of Leachate Contaminants (FALCON) method was developed in 2004 by the United States Environmental Protection Agency (USEPA) as a tool to identify the source of impacts within groundwater. The FALCON method compiles ion ratios for multiple constituents in order to develop a distinctive chemical fingerprint for each possible contaminant source and un-impacted background groundwater. These signatures were correlated to data downgradient of the sources and are used to characterize the source of the contaminant plume. For this calculation, background groundwater quality is based on background wells located approximately 2 to 2.5 miles west of the LCPB. Source data are from pore-water collected from temporary piezometers within the LCPA and LCPB. Fingerprints from these three sources (background groundwater, LCPA pore-water, and LCPB pore-water) were compared to data from alluvial aquifer sampling locations at the LEC. Data from the LCPA and LCPB pore-water are from the November 2017 ASD for the LCPB, which is available in the 2018 Annual Report for the LCPB. Data from the background and compliance monitoring wells are from the April 2022 sampling event.

3.0 SELECTION OF CONSTITUENTS TO USE

The first step in completing the FALCON analysis was to select a subset of constituents that are representative of the potential source areas. When selecting these constituents, it is important to include constituents that are mobile in the hydrogeological environment and that can uniquely characterize each water type. Constituents selected included major cation and anion constituents that represent groundwater chemistry and selected key indicators of CCR impacts. Values of the three different sources were compared to see which constituents fit the criteria. A summary table of the values used for the three sources is provided in **Table 1**. The following constituents were selected to complete the FALCON analysis:

- Alkalinity
- Total Boron
- Total Calcium
- Total Chloride
- Total Fluoride
- Total Iron
- Total Magnesium
- Total Manganese
- Total Potassium
- Total Sodium
- Total Sulfate

4.0 DATA TABULATION AND NORMALIZATION

Once the constituents were selected, the data were tabulated, normalized, and a graphical presentation of the fingerprints were produced. The data used, along with the normalization percentages, are provided in **Table 1** for the three different sources (background groundwater, LCPA pore-water, and LCPB pore-water) as well as for each monitoring well evaluated. Correlations were then completed between the different sources to determine each source's reproducibility. Tables displaying these correlations are provided below in **Tables 2-4**.

Table 2 – Background Groundwater Correlations

Well ID	*L-BMW-1D*	*L-BMW-1S*	*L-BMW-2D*	*L-BMW-2S*
L-BMW-1D				
L-BMW-1S	98.8%			
L-BMW-2D	99.8%	99.4%		
L-BMW-2S	99.4%	99.9%	99.9%	
Average Fingerprint Reproducibility			99.5%	

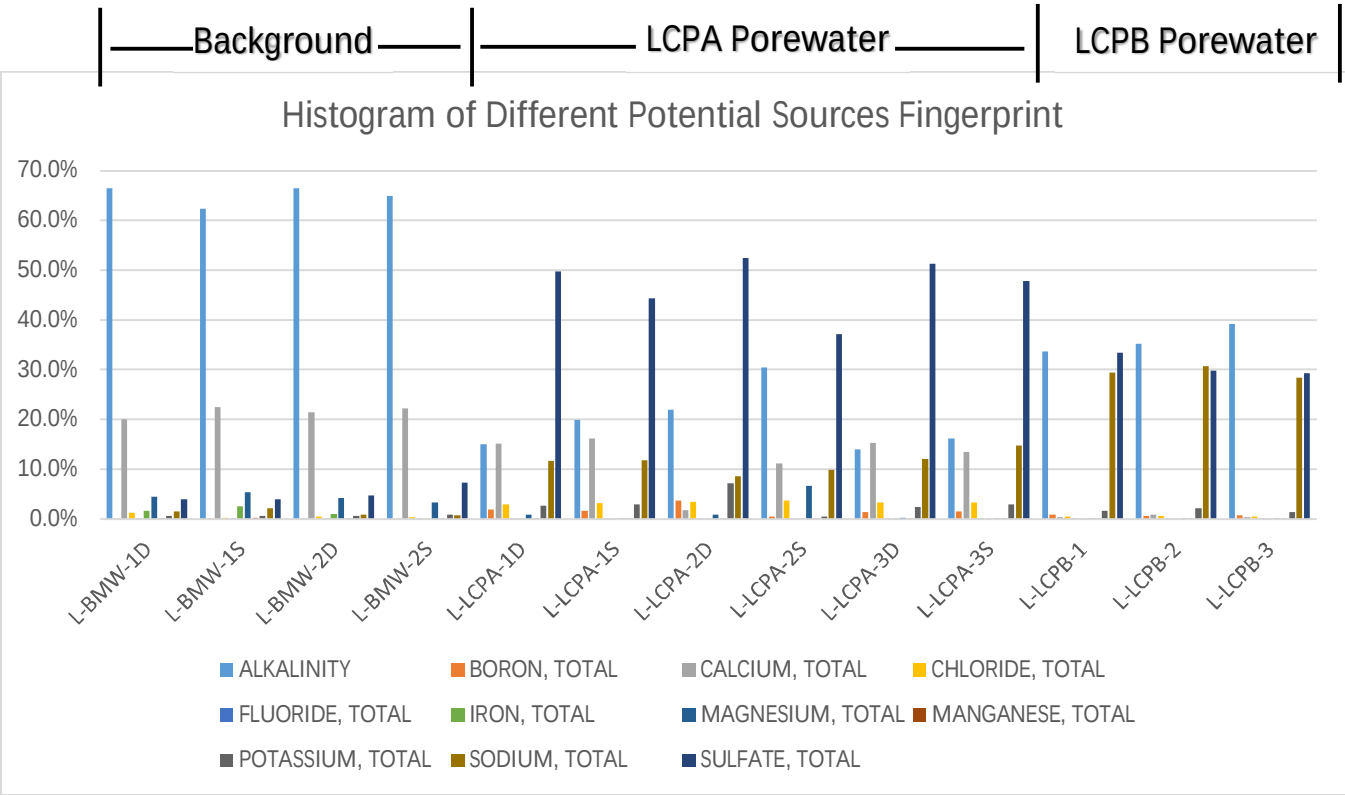
Table 3 – LCPB Pore-water Correlations

Well ID	*L-LCPB-1*	*L-LCPB-2*	*L-LCPB-3*
L-LCPB-1			
L-LCPB-2	99.6%		
L-LCPB-3	98.9%	99.5%	
Average Fingerprint Reproducibility			99.4%

Table 4 – LCPA Pore-water Correlations

	L-LCPA-1D	*L-LCPA-1S*	*L-LCPA-2D*	*L-LCPA-2S*	*L-LCPA-3D*	*L-LCPA-3S*
L-LCPA-1D						
L-LCPA-1S	98.9%					
L-LCPA-2D	94.5%	93.8%				
L-LCPA-2S	88.9%	93.3%	90.0%			
L-LCPA-3D	99.9%	98.5%	94.1%	87.6%		
L-LCPA-3S	99.6%	99.0%	94.8%	89.8%	99.5%	
Average Fingerprint Reproducibility						94.8%
Average Fingerprint Reproducibility with LCPA-1S, LCPA-1D, LCPA-2D, LCPA-3S and LCPA-3D						97.2%

Additionally, **Figure 1** below displays a histogram of the different source water normalizations. **Figure 1 – Histogram of Source Water Normalizations at the LEC**



As described in the ASD report for the November 2017 monitoring results (provided in the 2018 Annual Report for the LCPB), samples collected within the LCPA unit displayed less correlation due to the spatial variation of sample locations and differing materials present in sample intervals. The LCPA has been in operation since the 1970s and there have been many changes to CCR the LCPA received during this time. These include changes in types of coal used onsite and types of CCR placed in the facility (pre-LCPB construction vs. post-LCPB construction). While not as evident using the constituents available for this evaluation

(no Appendix IV constituents were tested because LCPB is under detection monitoring), when compared with the evaluation completed in 2018 for the November 2017 ASD, LCPA-2S still appears to have a weaker correlation (<90% in this case) and is, therefore, evaluated separately. Separating the LCPA into two potential sources (one for LCPA-1S, -1D, -2D, -3S, -3D and one for LCPA-2S) more accurately reflects the conditions within the LCPA due to its spatial variation of constituent concentrations.

5.0 CORRELATING DOWNGRADIENT GROUNDWATER SAMPLES WITH SOURCES

A correlation between the average groundwater concentration and the different source waters was completed to demonstrate which source better correlates with each alluvial aquifer groundwater sample. Results from this correlation are provided in **Table 5** and the values used for this correlation are provided in **Table 1**. The results demonstrate that groundwater in the alluvial aquifer correlates better with the LCPA pore-water or background groundwater than it does with the LCPB pore-water. In no case did a downgradient groundwater sample correlate better with the LCPB pore-water than with the LCPA pore-water or background groundwater.

Table 5 – Summary of April 2022 USEPA FALCON Evaluation

Piezometer or Well ID	Percent Correlation				Highest (Best) Correlation
	Background Groundwater	LCPB Average	LCPA Average (LCPA-1S/D, LCPA-2D & LCPA-3S/D)	LCPA-2S	
L-BMW-1D	100%	56%	25%	59%	Background
L-BMW-1S	100%	55%	25%	59%	Background
L-BMW-2D	100%	56%	26%	60%	Background
L-BMW-2S	100%	58%	30%	64%	Background
L-AM-1D	28%	76%	99%	92%	Average LCPA
L-AM-1S	97%	54%	21%	56%	Background
L-AMW-8	25%	76%	99%	91%	Average LCPA
L-LMW-1S	99%	62%	38%	69%	Background
L-LMW-2S	6%	61%	97%	81%	Average LCPA
L-LMW-3S	70%	91%	85%	97%	LCPA-2S
L-LMW-4S	88%	84%	67%	90%	LCPA-2S
L-LMW-5S	100%	53%	23%	57%	Background
L-LMW-6S	100%	59%	27%	61%	Background
L-LMW-7S	73%	81%	85%	98%	LCPA-2S
L-LMW-8S	52%	77%	96%	98%	LCPA-2S
L-MW-24	100%	57%	26%	61%	Background
L-MW-26	100%	56%	26%	60%	Background
L-MW-33(D)	29%	75%	100%	93%	Average LCPA
L-MW-34(D)	59%	83%	93%	99%	LCPA-2S

Piezometer or Well ID	Percent Correlation				Highest (Best) Correlation
	Background Groundwater	LCPB Average	LCPA Average (LCPA-1S/D, LCPA-2D & LCPA-3S/D)	LCPA-2S	
L-MW-35(D)	52%	80%	96%	98%	LCPA-2S
L-S-1	100%	54%	22%	57%	Background
L-TMW-1	99%	62%	36%	68%	Background
L-TMW-2	97%	66%	48%	77%	Background
L-TMW-3	100%	57%	25%	60%	Background
L-TP-1D	100%	56%	23%	58%	Background
L-TP-2D	85%	84%	72%	92%	LCPA-2S
L-TP-2M	84%	84%	74%	93%	LCPA-2S
L-TP-3D	19%	72%	99%	88%	Average LCPA
L-TP-3M	82%	83%	76%	95%	LCPA-2S
L-TP-4D	90%	75%	66%	89%	Background
L-UMW-1D	100%	57%	23%	58%	Background
L-UMW-2D	95%	76%	54%	82%	Background
L-UMW-3D	10%	63%	98%	83%	Average LCPA
L-UMW-4D	10%	70%	98%	84%	Average LCPA
L-UMW-5D	23%	70%	99%	88%	Average LCPA
L-UMW-6D	3%	58%	97%	79%	Average LCPA
L-UMW-7D	100%	62%	35%	67%	Background
L-UMW-8D	98%	71%	38%	71%	Background
L-UMW-9D	99%	53%	18%	54%	Background

Notes

1) Values display percent correlation between each sampling point and the LCPA Average (LCPA-1S, LCPA-1D, LCPA-2D, LCPA-3S, and LCPA-3D), LCPA-2S, LCPB, or Background fingerprints.

2) The higher values are shaded darker and indicate better correlation.

Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-BMW-1D	L-BMW-1S	L-BMW-2D	L-BMW-2S	L-AM-1D	L-AM-1S	L-AMW-8
ALKALINITY	mg/L	443	613	381	403	139	551	86.6
BORON, TOTAL	mg/L	0.086	0.109	0.079	0.0552	8.05	0.306	5.96
CALCIUM, TOTAL	mg/L	134	221	123	138	109	194	63.4
CHLORIDE, TOTAL	mg/L	8.4	2.5	2.6	2.5	36.4	138	20.1
FLUORIDE, TOTAL	mg/L	0.1	0.2	0.19	0.19	0.4	0.2	0.37
IRON, TOTAL	mg/L	11	24.8	5.77	0.025	5.15	4.4	4.07
MAGNESIUM, TOTAL	mg/L	30	53.1	24.3	20.9	13.7	37.4	8.83
MANGANESE, TOTAL	mg/L	1	2.74	0.234	0.0025	0.282	1.39	0.29
POTASSIUM, TOTAL	mg/L	5	5.92	3.82	5.79	8.63	7.2	6.13
SODIUM, TOTAL	mg/L	10	20.7	5.01	4.34	115	59.5	78.6
SULFATE, TOTAL	mg/L	26.1	38.6	27.1	45.7	371	22.3	248
Sum		667.3	982.7	573.1	620.5	806.6	1015.7	522.4

Analyte	L-BMW-1D	L-BMW-1S	L-BMW-2D	L-BMW-2S	L-AM-1D	L-AM-1S	L-AMW-8
ALKALINITY	66%	62%	66%	65%	17%	54%	17%
BORON, TOTAL	0.013%	0.011%	0.014%	0.0089%	1%	0.03%	1.1%
CALCIUM, TOTAL	20%	22%	21%	22%	14%	19%	12%
CHLORIDE, TOTAL	1.3%	0.25%	0.45%	0.4%	4.5%	14%	3.8%
FLUORIDE, TOTAL	0.015%	0.02%	0.033%	0.031%	0.05%	0.02%	0.071%
IRON, TOTAL	1.6%	2.5%	1%	0.004%	0.64%	0.43%	0.78%
MAGNESIUM, TOTAL	4.5%	5.4%	4.2%	3.4%	1.7%	3.7%	1.7%
MANGANESE, TOTAL	0.11%	0.28%	0.041%	0.0004%	0.035%	0.14%	0.056%
POTASSIUM, TOTAL	0.68%	0.6%	0.67%	0.93%	1.1%	0.71%	1.2%
SODIUM, TOTAL	1.5%	2.1%	0.87%	0.7%	14%	5.9%	15%
SULFATE, TOTAL	3.9%	3.9%	4.7%	7.4%	46%	2.2%	47%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

1) Values for CCR Rule monitoring wells from April 2022 samples collected for the CCR Rule.

2) Unit abbreviations - mg/L - milligrams per liter.

3) Half (1/2) the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

4) The alkalinity value represented for BMW-1S is an average of all available alkalinity data at the well. The April 2022 result is a non-detect outlier which does not accurately represent observed alkalinity concentrations at BMW-1S.

Prepared By: BTT
Checked By: EMS
Reviewed By: MNH

Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-LMW-1S	L-LMW-2S	L-LMW-3S	L-LMW-4S	L-LMW-5S	L-LMW-6S	L-LMW-7S
ALKALINITY	mg/L	335	34.3	233	397	359	372	287
BORON, TOTAL	mg/L	1.13	3.33	3.88	8.24	0.053	2.35	10.7
CALCIUM, TOTAL	mg/L	116	69.7	90.4	127	132	105	136
CHLORIDE, TOTAL	mg/L	3.5	17.4	20.9	23.3	4.4	2.8	20.8
FLUORIDE, TOTAL	mg/L	0.22	0.16	0.37	0.29	0.18	0.1	0.26
IRON, TOTAL	mg/L	3.56	0.025	5.99	12	0.0431	11.2	4.91
MAGNESIUM, TOTAL	mg/L	20.9	0.0899	9.36	27.1	13.6	20.2	30.5
MANGANESE, TOTAL	mg/L	0.878	0.0025	0.603	1.88	0.0131	1.31	1.41
POTASSIUM, TOTAL	mg/L	3.73	9.26	8.1	6.96	2.99	5.2	6.86
SODIUM, TOTAL	mg/L	7.6	64	99.9	92.4	7.81	17.1	59
SULFATE, TOTAL	mg/L	65.5	263	220	220	10.1	30.5	274
Sum		558.0	461.3	692.5	916.2	530.2	567.8	831.4

Analyte	L-LMW-1S	L-LMW-2S	L-LMW-3S	L-LMW-4S	L-LMW-5S	L-LMW-6S	L-LMW-7S
ALKALINITY	60%	7.4%	34%	43%	68%	66%	35%
BORON, TOTAL	0.2%	0.72%	0.56%	0.9%	0.01%	0.41%	1.3%
CALCIUM, TOTAL	21%	15%	13%	14%	25%	18%	16%
CHLORIDE, TOTAL	0.63%	3.8%	3%	2.5%	0.83%	0.49%	2.5%
FLUORIDE, TOTAL	0.039%	0.035%	0.053%	0.032%	0.034%	0.018%	0.031%
IRON, TOTAL	0.64%	0.0054%	0.86%	1.3%	0.0081%	2%	0.59%
MAGNESIUM, TOTAL	3.7%	0.019%	1.4%	3%	2.6%	3.6%	3.7%
MANGANESE, TOTAL	0.16%	0.00054%	0.087%	0.21%	0.0025%	0.23%	0.17%
POTASSIUM, TOTAL	0.67%	2%	1.2%	0.76%	0.56%	0.92%	0.83%
SODIUM, TOTAL	1.4%	14%	14%	10%	1.5%	3%	7.1%
SULFATE, TOTAL	12%	57%	32%	24%	1.9%	5.4%	33%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

1) Values for CCR Rule monitoring wells from April 2022 samples collected for the CCR Rule.
2) Unit abbreviations - mg/L - milligrams per liter.
3) One-half the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-LMW-8S	L-MW-24	L-MW-26	L-MW-33(D)	L-MW-34(D)	L-MW-35(D)	L-S-1
ALKALINITY	mg/L	340	402	414	122	198	228	453
BORON, TOTAL	mg/L	7.89	0.0787	0.0968	9.76	10.2	8.64	0.114
CALCIUM, TOTAL	mg/L	194	127	140	82.5	97.1	128	138
CHLORIDE, TOTAL	mg/L	17.6	3.7	5.9	21.3	19.3	16.9	4.9
FLUORIDE, TOTAL	mg/L	0.3	0.18	0.1	0.38	0.31	0.29	1.7
IRON, TOTAL	mg/L	7.05	0.025	0.025	4.19	5.19	5.44	0.0764
MAGNESIUM, TOTAL	mg/L	33.8	25.9	26.3	18.1	23.5	29.1	21.3
MANGANESE, TOTAL	mg/L	2.55	0.0112	0.115	0.239	0.252	0.416	0.651
POTASSIUM, TOTAL	mg/L	7.96	4.28	4.04	6.13	6.72	5.41	28.1
SODIUM, TOTAL	mg/L	90.9	6.66	5.96	85.5	69.3	80.7	3.7
SULFATE, TOTAL	mg/L	537	28.1	29	322	257	353	14.1
Sum		1239.1	597.9	625.5	672.1	686.9	855.9	665.6

Analyte	L-LMW-8S	L-MW-24	L-MW-26	L-MW-33(D)	L-MW-34(D)	L-MW-35(D)	L-S-1
ALKALINITY	27%	67%	66%	18%	29%	27%	68%
BORON, TOTAL	0.64%	0.013%	0.015%	1.5%	1.5%	1%	0.017%
CALCIUM, TOTAL	16%	21%	22%	12%	14%	15%	21%
CHLORIDE, TOTAL	1.4%	0.62%	0.94%	3.2%	2.8%	2%	0.74%
FLUORIDE, TOTAL	0.024%	0.03%	0.016%	0.057%	0.045%	0.034%	0.26%
IRON, TOTAL	0.57%	0.0042%	0.004%	0.62%	0.76%	0.64%	0.011%
MAGNESIUM, TOTAL	2.7%	4.3%	4.2%	2.7%	3.4%	3.4%	3.2%
MANGANESE, TOTAL	0.21%	0.0019%	0.018%	0.036%	0.037%	0.049%	0.098%
POTASSIUM, TOTAL	0.64%	0.72%	0.65%	0.91%	0.98%	0.63%	4.2%
SODIUM, TOTAL	7.3%	1.1%	0.95%	13%	10%	9.4%	0.56%
SULFATE, TOTAL	43%	4.7%	4.6%	48%	37%	41%	2.1%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

1) Values for CCR Rule monitoring wells from April 2022 samples collected for the CCR Rule.
2) Unit abbreviations - mg/L - milligrams per liter.
3) One-half the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-TMW-1	L-TMW-2	L-TMW-3	L-TP-1D	L-TP-2D	L-TP-2M	L-TP-3D
ALKALINITY	mg/L	524	620	469	476	239	245	119
BORON, TOTAL	mg/L	0.114	0.11	0.116	0.0796	1.82	1.82	10.4
CALCIUM, TOTAL	mg/L	165	220	141	135	92.8	97.4	101
CHLORIDE, TOTAL	mg/L	2.9	11.9	2.5	3.8	24.2	24.4	23.7
FLUORIDE, TOTAL	mg/L	0.21	0.1	0.2	0.1	0.45	0.47	0.1
IRON, TOTAL	mg/L	0.0385	0.466	0.735	7.78	3.37	2.84	4.43
MAGNESIUM, TOTAL	mg/L	40.8	56.3	27.7	32.3	16.6	14.6	22.8
MANGANESE, TOTAL	mg/L	1.51	3.2	0.241	0.221	0.305	0.411	0.178
POTASSIUM, TOTAL	mg/L	5	7.05	6.16	4.18	5.75	6.74	6.75
SODIUM, TOTAL	mg/L	10.1	12.5	9.55	11.6	60.4	64.9	120
SULFATE, TOTAL	mg/L	91.9	197	27.8	18.4	152	164	434
Sum		841.6	1128.6	685.0	689.5	596.7	622.6	842.4

Analyte	L-TMW-1	L-TMW-2	L-TMW-3	L-TP-1D	L-TP-2D	L-TP-2M	L-TP-3D
ALKALINITY	62%	55%	68%	69%	40%	39%	14%
BORON, TOTAL	0.014%	0.0097%	0.017%	0.012%	0.31%	0.29%	1.2%
CALCIUM, TOTAL	20%	19%	21%	20%	16%	16%	12%
CHLORIDE, TOTAL	0.34%	1.1%	0.36%	0.55%	4.1%	3.9%	2.8%
FLUORIDE, TOTAL	0.025%	0.0089%	0.029%	0.015%	0.075%	0.075%	0.012%
IRON, TOTAL	0.0046%	0.041%	0.11%	1.1%	0.56%	0.46%	0.53%
MAGNESIUM, TOTAL	4.8%	5%	4%	4.7%	2.8%	2.3%	2.7%
MANGANESE, TOTAL	0.18%	0.28%	0.035%	0.032%	0.051%	0.066%	0.021%
POTASSIUM, TOTAL	0.59%	0.62%	0.9%	0.61%	0.96%	1.1%	0.8%
SODIUM, TOTAL	1.2%	1.1%	1.4%	1.7%	10%	10%	14%
SULFATE, TOTAL	11%	17%	4.1%	2.7%	25%	26%	52%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

1) Values for CCR Rule monitoring wells from April 2022 samples collected for the CCR Rule.
2) Unit abbreviations - mg/L - milligrams per liter.
3) One-half the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

Prepared By: BTT
Checked By: EMS
Reviewed By: MNH

Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-TP-3M	L-TP-4D	L-UMW-1D	L-UMW-2D	L-UMW-3D	L-UMW-4D	L-UMW-5D
ALKALINITY	mg/L	260	311	518	362	43.2	60.3	85.9
BORON, TOTAL	mg/L	5.4	6.9	0.504	1.03	10.7	3.15	13.4
CALCIUM, TOTAL	mg/L	102	125	141	125	70	58.5	94.5
CHLORIDE, TOTAL	mg/L	18.5	14.6	9.6	31.5	19.6	20	19.2
FLUORIDE, TOTAL	mg/L	0.1	0.1	0.27	0.1	0.2	0.37	0.1
IRON, TOTAL	mg/L	7.35	5.6	15.9	3.64	0.299	0.229	0.0261
MAGNESIUM, TOTAL	mg/L	21.9	32.7	34.2	26.3	6.52	6.75	0.025
MANGANESE, TOTAL	mg/L	1.26	0.335	0.394	0.443	0.15	0.266	0.008
POTASSIUM, TOTAL	mg/L	5	4.73	6.4	8.03	7.67	7.92	15.1
SODIUM, TOTAL	mg/L	56.7	26.9	22.2	62.7	62	95.3	75.5
SULFATE, TOTAL	mg/L	190	177	20.3	138	249	301	283
Sum		668.2	704.9	768.8	758.7	469.3	553.8	586.8

Analyte	L-TP-3M	L-TP-4D	L-UMW-1D	L-UMW-2D	L-UMW-3D	L-UMW-4D	L-UMW-5D
ALKALINITY	39%	44%	67%	48%	9.2%	11%	15%
BORON, TOTAL	0.81%	0.98%	0.066%	0.14%	2.3%	0.57%	2.3%
CALCIUM, TOTAL	15%	18%	18%	16%	15%	11%	16%
CHLORIDE, TOTAL	2.8%	2.1%	1.2%	4.2%	4.2%	3.6%	3.3%
FLUORIDE, TOTAL	0.015%	0.014%	0.035%	0.013%	0.043%	0.067%	0.017%
IRON, TOTAL	1.1%	0.79%	2.1%	0.48%	0.064%	0.041%	0.0044%
MAGNESIUM, TOTAL	3.3%	4.6%	4.4%	3.5%	1.4%	1.2%	0.0043%
MANGANESE, TOTAL	0.19%	0.048%	0.051%	0.058%	0.032%	0.048%	0.0014%
POTASSIUM, TOTAL	0.75%	0.67%	0.83%	1.1%	1.6%	1.4%	2.6%
SODIUM, TOTAL	8.5%	3.8%	2.9%	8.3%	13%	17%	13%
SULFATE, TOTAL	28%	25%	2.6%	18%	53%	54%	48%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

1) Values for CCR Rule monitoring wells from April 2022 samples collected for the CCR Rule.
2) Unit abbreviations - mg/L - milligrams per liter.
3) One-half the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

Prepared By: BTT
Checked By: EMS
Reviewed By: MNH

Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-UMW-6D	L-UMW-7D	L-UMW-8D	L-UMW-9D	L-LCPA-1D	L-LCPA-1S	L-LCPA-2D
ALKALINITY	mg/L	50.8	463	408	409	77.6	120	128
BORON, TOTAL	mg/L	12.4	1.92	2.78	0.106	10	10.3	21.7
CALCIUM, TOTAL	mg/L	135	154	105	112	78.2	97.1	10.6
CHLORIDE, TOTAL	mg/L	18.7	8.2	8.3	24.1	15.2	18.9	19.8
FLUORIDE, TOTAL	mg/L	0.1	0.29	0.1	0.19	0.2	0.088	0.14
IRON, TOTAL	mg/L	0.852	11.3	16.6	22.4	0.178	0.138	0.0869
MAGNESIUM, TOTAL	mg/L	7.03	21	26.5	30.3	4.47	0.184	5.43
MANGANESE, TOTAL	mg/L	0.67	1.59	0.586	0.376	0.0041	0.0032	0.0025
POTASSIUM, TOTAL	mg/L	20.3	4.98	5.23	3.97	14	17.8	42.1
SODIUM, TOTAL	mg/L	108	20.5	57	12.9	60	71.1	50.5
SULFATE, TOTAL	mg/L	537	74.3	82.4	0.5	257	267	306
Sum		890.9	761.1	712.5	615.8	516.9	602.6	584.4

Analyte	L-UMW-6D	L-UMW-7D	L-UMW-8D	L-UMW-9D	L-LCPA-1D	L-LCPA-1S	L-LCPA-2D
ALKALINITY	5.7%	61%	57%	66%	15%	20%	22%
BORON, TOTAL	1.4%	0.25%	0.39%	0.017%	1.9%	1.7%	3.7%
CALCIUM, TOTAL	15%	20%	15%	18%	15%	16%	1.8%
CHLORIDE, TOTAL	2.1%	1.1%	1.2%	3.9%	2.9%	3.1%	3.4%
FLUORIDE, TOTAL	0.011%	0.038%	0.014%	0.031%	0.039%	0.015%	0.024%
IRON, TOTAL	0.096%	1.5%	2.3%	3.6%	0.034%	0.023%	0.015%
MAGNESIUM, TOTAL	0.79%	2.8%	3.7%	4.9%	0.86%	0.031%	0.93%
MANGANESE, TOTAL	0.075%	0.21%	0.082%	0.061%	0.00079%	0.00053%	0.00043%
POTASSIUM, TOTAL	2.3%	0.65%	0.73%	0.64%	2.7%	3%	7.2%
SODIUM, TOTAL	12%	2.7%	8%	2.1%	12%	12%	8.6%
SULFATE, TOTAL	60%	9.8%	12%	0.081%	50%	44%	52%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes

1) Values for CCR Rule monitoring wells from April 2022. Values for pore-water samples from LCPB ASD investigation collected in February-March 2018.

2) Unit abbreviations - mg/L - milligrams per liter.

3) Half (1/2) the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

Prepared By: BTT
Checked By: EMS
Reviewed By: MNH

Table 1
Summary of Concentrations Used for Correlation
LCPB Alternative Source Demonstration
Labadie Energy Center, Franklin County, MO

Analyte	Units	L-LCPA-2S	L-LCPA-3D	L-LCPA-3S	L-LCPB-1	L-LCPB-2	L-LCPB-3
ALKALINITY	mg/L	208	80.2	91.8	1070	861	1340
BORON, TOTAL	mg/L	3.36	8.1	8.44	28.2	14.8	25.7
CALCIUM, TOTAL	mg/L	76.5	87.7	76.9	11.4	22.6	11.4
CHLORIDE, TOTAL	mg/L	25.5	18.9	18.6	15.6	16.2	18.4
FLUORIDE, TOTAL	mg/L	0.17	0.16	0.16	2.4	1	1.9
IRON, TOTAL	mg/L	0.0279	0.122	0.112	0.0273	0.129	0.384
MAGNESIUM, TOTAL	mg/L	45.5	1.54	0.445	0.0844	0.0874	0.386
MANGANESE, TOTAL	mg/L	0.0392	0.0023	0.0025	0.0025	0.0025	0.0023
POTASSIUM, TOTAL	mg/L	3.54	14.2	16.6	51	52.6	48.2
SODIUM, TOTAL	mg/L	67.2	69	84	935	750	969
SULFATE, TOTAL	mg/L	254	295	272	1060	728	999
Sum		683.8	574.9	569.1	3173.7	2446.4	3414.4

Analyte	L-LCPA-2S	L-LCPA-3D	L-LCPA-3S	L-LCPB-1	L-LCPB-2	L-LCPB-3
ALKALINITY	30%	14%	16%	34%	35%	39%
BORON, TOTAL	0.49%	1.4%	1.5%	0.89%	0.6%	0.75%
CALCIUM, TOTAL	11%	15%	14%	0.36%	0.92%	0.33%
CHLORIDE, TOTAL	3.7%	3.3%	3.3%	0.49%	0.66%	0.54%
FLUORIDE, TOTAL	0.025%	0.028%	0.028%	0.076%	0.041%	0.056%
IRON, TOTAL	0.0041%	0.021%	0.02%	0.00086%	0.0053%	0.011%
MAGNESIUM, TOTAL	6.7%	0.27%	0.078%	0.0027%	0.0036%	0.011%
MANGANESE, TOTAL	0.0057%	0.0004%	0.00044%	0.000079%	0.0001%	0.000067%
POTASSIUM, TOTAL	0.52%	2.5%	2.9%	1.6%	2.2%	1.4%
SODIUM, TOTAL	9.8%	12%	15%	29%	31%	28%
SULFATE, TOTAL	37%	51%	48%	33%	30%	29%
Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

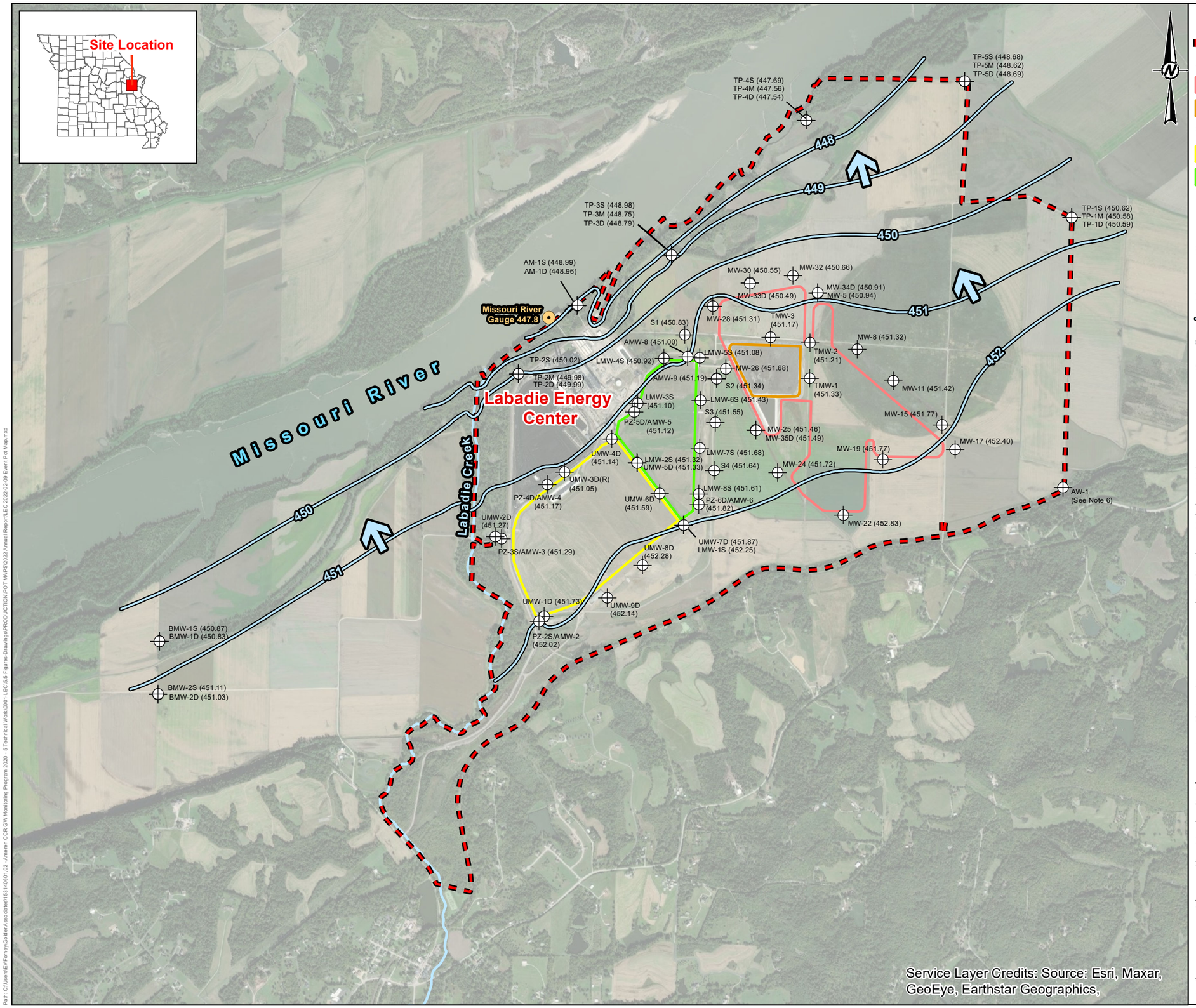
Notes

1) Values for pore-water samples from LCPB ASD investigation collected in February-March 2018.
2) Unit abbreviations - mg/L - milligrams per liter.
3) One-half the value of the Method Detection Limit (MDL) is used for non-detect values (values less than the MDL).

Prepared By: BTT
Checked By: EMS
Reviewed By: MNH

APPENDIX D

2022 Potentiometric Surface Maps



LEGEND

Labadie Energy Center Property Boundary

Utility Waste Landfill (UWL)

Proposed Final UWL Fence Perimeter

LCL1 - Utility Waste Landfill Cell 1

Surface Impoundments

LCPA - Bottom Ash Surface Impoundment

LCPB - Fly Ash Surface Impoundment

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 ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FT MSL (FEET ABOVE MEAN SEA LEVEL).
4. MISSOURI RIVER LEVEL OBTAINED FROM USGS LABADIE GAUGE 06935550.
5. THE UWL BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.
6. 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. COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.
3. USGS (UNITED STATES GEOLOGICAL SURVEY), NATIONAL WATER INFORMATION SYSTEM, USGS GAUGE 06935550 MISSOURI RIVER NEAR LABADIE, MO.

0 1,000 2,000 3,000 4,000 5,000 6,000

Feet

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
FEBRUARY 9, 2022 POTENTIOMETRIC SURFACE MAP

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-05
PREPARED	GTM
DESIGN	JSI
REVIEW	SSS/EMS
APPROVED	MNH

PROJECT No. 153140604 | PHASE 0001 | FIGURE **D1**

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

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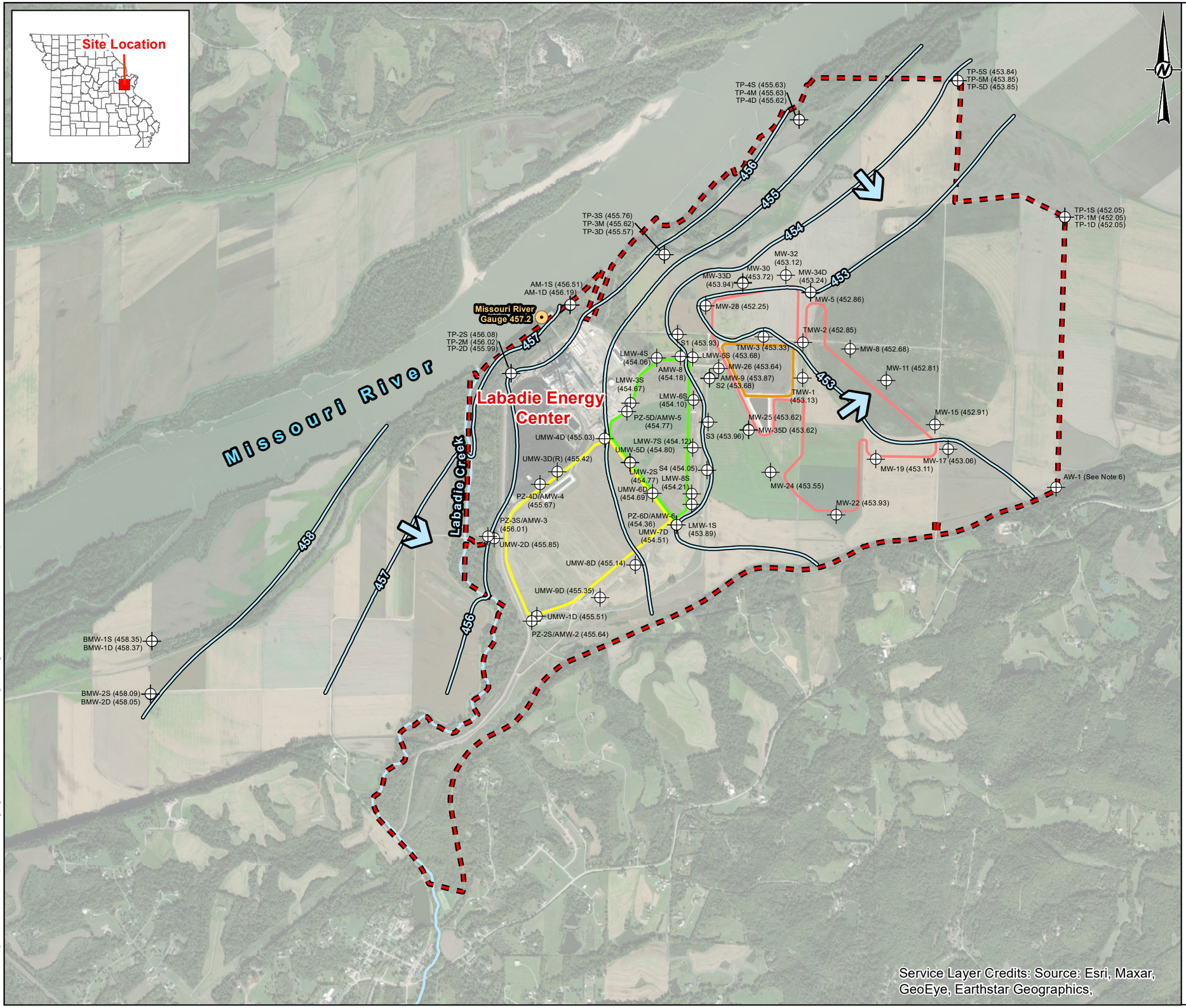

LEGEND

- Labadie Energy Center Property Boundary

Utility Waste Landfill (UWL)

- Proposed Final UWL Fence Perimeter
- LCL1 - Utility Waste Landfill Cell 1

Surface Impoundments

- LCPA - Bottom Ash Surface Impoundment
- LCPB - Fly Ash Surface Impoundment

Monitoring Well or Piezometer

- Monitoring Well or Piezometer

Surface Water Elevation Measurement Location

- Missouri River Gauge

Groundwater Elevation Contours

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

NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FT MSL (FEET ABOVE MEAN SEA LEVEL).
4. MISSOURI RIVER LEVEL OBTAINED FROM USGS LABADIE GAUGE 06935550.
5. THE UWL BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.
6. 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. COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.
3. USGS (UNITED STATES GEOLOGICAL SURVEY), NATIONAL WATER INFORMATION SYSTEM, USGS GAUGE 06935550 MISSOURI RIVER NEAR LABADIE, MO.

0 1,000 2,000 3,000 4,000 5,000 6,000

Feet

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
APRIL 5, 2022 POTENTIOMETRIC SURFACE MAP

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2023-01-05
PREPARED	JSI
DESIGN	JSI
REVIEW	BTT
APPROVED	MNH

PROJECT No. 153140604
PHASE 0001
FIGURE **D2**

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

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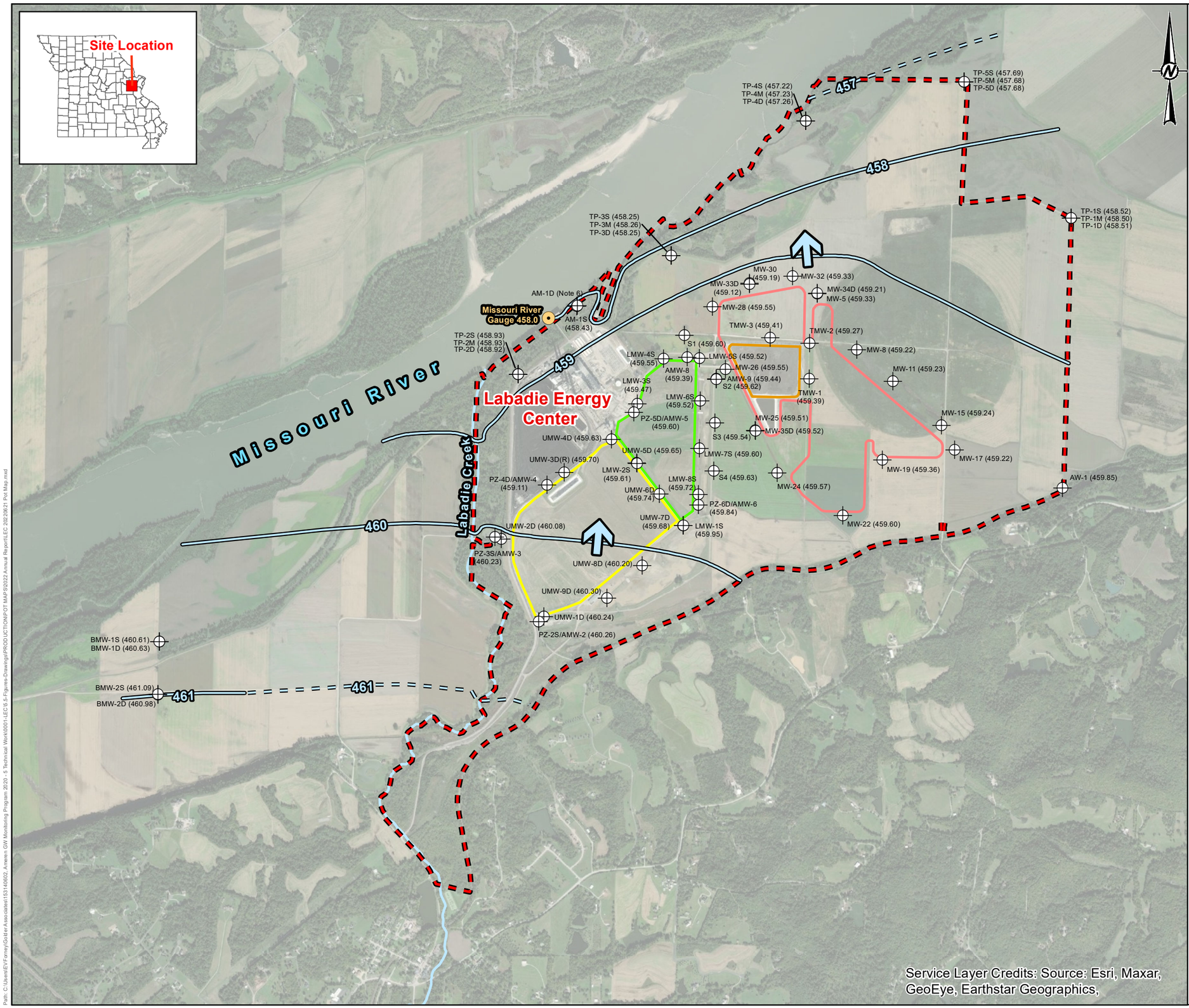

LEGEND

- Labadie Energy Center Property Boundary

Utility Waste Landfill (UWL)

- Proposed Final UWL Fence Perimeter
- LCL1 - Utility Waste Landfill Cell 1

Surface Impoundments

- LCPA - Bottom Ash Surface Impoundment
- LCPB - Fly Ash Surface Impoundment

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 ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FT MSL (FEET ABOVE MEAN SEA LEVEL).
4. MISSOURI RIVER LEVEL OBTAINED FROM USGS LABADIE GAUGE 06935550.
5. THE UWL BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.
6. GROUNDWATER ELEVATION COULD NOT BE COLLECTED WITHIN 24 HOURS OF OTHER ELEVATIONS DUE TO AN OBSTRUCTION AT AM-1D.

REFERENCES

1. ZAHNER AND ASSOCIATES, INC. 2016. LOT CONSOLIDATION PLAT OF "LABADIE ENERGY CENTER" - PREPARED FOR AMEREN MISSOURI. REVISED JUNE 15, 2016.
2. COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.
3. USGS (UNITED STATES GEOLOGICAL SURVEY), NATIONAL WATER INFORMATION SYSTEM, USGS GAUGE 06935550 MISSOURI RIVER NEAR LABADIE, MO.

0 1,000 2,000 3,000 4,000 5,000 6,000

Feet

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
JUNE 21, 2022 POTENTIOMETRIC SURFACE MAP

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2023-01-05
PREPARED	ETF
DESIGN	ETF
REVIEW	GTM
APPROVED	MNH

PROJECT No. 153140604
PHASE 0001
FIGURE **D3**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 11in

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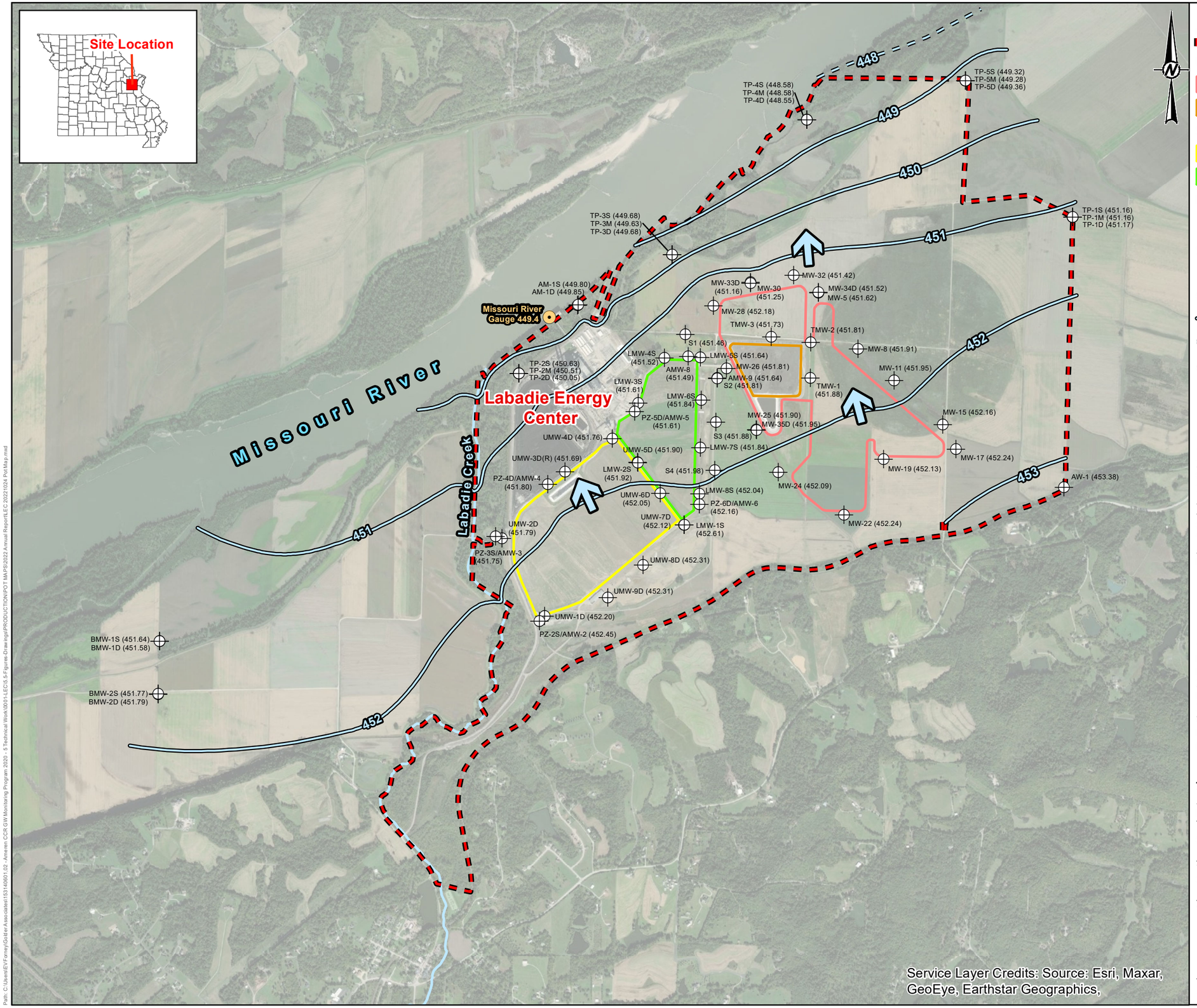

LEGEND

- Labadie Energy Center Property Boundary

Utility Waste Landfill (UWL)

- Proposed Final UWL Fence Perimeter
- LCL1 - Utility Waste Landfill Cell 1

Surface Impoundments

- LCPA - Bottom Ash Surface Impoundment
- LCPB - Fly Ash Surface Impoundment

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 ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FT MSL (FEET ABOVE MEAN SEA LEVEL).
4. MISSOURI RIVER LEVEL OBTAINED FROM USGS LABADIE GAUGE 06935550.
5. THE UWL BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.

REFERENCES

1. ZAHNER AND ASSOCIATES, INC. 2016. LOT CONSOLIDATION PLAT OF "LABADIE ENERGY CENTER" - PREPARED FOR AMEREN MISSOURI. REVISED JUNE 15, 2016.
2. COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.
3. USGS (UNITED STATES GEOLOGICAL SURVEY), NATIONAL WATER INFORMATION SYSTEM, USGS GAUGE 06935550 MISSOURI RIVER NEAR LABADIE, MO.

0 1,000 2,000 3,000 4,000 5,000 6,000 Feet

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
OCTOBER 24, 2022 POTENTIOMETRIC SURFACE MAP

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2023-01-05
PREPARED	ETF
DESIGN	JSI
REVIEW	GTM
APPROVED	MNH

PROJECT No. 153140604
PHASE 0001
FIGURE **D4**

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

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