2020 Annual Groundwater Monitoring and Corrective Action Report

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

Submitted to:

Ameren Missouri
1901 Chouteau Avenue
St. Louis, Missouri 63103

Submitted by:

Golder Associates Inc.
13515 Barrett Parkway Drive, Suite 260, Ballwin, Missouri, USA 63021
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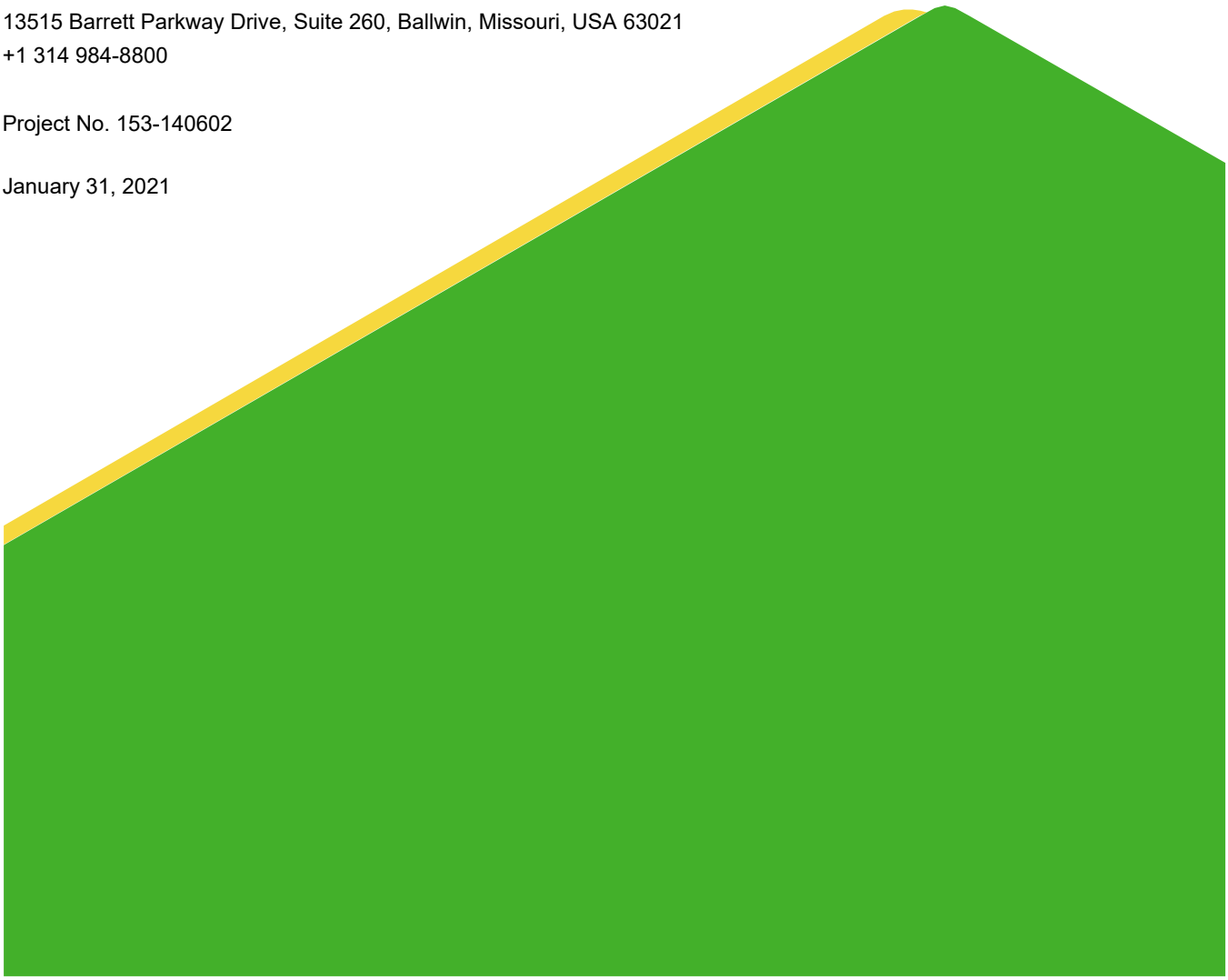
Project No. 153-140602

January 31, 2021



1.0 EXECUTIVE SUMMARY AND STATUS OF THE LCL1 GROUNDWATER MONITORING PROGRAM

This annual report was developed to meet the requirements of United States Environmental Protection Agency (USEPA) 40 CFR Part 257 "Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule" (the CCR Rule). The CCR Rule requires owners or operators of existing CCR units to produce an Annual Groundwater Monitoring and Corrective Action Report (Annual Report) each year (§§ 257.90(e)). Ameren Missouri (Ameren) has determined that the Utility Waste Landfill (UWL) at the Labadie Energy Center (LEC) is subject to the requirements of the CCR Rule. The UWL currently only operates LCL1 (Cell 1) which is an on-site landfill cell and manages Coal Combustion Residuals (CCR) from the facility. This Annual Report for the LCL1 describes CCR Rule groundwater monitoring activities from January 1, 2020 through December 31, 2020, including verification results related to late 2019 sampling.

Throughout 2020, the LCL1 CCR unit has been operating under the Detection Monitoring Program (§257.94) which began October 17, 2017. As a part of Detection Monitoring, statistical evaluations are completed after each sampling event to determine if there are any values that represent a Statistically Significant Increase (SSI) over background concentrations. In 2020, SSIs have been determined during one sampling event and a summary of the SSIs for the past year is provided in **Table 1**.

Table 1 – Summary of 2020 LCL1 Sampling Events, Previous Year Verification, and Statistical Evaluations

Event Name	Type of Event and Sampling Dates	Laboratory Analytical Data Receipt Date	Parameters Collected	Verified SSI	SSI Determination Date	ASD Completion Date
November 2019 Sampling Event	Detection Monitoring, November 5-6, 2019	November 27, 2019	Appendix III, Major Cations and Anions	**Boron:** MW-26 **Chloride:** MW-26 **TDS:** MW-26	February 25, 2020	May 22, 2020
	Verification Sampling, January 7-8, 2020	January 17 and February 13, 2020	Detected Appendix III Parameters (See Note 1)			
April 2020 Sampling Event	Detection Monitoring, April 14-21, 2020	May 22 & May 29, 2020 (See Note 2)	Appendix III, Major Cations and Anions	None	August 10, 2020	Not Applicable
	Verification Sampling, May 27, 2020	June 3, 2020	Detected Appendix III Parameters (See Note 1)			
November 2020 Sampling Event	Detection Monitoring, November 2-3, 2020	December 11, 2020	Appendix III, Major Cations and Anions	To be determined after statistical analyses and Verification Sampling are completed in 2021.		

Notes:
1) Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
2) Golder accessed the preliminary data from the April 2020 Detection Monitoring event online on May 22, 2020 so that verification sampling could occur on schedule and concurrently with the subsequent Corrective Action sampling event for the LCPA. The official data from the laboratory was provided to Golder on May 29, 2020 and supported the preliminary data.
3) SSI – Statistically Significant Increase.
4) ASD – Alternative Source Demonstration.
5) TDS – Total Dissolved Solids.

As outlined in section 257.94(e)(2) of the CCR Rule, the owner or operator may demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. An Alternative Source Demonstration (ASD) was prepared for the November 2019 sampling event and is discussed further in this Annual Report.

There were no changes made to the monitoring system in 2020 with no new wells being installed or decommissioned.

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2.0 INSTALLATION OR DECOMMISSIONING OF MONITORING WELLS

In accordance with the CCR Rule, a groundwater monitoring system has been installed to monitor the LCL1. The groundwater monitoring system consists of six (6) groundwater monitoring wells screened in the uppermost aquifer and is displayed in **Figure 1**. No new monitoring wells were installed or decommissioned in 2020 as a part of the CCR Rule monitoring program for the LCL1. For more information on the groundwater monitoring network, details are provided in the previous Annual Groundwater Monitoring Reports for the LCL1.

3.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION

The following sections discuss the sampling events completed for the LCL1 CCR Unit in 2020. **Table 2** below provides a summary of the groundwater samples collected in 2020 including the number of samples, the date of sample collection, and the monitoring program.

Table 2 – Summary of Groundwater Sampling Dates

Sampling Event	Groundwater Monitoring Wells						Monitoring Program
	BMW-1S	BMW-2S	MW-26	TMW-1	TMW-2	TMW-3	
	Date of Sample Collection						
January 2020 Verification Sampling	-	-	1/8/2020	1/7/2020	-	-	Detection
April 2020 Detection Monitoring	4/14/2020	4/14/2020	4/20/2020	4/21/2020	4/21/2020	4/21/2020	Detection
May 2020 Verification Sampling	-	-	-	-	-	5/27/2020	Detection
November 2020 Detection Monitoring	11/2/2020	11/2/2020	11/2/2020	11/3/2020	11/3/2020	11/3/2020	Detection
Total Number of Samples Collected	2	2	3	3	2	3	NA

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

3.1 Detection Monitoring Program

A Detection Monitoring sampling event was completed November 5-6, 2019. Verification sampling and the statistical analysis to evaluate for SSIs for the November 2019 event were not completed until 2020 and are, therefore, included in this report. Detections of Appendix III analytes triggered a verification sampling event, which was completed on January 7-8, 2020 and verified SSIs. **Table 3** summarizes the results of the statistical analysis of the November 2019 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

As outlined in section 257.94(e)(2) of the CCR Rule, the owner or operator may demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. An ASD was completed for these SSIs and is provided in **Appendix B**. This ASD demonstrates that SSIs at the monitoring wells around LCL1 are not caused by the LCL1 CCR Unit and the LCL1 CCR Unit remains in Detection Monitoring.

Detection Monitoring samples were collected April 14-21, 2020, and 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 May 27, 2020 and the testing results did not verify any SSIs. **Table 4** summarizes the results of the statistical analysis of the April 2020 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

A Detection Monitoring sampling event was completed November 2-3, 2020, and testing was performed for all Appendix III analytes, as well as major cations and anions. Statistical analyses to evaluate for SSIs in the November 2020 data were not completed in 2020 and the results will be provided in the 2021 Annual Report. **Table 5** summarizes the results of the November 2020 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

3.2 Groundwater Elevation, Flow Rate and Direction

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

Groundwater elevations were used to generate potentiometric surface maps provided in **Appendix C**. As shown on the potentiometric surface maps, groundwater flow direction within the uppermost aquifer is dynamic and influenced by seasonal changes in the water level in the adjacent Missouri River. Water flows into and out of the alluvial aquifer because of fluctuating river water levels that produce “bank recharge” and “bank discharge” conditions. Overall, based on 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. 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 0.0007 feet/foot with an estimated net annual groundwater movement of approximately 18 feet in the prevailing downgradient direction.

3.3 Sampling issues

The verification sampling for the April 2020 Detection Monitoring sampling event was scheduled to occur concurrently with the May 2020 sampling of the Corrective Action network for the nearby LCPA. The laboratory had not provided data to Golder before the event was scheduled to occur. Therefore, Golder accessed the preliminary laboratory data using the laboratory’s online access tool on May 22, 2020. This allowed for verification sampling to occur as scheduled on May 27, 2020. The laboratory provided the official data to Golder

on May 29, 2020 and that data confirmed the initial exceedance previously identified for verification sampling using the preliminary data.

No additional notable sampling issues were encountered at the LCL1 in 2020.

4.0 ACTIVITIES PLANNED FOR 2021

Detection Monitoring is scheduled to continue on a semi-annual basis in the second and fourth quarters of 2020. Statistical analysis of the November 2020 Detection Monitoring data will be completed in 2021 and included in the 2021 Annual Report.

Tables

Table 3
November 2019 Detection Monitoring Results
LCL1 - Utility Waste Landfill Cell 1
Labadie Energy Center, Franklin County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-2S	Prediction Limit MW-26	MW-26	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
November 2019 Detection Monitoring Event											
DATE	NA	11/5/2019	11/5/2019	NA	11/6/2019	NA	11/5/2019	NA	11/5/2019	NA	11/5/2019
pH	SU	6.83	7.08	6.02-7.44	7.30	6.623-7.19	6.94	6.42-7.17	6.95	5.83-7.07	6.74
BORON, TOTAL	µg/L	122	61.2 J	DQR	423	139.7	101	136.3	97.3 J	139.7	122
CALCIUM, TOTAL	µg/L	194,000	125,000	182,000	146,000	177,907	174,000 J	195,768	177,000	208,416	176,000
CHLORIDE, TOTAL	mg/L	4.8	3.3	5.922	22.5	4.246	4.4	7.116	4.9	8.166	5.5
FLUORIDE, TOTAL	mg/L	ND	0.12 J	0.2237	ND	0.2916	0.15 J	0.2707	0.13 J	DQR	0.089 J
SULFATE, TOTAL	mg/L	29.9	28.5	33.4	18.1	122.2	109	109.9	82.6	109.6	44.5
TOTAL DISSOLVED SOLIDS	mg/L	700	425	520.2	540	733.7	673	767.8	687	756.6	604
January 2020 Verification Sampling Event											
DATE	NA				1/8/2020		1/7/2020				
pH	SU										
BORON, TOTAL	µg/L				162						
CALCIUM, TOTAL	µg/L										
CHLORIDE, TOTAL	mg/L				7.4		4.2				
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L										
TOTAL DISSOLVED SOLIDS	mg/L				575						

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. ND - Constituent was analyzed for 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.
4. NA - Not applicable.
5. Prediction Limits calculated using Sanitas Software.
6. Values highlighted in yellow indicate a Statistically Significant Increase (SSI).
7. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).
8. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
9. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantification Rule (DQR) is used.

Prepared By: EMS
Checked By: BTT
Reviewed By: SCP

Table 4
April 2020 Detection Monitoring Results
LCL1 - Utility Waste Landfill Cell 1
Labadie Energy Center, Franklin County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-2S	Prediction Limit MW-26	MW-26	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
April 2020 Detection Monitoring Event											
DATE	NA	4/14/2020	4/14/2020	NA	4/20/2020	NA	4/21/2020	NA	4/21/2020	NA	4/21/2020
pH	SU	6.62	6.98	6.02-7.44	6.92	6.623-7.19	6.87	6.42-7.17	6.88	5.83-7.07	6.76
BORON, TOTAL	µg/L	95.2 J	51.0 J	DQR	ND	139.7	89.6 J	136.3	86.8 J	139.7	116
CALCIUM, TOTAL	µg/L	212,000	137,000	182,000	150,000	177,907	177,000	195,768	169,000 J	208,416	167,000
CHLORIDE, TOTAL	mg/L	3.7	4.0	5.922	4.2	4.246	3.8	7.116	3.8 J	8.166	4.3
FLUORIDE, TOTAL	mg/L	0.16 J	0.14 J	0.2237	0.14 J	0.2916	0.28	0.2707	0.27	DQR	0.30
SULFATE, TOTAL	mg/L	38.5	45.5	33.4	30.8	122.2	96.1	109.9	94.6	109.6	35.1
TOTAL DISSOLVED SOLIDS	mg/L	711	555	520.2	499	733.7	674	767.8	732	756.6	585
May 2020 Verification Sampling Event											
DATE	NA										5/27/2020
pH	SU										
BORON, TOTAL	µg/L										
CALCIUM, TOTAL	µg/L										
CHLORIDE, TOTAL	mg/L										
FLUORIDE, TOTAL	mg/L										ND
SULFATE, TOTAL	mg/L										
TOTAL DISSOLVED SOLIDS	mg/L										

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

Prepared By: JSI
Checked By: BTT
Reviewed By: MNH

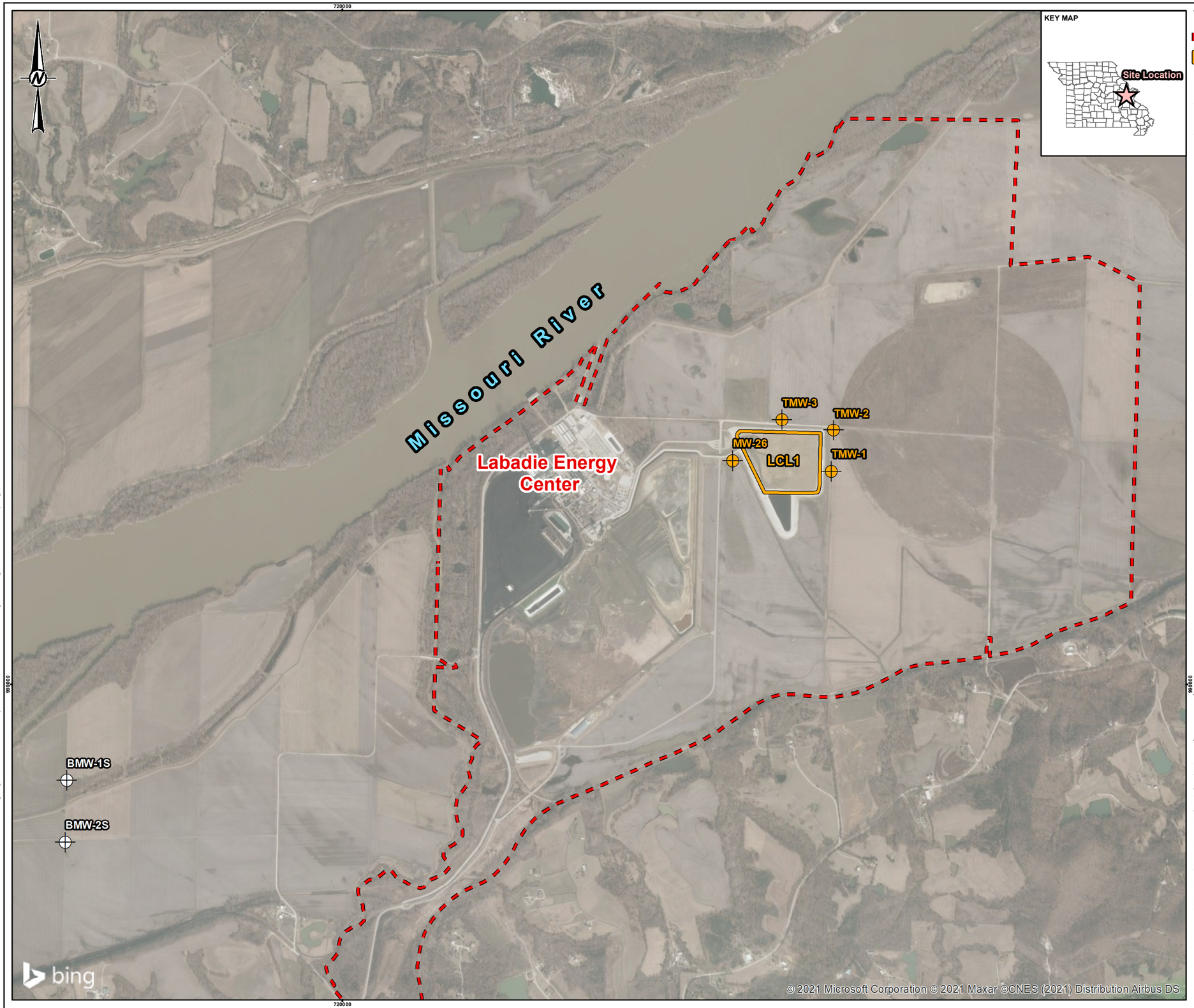
Table 5
November 2020 Detection Monitoring Results
LCL1 - Utility Waste Landfill Cell 1
Labadie Energy Center, Franklin County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS			
ANALYTE	UNITS	BMW-1S	BMW-2S	MW-26	TMW-1	TMW-2	TMW-3
November 2020 Detection Monitoring Event							
DATE	NA	11/2/2020	11/2/2020	11/2/2020	11/3/2020	11/3/2020	11/3/2020
pH	SU	6.87	7.23	7.00	6.95	6.89	6.84
BORON, TOTAL	µg/L	99.0 J	45.2 J	63.6 J	103	132	128
CALCIUM, TOTAL	µg/L	216,000	142,000	119,000	142,000 J	197,000	172,000
CHLORIDE, TOTAL	mg/L	6.4	3.4	5.9	1.8	8.2	5.3
FLUORIDE, TOTAL	mg/L	0.17 J	0.22	0.22	0.33	0.25	0.27
SULFATE, TOTAL	mg/L	66.5	73.4	29.8	30.9	116	56.1
TOTAL DISSOLVED SOLIDS	mg/L	780	524	420	579	801	651

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.

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

Figures



KEY MAP

LEGEND

- Approximate Property Boundary
- LCL1 - Utility Waste Landfill Cell 1

LCL1 Monitoring Wells

- LCL1 - Utility Waste Landfill Cell 1 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 AND MONITORING WELL LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2019-12-31
DESIGNED	JSI
PREPARED	JSI
REVIEWED	EMS
APPROVED	CMR

PROJECT NO.	CONTROL	REV.	FIGURE
153140602	1240	0.0	1

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

0 1in

PATH: C:\Users\BTalbert\Golder Associates\153140601.02 - Ameren CCR GW Monitoring Program 2020 - 153141106 - All Project Files\5 Technical Work\0001-LEC\5.5-Figures-Drawings\PRODUCTION\Ore Maps\Figure 1 - LCL1.mxd PRINTED ON: 2021-01-26 AT: 2:07:13 PM

APPENDIX A

Laboratory Analytical Data

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

February 13, 2020

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

RE: Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

Dear Jeffrey Ingram:
Enclosed are the analytical results for sample(s) received by the laboratory between January 08, 2020 and January 10, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

REV-1, 2/13/20: Samples L-TMW-1 and L-LCL1-FB-1 added to report.

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
Tommy Goodwin, Golder Associates
Mark Haddock, Golder Associates
Eric Schneider, Golder Associates

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

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 19-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
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 #: KS000212018-8
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 LABADIE ENERGY CTR
Pace Project No.: 60326300

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60326300001	**L-MW-26**	Water	01/08/20 08:25	01/10/20 03:14
60326300002	**L-LCL1-DUP-1**	Water	01/08/20 08:00	01/10/20 03:14
60326111008	**L-TMW-1**	Water	01/07/20 12:25	01/08/20 03:30
60326111009	**L-LCL1-FB-1**	Water	01/07/20 12:35	01/08/20 03:30

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60326300001	**L-MW-26**	EPA 200.7	LRS	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CNB	1	PASI-K
60326300002	**L-LCL1-DUP-1**	EPA 200.7	LRS	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CNB	1	PASI-K
60326111008	**L-TMW-1**	EPA 200.7	LRS	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CNB	1	PASI-K
60326111009	**L-LCL1-FB-1**	EPA 200.7	LRS	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CNB	1	PASI-K

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

ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

Sample: L-MW-26 **Lab ID: 60326300001** Collected: 01/08/20 08:25 Received: 01/10/20 03:14 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								
Boron	**162**	ug/L	100	11.7	1	01/13/20 09:51	01/14/20 16:00	7440-42-8	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**575**	mg/L	10.0	10.0	1		01/15/20 10:03		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**7.4**	mg/L	1.0	0.39	1		01/15/20 22:07	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

Sample: L-LCL1-DUP-1 **Lab ID: 60326300002** Collected: 01/08/20 08:00 Received: 01/10/20 03:14 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								
Boron	**167**	ug/L	100	11.7	1	01/13/20 09:51	01/14/20 16:02	7440-42-8	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**556**	mg/L	10.0	10.0	1		01/15/20 10:03		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**7.4**	mg/L	1.0	0.39	1		01/15/20 22:54	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

Sample: L-TMW-1 **Lab ID: 60326111008** Collected: 01/07/20 12:25 Received: 01/08/20 03:30 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								
Boron	**95.2J**	ug/L	100	11.7	1	01/13/20 09:51	01/14/20 15:36	7440-42-8	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**671**	mg/L	10.0	10.0	1		01/14/20 09:14		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**4.2**	mg/L	1.0	0.39	1		01/15/20 16:31	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

Sample: L-LCL1-FB-1 **Lab ID: 60326111009** Collected: 01/07/20 12:35 Received: 01/08/20 03:30 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								
Boron	**<11.7**	ug/L	100	11.7	1	01/13/20 09:51	01/14/20 15:41	7440-42-8	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		01/14/20 09:14		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.39**	mg/L	1.0	0.39	1		01/15/20 16:47	16887-00-6	

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

QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

QC Batch: 632714 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60326111008, 60326111009, 60326300001, 60326300002

METHOD BLANK: 2576847 Matrix: Water
Associated Lab Samples: 60326111008, 60326111009, 60326300001, 60326300002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<11.7	100	11.7	01/14/20 14:55	

LABORATORY CONTROL SAMPLE: 2576848

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	975	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2576849 2576850

Parameter	Units	60326269001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	ND	1000	1000	951	992	93	97	70-130	4	20	

MATRIX SPIKE SAMPLE: 2576851

Parameter	Units	60326111008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	95.2J	1000	1060	97	70-130	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

QC Batch: 632924 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60326111008, 60326111009

METHOD BLANK: 2577333 Matrix: Water
Associated Lab Samples: 60326111008, 60326111009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	01/14/20 09:13	

LABORATORY CONTROL SAMPLE: 2577334

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

SAMPLE DUPLICATE: 2577335

Parameter	Units	60325852002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	888	909	2	10	

SAMPLE DUPLICATE: 2577336

Parameter	Units	60326252008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	964	1000	4	10	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

QC Batch: 633115 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60326300001, 60326300002

METHOD BLANK: 2578053 Matrix: Water
Associated Lab Samples: 60326300001, 60326300002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	01/15/20 10:02	

LABORATORY CONTROL SAMPLE: 2578054

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1020	102	80-120	

SAMPLE DUPLICATE: 2578055

Parameter	Units	60326266004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1020	1010	0	10	

SAMPLE DUPLICATE: 2578056

Parameter	Units	60326262001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	5060	4600	10	10	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

QC Batch: 632763 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60326111008, 60326111009

METHOD BLANK: 2577002 Matrix: Water
Associated Lab Samples: 60326111008, 60326111009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	01/13/20 10:45	

METHOD BLANK: 2577515 Matrix: Water
Associated Lab Samples: 60326111008, 60326111009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	01/14/20 09:36	

METHOD BLANK: 2579424 Matrix: Water
Associated Lab Samples: 60326111008, 60326111009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	01/15/20 13:37	

LABORATORY CONTROL SAMPLE: 2577003

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	90-110	

LABORATORY CONTROL SAMPLE: 2577516

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

LABORATORY CONTROL SAMPLE: 2579425

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	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 ENERGY CTR
Pace Project No.: 60326300

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2577004 2577005

Parameter	Units	60326237001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	689	250	250	994	979	122	116	80-120	2	15	M1

MATRIX SPIKE SAMPLE: 2577006

Parameter	Units	60326296001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	<77.5	1000	1050	98	80-120	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

QC Batch: 632967 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60326300001, 60326300002

METHOD BLANK: 2577539 Matrix: Water
Associated Lab Samples: 60326300001, 60326300002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	01/15/20 13:58	

METHOD BLANK: 2579249 Matrix: Water
Associated Lab Samples: 60326300001, 60326300002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	01/16/20 14:00	

LABORATORY CONTROL SAMPLE: 2577540

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	

LABORATORY CONTROL SAMPLE: 2579250

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2577541 2577542

Parameter	Units	60326375001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	14.5	5	5	19.6	19.4	103	99	80-120	1	15	

MATRIX SPIKE SAMPLE: 2577543

Parameter	Units	60326293001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	3.3	5	8.5	103	80-120	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: AMEREN LABADIE ENERGY CTR
Pace Project No.: 60326300

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

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 LABADIE ENERGY CTR
Pace Project No.: 60326300

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60326111008	**L-TMW-1**	EPA 200.7	632714	EPA 200.7	632903
60326111009	**L-LCL1-FB-1**	EPA 200.7	632714	EPA 200.7	632903
60326300001	**L-MW-26**	EPA 200.7	632714	EPA 200.7	632903
60326300002	**L-LCL1-DUP-1**	EPA 200.7	632714	EPA 200.7	632903
60326111008	**L-TMW-1**	SM 2540C	632924		
60326111009	**L-LCL1-FB-1**	SM 2540C	632924		
60326300001	**L-MW-26**	SM 2540C	633115		
60326300002	**L-LCL1-DUP-1**	SM 2540C	633115		
60326111008	**L-TMW-1**	EPA 300.0	632763		
60326111009	**L-LCL1-FB-1**	EPA 300.0	632763		
60326300001	**L-MW-26**	EPA 300.0	632967		
60326300002	**L-LCL1-DUP-1**	EPA 300.0	632967		

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Sample Condition Upon Receipt

WO# : 60326300

60326300

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

Cooler Temperature (°C): **As-read** 1.7 **Corr. Factor** 0.2 **Corrected** 1.9

Date and initials of person examining contents: 1/10/20

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)	☑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: Jami Church 1/10/20 Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Ryan Feldmann/Eric Schneider
Purchase Order No.:	
Project Name:	Ameren
Project Number:	153140601.000 1

Section C Invoice Information:

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

REGULATORY AGENCY

NPDES | GROUND WATER | DRINKING WATER

UST | RCRA | OTHER

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW WT
WATER	WW
WASTE WATER	P
PRODUCT	SL
SOIL/SOLID	OL
OIL	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	200.7 Boron	200.7 Calcium	Chloride	Fluoride	Sulfate	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N	N	N	N		40326300
1	L-MW-26	WT	G			1/8/20	0825		2	1		1							✓		✓			✓		001
2	LCLI-DUP-1	WT	G			1	—		1	1		1							1		1			1		002
3		WT	G																							
4		WT	G																							
5		WT	G																							
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
	Eric Schneider/Golder	1/9/2020	1315	PACE	1/9/20	1315	
	PACE	1/9/20	1700		1/10/20	0730	1.9 ✓ ✓ ✓

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schneider

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 01/08/20

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

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Sample Condition Upon Receipt

WO# : 60326111

60326111

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 ☑ 2PIC

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

Cooler Temperature (°C): **As-read** 0.0 **Corr. Factor** +0.2 **Corrected** 0.2

Date and initials of person examining contents: MB 1/8/2020

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	Did not recieve Samples
Pace containers used:	☑Yes ☐No ☐N/A	L-UMW-5D, L-LMW-4S,
Containers intact:	☑Yes ☐No ☐N/A	and L-LCPB-FB-1
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)	☑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: Per Eric Schneider, missing samples will be submitted at a later date.

Project Manager Review: Jami Church Date: 1/10/20

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 3

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Ryan Feldmann/Eric Schneider
Purchase Order No.:	
Project Name:	Ameren
Project Number:	

Section C Invoice Information:

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

REGULATORY AGENCY

NPDES | GROUND WATER | DRINKING WATER
UST | RCRA | OTHER

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	Section D 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	200.7 Boron	200.7 Calcium	Chloride	Fluoride	Sulfate	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	L-UMW-1D	WT	G			1/6/20	1048		1																	
2	L-UMW-5D	WT	G			1/7/20	0950		1																	
3	L-UMW-7D	WT	G			1/6/20	1105		1																	
4	L-UMW-8D	WT	G			1/6/20	1260		2																	
5	L-UMW 9D	WT	G			1/6/20	1140		2																	
6	L-AM-1S	WT	G	1/7/20	0950				1																	
7	LCPA-Dup-1	WT	G			1/6/20	—		7																	
8	LCPA-FB-1	WT	G			1/6/20	1300		2																	
9		WT	G																							
10		WT	G																							
11		WT	G																							
12		WT	G																							

60324111

Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
		1-7	1745		1/8/2020	0350	0.2	Y	Y	Y

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

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 3

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

REGULATORY AGENCY: NPDES, GROUND WATER, DRINKING WATER, UST, RCRA, OTHER

Site Location STATE: MO

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	200.7 Boron	200.7 Calcium	Chloride	Fluoride	Sulfate	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	L-LMW-45	WT	G			1/7/26	1130		2									Y	Y	Y	Y	N	N	Y		L0326111
2	L-LCPB-FB-1	WT	G			1/7/26	1440		2									Y	Y	Y	N	N	N	Y		
3		WT	G																							
4		WT	G																							
5		WT	G																							
6		WT	G																							
7		WT	G																							
8		WT	G																							
9		WT	G																							
10		WT	G																							
11		WT	G																							
12		WT	G																							

Valid Matrix Codes: DRINKING WATER DW, WATER WW, WASTE WATER P, PRODUCT SL, SOIL/SOLID OL, OIL WP, AR, OT, TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Angela Mann	1-7	1745	Victoria Jane	1/8/2026	0330	0.2	Y	Y	Y

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

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 Drive, Ste 260
	Ballwin, MO 63021
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Ryan Feldmann/Eric Schneider
Purchase Order No.:	
Project Name:	Ameren
Project Number:	

Section C Invoice Information:

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

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER _____

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW WT
WATER	WW
WASTE WATER	P
PRODUCT	SL
SOIL/SOLID	OL
OIL	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	200.7 Boron	200.7 Calcium	Chloride	Fluoride	Sulfate	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N	N	N	N		60324111
1	L-TMW-1	WT	G			1/7/20	1225		2	/		/							/	/	/			/		
2	LCL1-FB-1	WT	G			1/7/20	1335		2	/		/							/	/	/			/		
3		WT	G																							
4		WT	G																							
5		WT	G																							
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			
	[signature]	1-7	1745	[signature] Pace	1/8/2020	0330	0.2	Y	Y	Y

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

MEMORANDUM

DATE February 13, 2020 **Project No.** 153140601

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Tommy Goodwin **EMAIL Tommy_Goodwin@golder.com**

DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCL1 – VERIFICATION SAMPLING - DATA PACKAGE 60326300REV1

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

- None.

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Manager: J Ingram
Project Name: Ameren - Labadie - LCL1
Project Number: 153140601
Reviewer: T Goodwin
Validation Date: 2/13/2020

Laboratory: Pace Analytical - KS
SDG #: 60326300rev1
Analytical Method (type and no.): EPA 2007. (Metals), SM 2540C (TDS), EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐ _____
Sample Names L-MW-26, L-LCL1-DUP-1, L-TMW-1, L-LCL1-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			1/7-8/2020
b) Sampling team indicated?	x			
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			
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		See Notes
b) Was the COC signed by both field and laboratory personnel?		x		Second CoC not signed by field staff
c) Were samples received in good condition?	x			

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☐	☒	☐	
b) Were analytes detected in the field blank(s)?	☐	☒	☐	
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)?	☒	☐	☐	See Notes
b) Were field dup. precision criteria met (note RPD)?	☒	☐	☐	See Notes
c) Were lab duplicates analyzed (note original and duplicate samples)?	☐	☒	☐	Unrelated Sample
d) Were lab dup. precision criteria met (note RPD)?	☐	☐	☒	

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

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

Comments/Notes:

DUP-1 @ L-MW-26; L-LCL1-FB-1 @ L-TMW-1

CoC: Samples on page 1 and 2 of the second CoC are not associated with this data package.

Max Field Duplicate RPD: 3% (20% Limit)

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
None				

Signature: Tommy J. Hudson Jr. Date: 2/13/2020

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

May 29, 2020

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

RE: Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory between April 15, 2020 and April 22, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

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

Sincerely,

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

Enclosures

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

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

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

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60334358003	**L-TMW-1**	Water	04/21/20 08:38	04/22/20 02:38
60334358004	**L-TMW-2**	Water	04/21/20 09:43	04/22/20 02:38
60334358005	**L-TMW-3**	Water	04/21/20 10:32	04/22/20 02:38
60334358006	**L-UWL-DUP-1**	Water	04/21/20 08:00	04/22/20 02:38
60334358007	**L-UWL-FB-1**	Water	04/21/20 08:00	04/22/20 02:38
60334356003	**L-BMW-1S**	Water	04/14/20 11:24	04/15/20 02:25
60334356004	**L-BMW-2S**	Water	04/14/20 11:39	04/15/20 02:25
60334356030	**L-MW-26**	Water	04/21/20 14:05	04/22/20 02:38

Pace Analytical Services, LLC
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Lenexa, KS 66219
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SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60334358003	**L-TMW-1**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60334358004	**L-TMW-2**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60334358005	**L-TMW-3**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60334358006	**L-UWL-DUP-1**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60334358007	**L-UWL-FB-1**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60334356003	**L-BMW-1S**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	MGS	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	JWR, LDB	3	PASI-K
60334356004	**L-BMW-2S**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	MJK	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	JWR, LDB	3	PASI-K
60334356030	**L-MW-26**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	JWR	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 LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Sample: L-TMW-1 **Lab ID: 60334358003** Collected: 04/21/20 08:38 Received: 04/22/20 02:38 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**89.6J**	ug/L	100	11.7	1	04/28/20 14:10	04/29/20 16:28	7440-42-8	
Calcium	**177000**	ug/L	200	32.4	1	04/28/20 14:10	04/29/20 16:28	7440-70-2	
Iron	**213**	ug/L	50.0	26.8	1	04/28/20 14:10	04/29/20 16:28	7439-89-6	
Magnesium	**46100**	ug/L	50.0	19.7	1	04/28/20 14:10	04/29/20 16:28	7439-95-4	
Manganese	**5600**	ug/L	5.0	0.97	1	04/28/20 14:10	04/29/20 16:28	7439-96-5	
Potassium	**5310**	ug/L	500	189	1	04/28/20 14:10	04/29/20 16:28	7440-09-7	
Sodium	**13200**	ug/L	500	107	1	04/28/20 14:10	04/29/20 16:28	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**527**	mg/L	20.0	8.4	1		04/28/20 12:41		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**674**	mg/L	10.0	10.0	1		04/27/20 15:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.8**	mg/L	1.0	0.39	1		04/30/20 20:01	16887-00-6	B
Fluoride	**0.28**	mg/L	0.20	0.075	1		04/30/20 20:01	16984-48-8	
Sulfate	**96.1**	mg/L	5.0	1.4	5		04/30/20 20:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Sample: L-TMW-2 **Lab ID: 60334358004** Collected: 04/21/20 09:43 Received: 04/22/20 02:38 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**86.8J**	ug/L	100	11.7	1	04/28/20 14:10	04/29/20 16:30	7440-42-8	
Calcium	**169000**	ug/L	200	32.4	1	04/28/20 14:10	04/29/20 16:30	7440-70-2	M1
Iron	**206**	ug/L	50.0	26.8	1	04/28/20 14:10	04/29/20 16:30	7439-89-6	
Magnesium	**44300**	ug/L	50.0	19.7	1	04/28/20 14:10	04/29/20 16:30	7439-95-4	
Manganese	**5360**	ug/L	5.0	0.97	1	04/28/20 14:10	04/29/20 16:30	7439-96-5	
Potassium	**5100**	ug/L	500	189	1	04/28/20 14:10	04/29/20 16:30	7440-09-7	
Sodium	**12600**	ug/L	500	107	1	04/28/20 14:10	04/29/20 16:30	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**563**	mg/L	20.0	8.4	1		04/28/20 12:48		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**732**	mg/L	10.0	10.0	1		04/27/20 15:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.8**	mg/L	1.0	0.39	1		04/30/20 20:34	16887-00-6	B
Fluoride	**0.27**	mg/L	0.20	0.075	1		04/30/20 20:34	16984-48-8	
Sulfate	**94.6**	mg/L	5.0	1.4	5		04/30/20 21:57	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Sample: L-TMW-3 **Lab ID: 60334358005** Collected: 04/21/20 10:32 Received: 04/22/20 02:38 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	**116**	ug/L	100	11.7	1	04/28/20 14:10	04/29/20 16:36	7440-42-8	
Calcium	**167000**	ug/L	200	32.4	1	04/28/20 14:10	04/29/20 16:36	7440-70-2	
Iron	**742**	ug/L	50.0	26.8	1	04/28/20 14:10	04/29/20 16:36	7439-89-6	
Magnesium	**33100**	ug/L	50.0	19.7	1	04/28/20 14:10	04/29/20 16:36	7439-95-4	
Manganese	**244**	ug/L	5.0	0.97	1	04/28/20 14:10	04/29/20 16:36	7439-96-5	
Potassium	**6920**	ug/L	500	189	1	04/28/20 14:10	04/29/20 16:36	7440-09-7	
Sodium	**13500**	ug/L	500	107	1	04/28/20 14:10	04/29/20 16:36	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**525**	mg/L	20.0	8.4	1		04/28/20 13:11		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**585**	mg/L	10.0	10.0	1		04/27/20 15:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**4.3**	mg/L	1.0	0.39	1		04/30/20 22:46	16887-00-6	B
Fluoride	**0.30**	mg/L	0.20	0.075	1		04/30/20 22:46	16984-48-8	
Sulfate	**35.1**	mg/L	5.0	1.4	5		04/30/20 23:03	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Sample: L-UWL-DUP-1 **Lab ID: 60334358006** Collected: 04/21/20 08:00 Received: 04/22/20 02:38 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	**107**	ug/L	100	11.7	1	04/28/20 14:10	04/29/20 16:39	7440-42-8	
Calcium	**194000**	ug/L	200	32.4	1	04/28/20 14:10	04/29/20 16:39	7440-70-2	
Iron	**482**	ug/L	50.0	26.8	1	04/28/20 14:10	04/29/20 16:39	7439-89-6	
Magnesium	**46900**	ug/L	50.0	19.7	1	04/28/20 14:10	04/29/20 16:39	7439-95-4	
Manganese	**2600**	ug/L	5.0	0.97	1	04/28/20 14:10	04/29/20 16:39	7439-96-5	
Potassium	**6560**	ug/L	500	189	1	04/28/20 14:10	04/29/20 16:39	7440-09-7	
Sodium	**17900**	ug/L	500	107	1	04/28/20 14:10	04/29/20 16:39	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**566**	mg/L	20.0	8.4	1		04/28/20 13:17		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**719**	mg/L	10.0	10.0	1		04/27/20 15:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**5.7**	mg/L	1.0	0.39	1		04/30/20 23:19	16887-00-6	
Fluoride	**0.23**	mg/L	0.20	0.075	1		04/30/20 23:19	16984-48-8	
Sulfate	**94.2**	mg/L	5.0	1.4	5		04/30/20 23:36	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Sample: L-UWL-FB-1 **Lab ID: 60334358007** Collected: 04/21/20 08:00 Received: 04/22/20 02:38 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	**<11.7**	ug/L	100	11.7	1	04/28/20 14:10	04/29/20 16:41	7440-42-8	
Calcium	**<32.4**	ug/L	200	32.4	1	04/28/20 14:10	04/29/20 16:41	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	04/28/20 14:10	04/29/20 16:41	7439-89-6	
Magnesium	**<19.7**	ug/L	50.0	19.7	1	04/28/20 14:10	04/29/20 16:41	7439-95-4	
Manganese	**<0.97**	ug/L	5.0	0.97	1	04/28/20 14:10	04/29/20 16:41	7439-96-5	
Potassium	**<189**	ug/L	500	189	1	04/28/20 14:10	04/29/20 16:41	7440-09-7	
Sodium	**<107**	ug/L	500	107	1	04/28/20 14:10	04/29/20 16:41	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**<8.4**	mg/L	20.0	8.4	1		04/28/20 13:21		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**18.0**	mg/L	5.0	5.0	1		04/27/20 15:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**<0.39**	mg/L	1.0	0.39	1		04/30/20 23:53	16887-00-6	
Fluoride	**<0.075**	mg/L	0.20	0.075	1		04/30/20 23:53	16984-48-8	
Sulfate	**<0.28**	mg/L	1.0	0.28	1		04/30/20 23:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Sample: L-BMW-1S **Lab ID: 60334356003** Collected: 04/14/20 11:24 Received: 04/15/20 02:25 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	**95.2J**	ug/L	100	11.7	1	04/23/20 16:10	04/24/20 18:04	7440-42-8	
Calcium	**212000**	ug/L	200	32.4	1	04/23/20 16:10	04/24/20 18:04	7440-70-2	
Iron	**27900**	ug/L	50.0	26.8	1	04/23/20 16:10	04/24/20 18:04	7439-89-6	
Magnesium	**47100**	ug/L	50.0	19.7	1	04/23/20 16:10	04/24/20 18:04	7439-95-4	
Manganese	**2730**	ug/L	5.0	0.97	1	04/23/20 16:10	04/24/20 18:04	7439-96-5	
Potassium	**5180**	ug/L	500	189	1	04/23/20 16:10	04/24/20 18:04	7440-09-7	
Sodium	**15000**	ug/L	500	107	1	04/23/20 16:10	04/24/20 18:04	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**674**	mg/L	20.0	8.4	1		04/23/20 13:07		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**711**	mg/L	10.0	10.0	1		04/20/20 11:44		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.7**	mg/L	1.0	0.39	1		04/21/20 23:39	16887-00-6	B
Fluoride	**0.16J**	mg/L	0.20	0.075	1		04/21/20 23:39	16984-48-8	
Sulfate	**38.5**	mg/L	5.0	1.4	5		04/20/20 18:04	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Sample: L-BMW-2S **Lab ID: 60334356004** Collected: 04/14/20 11:39 Received: 04/15/20 02:25 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	**51.0J**	ug/L	100	11.7	1	04/23/20 16:10	04/24/20 18:06	7440-42-8	
Calcium	**137000**	ug/L	200	32.4	1	04/23/20 16:10	04/24/20 18:06	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	04/23/20 16:10	04/24/20 18:06	7439-89-6	
Magnesium	**20400**	ug/L	50.0	19.7	1	04/23/20 16:10	04/24/20 18:06	7439-95-4	
Manganese	**<0.97**	ug/L	5.0	0.97	1	04/23/20 16:10	04/24/20 18:06	7439-96-5	
Potassium	**6800**	ug/L	500	189	1	04/23/20 16:10	04/24/20 18:06	7440-09-7	
Sodium	**7920**	ug/L	500	107	1	04/23/20 16:10	04/24/20 18:06	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**301**	mg/L	20.0	8.4	1		04/22/20 17:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**555**	mg/L	10.0	10.0	1		04/20/20 11:45		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**4.0**	mg/L	1.0	0.39	1		04/21/20 23:55	16887-00-6	B
Fluoride	**0.14J**	mg/L	0.20	0.075	1		04/21/20 23:55	16984-48-8	
Sulfate	**45.5**	mg/L	5.0	1.4	5		04/20/20 18:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Sample: L-MW-26 **Lab ID: 60334356030** Collected: 04/21/20 14:05 Received: 04/22/20 02:38 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**93.0J**	ug/L	100	11.7	1	04/29/20 13:20	04/30/20 17:28	7440-42-8	B
Calcium	**150000**	ug/L	200	32.4	1	04/29/20 13:20	04/30/20 17:28	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	04/29/20 13:20	04/30/20 17:28	7439-89-6	
Magnesium	**29800**	ug/L	50.0	19.7	1	04/29/20 13:20	04/30/20 17:28	7439-95-4	
Manganese	**1000**	ug/L	5.0	0.97	1	04/29/20 13:20	04/30/20 17:28	7439-96-5	
Potassium	**4010**	ug/L	500	189	1	04/29/20 13:20	04/30/20 17:28	7440-09-7	
Sodium	**9540**	ug/L	500	107	1	04/29/20 13:20	04/30/20 17:28	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**425**	mg/L	20.0	8.4	1		04/28/20 12:34		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**499**	mg/L	10.0	10.0	1		04/27/20 15:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**4.2**	mg/L	1.0	0.39	1		05/08/20 22:45	16887-00-6	B
Fluoride	**0.14J**	mg/L	0.20	0.075	1		05/08/20 22:45	16984-48-8	
Sulfate	**30.8**	mg/L	2.0	0.56	2		05/11/20 15:54	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

QC Batch: 650987
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: 60334356003, 60334356004

METHOD BLANK: 2641577 Matrix: Water
Associated Lab Samples: 60334356003, 60334356004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<11.7	100	11.7	04/24/20 17:56	
Calcium	ug/L	<32.4	200	32.4	04/24/20 17:56	
Iron	ug/L	<26.8	50.0	26.8	04/24/20 17:56	
Magnesium	ug/L	<19.7	50.0	19.7	04/24/20 17:56	
Manganese	ug/L	<0.97	5.0	0.97	04/24/20 17:56	
Potassium	ug/L	<189	500	189	04/24/20 17:56	
Sodium	ug/L	<107	500	107	04/24/20 17:56	

LABORATORY CONTROL SAMPLE: 2641578

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1020	102	85-115	
Calcium	ug/L	10000	10500	105	85-115	
Iron	ug/L	10000	10200	102	85-115	
Magnesium	ug/L	10000	11000	110	85-115	
Manganese	ug/L	1000	1050	105	85-115	
Potassium	ug/L	10000	9870	99	85-115	
Sodium	ug/L	10000	10000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2641579 2641580

Parameter	Units	60334356007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	11000	1000	1000	11600	11800	60	72	70-130	1	20	M1
Calcium	ug/L	82900	10000	10000	91700	93200	88	103	70-130	2	20	
Iron	ug/L	4720	10000	10000	14600	14700	99	100	70-130	0	20	
Magnesium	ug/L	20600	10000	10000	30300	30600	96	100	70-130	1	20	
Manganese	ug/L	212	1000	1000	1220	1210	101	100	70-130	1	20	
Potassium	ug/L	6200	10000	10000	16000	16200	98	100	70-130	1	20	
Sodium	ug/L	73500	10000	10000	81900	82800	84	94	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2641581 2641582

Parameter	Units	60334356010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	74.5J	1000	1000	1120	1100	104	103	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2641581 2641582

Parameter	Units	60334356010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	139000	10000	10000	151000	150000	120	109	70-130	1	20	
Iron	ug/L	8850	10000	10000	18900	18700	101	99	70-130	1	20	
Magnesium	ug/L	36400	10000	10000	47200	46900	108	105	70-130	1	20	
Manganese	ug/L	276	1000	1000	1300	1280	102	101	70-130	1	20	
Potassium	ug/L	4080	10000	10000	14200	13900	101	99	70-130	2	20	
Sodium	ug/L	11700	10000	10000	21900	21700	102	100	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

QC Batch: 651685
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: 60334358003, 60334358004, 60334358005, 60334358006, 60334358007

METHOD BLANK: 2643997 Matrix: Water
Associated Lab Samples: 60334358003, 60334358004, 60334358005, 60334358006, 60334358007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<11.7	100	11.7	04/29/20 16:15	
Calcium	ug/L	<32.4	200	32.4	04/29/20 16:15	
Iron	ug/L	<26.8	50.0	26.8	04/29/20 16:15	
Magnesium	ug/L	<19.7	50.0	19.7	04/29/20 16:15	
Manganese	ug/L	<0.97	5.0	0.97	04/29/20 16:15	
Potassium	ug/L	<189	500	189	04/29/20 16:15	
Sodium	ug/L	<107	500	107	04/29/20 16:15	

LABORATORY CONTROL SAMPLE: 2643998

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1000	100	85-115	
Calcium	ug/L	10000	10800	108	85-115	
Iron	ug/L	10000	10600	106	85-115	
Magnesium	ug/L	10000	11100	111	85-115	
Manganese	ug/L	1000	1050	105	85-115	
Potassium	ug/L	10000	10700	107	85-115	
Sodium	ug/L	10000	10600	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2643999 2644000

Parameter	Units	60334358004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	86.8J	1000	1000	1050	1040	96	96	70-130	0	20	
Calcium	ug/L	169000	10000	10000	182000	180000	137	114	70-130	1	20	M1
Iron	ug/L	206	10000	10000	10500	10300	103	101	70-130	1	20	
Magnesium	ug/L	44300	10000	10000	54800	55300	105	111	70-130	1	20	
Manganese	ug/L	5360	1000	1000	6310	6350	95	99	70-130	1	20	
Potassium	ug/L	5100	10000	10000	15700	15500	106	104	70-130	1	20	
Sodium	ug/L	12600	10000	10000	23100	22800	105	103	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

QC Batch: 651904
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: 60334356030

METHOD BLANK: 2644803 Matrix: Water
Associated Lab Samples: 60334356030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	12.8J	100	11.7	04/30/20 17:09	
Calcium	ug/L	<32.4	200	32.4	04/30/20 17:09	
Iron	ug/L	<26.8	50.0	26.8	04/30/20 17:09	
Magnesium	ug/L	<19.7	50.0	19.7	04/30/20 17:09	
Manganese	ug/L	<0.97	5.0	0.97	04/30/20 17:09	
Potassium	ug/L	<189	500	189	04/30/20 17:09	
Sodium	ug/L	<107	500	107	04/30/20 17:09	

LABORATORY CONTROL SAMPLE: 2644804

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	999	100	85-115	
Calcium	ug/L	10000	10100	101	85-115	
Iron	ug/L	10000	9930	99	85-115	
Magnesium	ug/L	10000	10500	105	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	9960	100	85-115	
Sodium	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2644805 2644806

Parameter	Units	60334356027 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	7780	1000	1000	8480	8340	69	56	70-130	2	20	M1
Calcium	ug/L	95600	10000	10000	102000	103000	62	74	70-130	1	20	M1
Iron	ug/L	4560	10000	10000	14200	14600	97	100	70-130	3	20	
Magnesium	ug/L	15300	10000	10000	24400	24800	91	95	70-130	2	20	
Manganese	ug/L	266	1000	1000	1260	1280	100	102	70-130	2	20	
Potassium	ug/L	8110	10000	10000	18000	18200	98	101	70-130	2	20	
Sodium	ug/L	117000	10000	10000	124000	123000	68	64	70-130	0	20	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

QC Batch: 650660
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60334356004

METHOD BLANK: 2640387 Matrix: Water
Associated Lab Samples: 60334356004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<8.4	20.0	8.4	04/22/20 17:19	

LABORATORY CONTROL SAMPLE: 2640388

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	477	95	90-110	

SAMPLE DUPLICATE: 2640389

Parameter	Units	60334977003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	152	154	1	10	

SAMPLE DUPLICATE: 2640390

Parameter	Units	60334689003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	515	546	6	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

QC Batch: 650869
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60334356003

METHOD BLANK: 2641105 Matrix: Water
Associated Lab Samples: 60334356003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<8.4	20.0	8.4	04/23/20 11:43	

LABORATORY CONTROL SAMPLE: 2641106

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	455	91	90-110	

SAMPLE DUPLICATE: 2641107

Parameter	Units	60334355001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	218	228	5	10	

SAMPLE DUPLICATE: 2641108

Parameter	Units	60334356007 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	168	172	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

QC Batch: 651576 | Analysis Method: SM 2320B
QC Batch Method: SM 2320B | Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60334356030, 60334358003, 60334358004, 60334358005, 60334358006, 60334358007

METHOD BLANK: 2643724 Matrix: Water
Associated Lab Samples: 60334356030, 60334358003, 60334358004, 60334358005, 60334358006, 60334358007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<8.4	20.0	8.4	04/28/20 11:57	

LABORATORY CONTROL SAMPLE: 2643725

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	484	97	90-110	

SAMPLE DUPLICATE: 2643726

Parameter	Units	60334358004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	563	594	5	10	

SAMPLE DUPLICATE: 2643727

Parameter	Units	60334358007 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<8.4	<8.4		10	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

QC Batch: 650056
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60334356003, 60334356004

METHOD BLANK: 2638189 Matrix: Water
Associated Lab Samples: 60334356003, 60334356004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	04/20/20 11:43	

LABORATORY CONTROL SAMPLE: 2638190

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

SAMPLE DUPLICATE: 2638191

Parameter	Units	60334355006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	10.0	12.0	18	10	D6

SAMPLE DUPLICATE: 2638192

Parameter	Units	60334359008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	715	752	5	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

QC Batch: 651301 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60334356030, 60334358003, 60334358004, 60334358005, 60334358006, 60334358007

METHOD BLANK: 2642929 Matrix: Water
Associated Lab Samples: 60334356030, 60334358003, 60334358004, 60334358005, 60334358006, 60334358007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	04/27/20 15:30	

LABORATORY CONTROL SAMPLE: 2642930

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	997	100	80-120	

SAMPLE DUPLICATE: 2642931

Parameter	Units	60335043008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	5640	5560	1	10	

SAMPLE DUPLICATE: 2642932

Parameter	Units	60334358004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	732	728	1	10	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

QC Batch: 650170
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: 60334356003, 60334356004

METHOD BLANK: 2638395 Matrix: Water
Associated Lab Samples: 60334356003, 60334356004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/20/20 10:38	
Fluoride	mg/L	<0.075	0.20	0.075	04/20/20 10:38	
Sulfate	mg/L	<0.28	1.0	0.28	04/20/20 10:38	

METHOD BLANK: 2638926 Matrix: Water
Associated Lab Samples: 60334356003, 60334356004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.44J	1.0	0.39	04/16/20 09:12	
Fluoride	mg/L	<0.075	0.20	0.075	04/16/20 09:12	
Sulfate	mg/L	<0.28	1.0	0.28	04/16/20 09:12	

METHOD BLANK: 2639261 Matrix: Water
Associated Lab Samples: 60334356003, 60334356004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/21/20 16:31	
Fluoride	mg/L	<0.075	0.20	0.075	04/21/20 16:31	
Sulfate	mg/L	<0.28	1.0	0.28	04/21/20 16:31	

METHOD BLANK: 2639859 Matrix: Water
Associated Lab Samples: 60334356003, 60334356004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/22/20 12:52	
Fluoride	mg/L	<0.075	0.20	0.075	04/22/20 12:52	
Sulfate	mg/L	<0.28	1.0	0.28	04/22/20 12:52	

METHOD BLANK: 2641399 Matrix: Water
Associated Lab Samples: 60334356003, 60334356004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/23/20 08:10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

METHOD BLANK: 2641399 Matrix: Water
Associated Lab Samples: 60334356003, 60334356004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.075	0.20	0.075	04/23/20 08:10	
Sulfate	mg/L	<0.28	1.0	0.28	04/23/20 08:10	

LABORATORY CONTROL SAMPLE: 2638396

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	2.3	94	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

LABORATORY CONTROL SAMPLE: 2638927

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	2.6	105	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

LABORATORY CONTROL SAMPLE: 2639262

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	101	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

LABORATORY CONTROL SAMPLE: 2639860

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	2.3	91	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

LABORATORY CONTROL SAMPLE: 2641400

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	2.6	104	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

MATRIX SPIKE SAMPLE: 2638397

Parameter	Units	60334355007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	19.1	10	30.3	112	80-120	
Fluoride	mg/L	0.18J	2.5	2.7	102	80-120	
Sulfate	mg/L	222	100	325	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2638398 2638399

Parameter	Units	60334434003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	63.0	25	25	81.8	81.9	75	75	80-120	0	15	M1
Fluoride	mg/L	0.33	2.5	2.5	3.0	3.0	106	107	80-120	0	15	
Sulfate	mg/L	ND	5	5	5.3	5.3	101	101	80-120	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

QC Batch: 652203
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: 60334358003, 60334358004, 60334358005, 60334358006, 60334358007

METHOD BLANK: 2645879 Matrix: Water
Associated Lab Samples: 60334358003, 60334358004, 60334358005, 60334358006, 60334358007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/30/20 14:29	
Fluoride	mg/L	<0.075	0.20	0.075	04/30/20 14:29	
Sulfate	mg/L	<0.28	1.0	0.28	04/30/20 14:29	

METHOD BLANK: 2646385 Matrix: Water
Associated Lab Samples: 60334358003, 60334358004, 60334358005, 60334358006, 60334358007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.44J	1.0	0.39	05/01/20 23:49	
Fluoride	mg/L	<0.075	0.20	0.075	05/01/20 23:49	
Sulfate	mg/L	<0.28	1.0	0.28	05/01/20 23:49	

LABORATORY CONTROL SAMPLE: 2645880

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	91	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 2646386

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.7	109	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2645881 2645882

Parameter	Units	60334358004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.8	5	5	8.7	8.9	99	102	80-120	2	15	
Fluoride	mg/L	0.27	2.5	2.5	2.9	3.0	105	107	80-120	2	15	
Sulfate	mg/L	94.6	25	25	122	121	110	107	80-120	1	15	E

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

MATRIX SPIKE SAMPLE: 2645883

Parameter	Units	60334358007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	<0.39	5	4.9	93	80-120	
Fluoride	mg/L	<0.075	2.5	2.7	108	80-120	
Sulfate	mg/L	<0.28	5	5.4	107	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

QC Batch: 653452
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: 60334356030

METHOD BLANK: 2650862 Matrix: Water
Associated Lab Samples: 60334356030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	05/08/20 13:45	
Fluoride	mg/L	<0.075	0.20	0.075	05/08/20 13:45	
Sulfate	mg/L	<0.28	1.0	0.28	05/08/20 13:45	

METHOD BLANK: 2652708 Matrix: Water
Associated Lab Samples: 60334356030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	05/11/20 09:21	
Fluoride	mg/L	<0.075	0.20	0.075	05/11/20 09:21	
Sulfate	mg/L	<0.28	1.0	0.28	05/11/20 09:21	

METHOD BLANK: 2653004 Matrix: Water
Associated Lab Samples: 60334356030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/21/20 17:16	
Fluoride	mg/L	<0.075	0.20	0.075	04/21/20 17:16	
Sulfate	mg/L	<0.28	1.0	0.28	04/21/20 17:16	

METHOD BLANK: 2653006 Matrix: Water
Associated Lab Samples: 60334356030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	04/29/20 07:26	
Fluoride	mg/L	<0.075	0.20	0.075	04/29/20 07:26	
Sulfate	mg/L	<0.28	1.0	0.28	04/29/20 07:26	

METHOD BLANK: 2653008 Matrix: Water
Associated Lab Samples: 60334356030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.44J	1.0	0.39	04/23/20 00:34	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

METHOD BLANK: 2653008 Matrix: Water
Associated Lab Samples: 60334356030

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.075	0.20	0.075	04/23/20 00:34	
Sulfate	mg/L	<0.28	1.0	0.28	04/23/20 00:34	

LABORATORY CONTROL SAMPLE: 2650863

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	2.3	93	90-110	
Sulfate	mg/L	5	4.8	95	90-110	

LABORATORY CONTROL SAMPLE: 2652709

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	2.4	94	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 2653005

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	2.3	91	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 2653007

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

LABORATORY CONTROL SAMPLE: 2653009

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

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QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2650864 2650865

Parameter	Units	60334857001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	116	50	50	166	165	101	99	80-120	1	15	
Fluoride	mg/L	0.49	2.5	2.5	2.9	3.0	98	100	80-120	2	15	
Sulfate	mg/L	783	500	500	1290	1290	102	100	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CTR LCL1
Pace Project No.: 60334358

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60334356003	**L-BMW-1S**	EPA 200.7	650987	EPA 200.7	651023
60334356004	**L-BMW-2S**	EPA 200.7	650987	EPA 200.7	651023
60334356030	**L-MW-26**	EPA 200.7	651904	EPA 200.7	651985
60334358003	**L-TMW-1**	EPA 200.7	651685	EPA 200.7	651717
60334358004	**L-TMW-2**	EPA 200.7	651685	EPA 200.7	651717
60334358005	**L-TMW-3**	EPA 200.7	651685	EPA 200.7	651717
60334358006	**L-UWL-DUP-1**	EPA 200.7	651685	EPA 200.7	651717
60334358007	**L-UWL-FB-1**	EPA 200.7	651685	EPA 200.7	651717
60334356003	**L-BMW-1S**	SM 2320B	650869		
60334356004	**L-BMW-2S**	SM 2320B	650660		
60334356030	**L-MW-26**	SM 2320B	651576		
60334358003	**L-TMW-1**	SM 2320B	651576		
60334358004	**L-TMW-2**	SM 2320B	651576		
60334358005	**L-TMW-3**	SM 2320B	651576		
60334358006	**L-UWL-DUP-1**	SM 2320B	651576		
60334358007	**L-UWL-FB-1**	SM 2320B	651576		
60334356003	**L-BMW-1S**	SM 2540C	650056		
60334356004	**L-BMW-2S**	SM 2540C	650056		
60334356030	**L-MW-26**	SM 2540C	651301		
60334358003	**L-TMW-1**	SM 2540C	651301		
60334358004	**L-TMW-2**	SM 2540C	651301		
60334358005	**L-TMW-3**	SM 2540C	651301		
60334358006	**L-UWL-DUP-1**	SM 2540C	651301		
60334358007	**L-UWL-FB-1**	SM 2540C	651301		
60334356003	**L-BMW-1S**	EPA 300.0	650170		
60334356004	**L-BMW-2S**	EPA 300.0	650170		
60334356030	**L-MW-26**	EPA 300.0	653452		
60334358003	**L-TMW-1**	EPA 300.0	652203		
60334358004	**L-TMW-2**	EPA 300.0	652203		
60334358005	**L-TMW-3**	EPA 300.0	652203		
60334358006	**L-UWL-DUP-1**	EPA 300.0	652203		
60334358007	**L-UWL-FB-1**	EPA 300.0	652203		

Pace Analytical

Sample Condition Upon Receipt

WO# : 60334358

60334358

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 ☒ zyic

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

Cooler Temperature (°C): As-read 0.5 Corr. Factor +0.1 Corrected 0.6

Date and initials of person examining contents: 4-15-2020 AK

Temperature should be above freezing to 6°C 16.1 16.2

Chain of Custody present:	☒Yes ☐No ☐N/A	cooler with 16.2 temp
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	Rad only Radium
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☒Yes ☐No ☐N/A	Fe +2
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	Did not receive samples for
Containers intact:	☒Yes ☐No ☐N/A	this CoC
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? (HNO3, H2SO4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) Lot #'s 603173, 607222	☒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: Jami Church 4/15/20 Date _____

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder, Ryan Feldman
Purchase Order No.:	COC #3 4 LCL1
Project Name:	Ameren Labadie Energy Center ~~LCPB~~
Project Number:	153140602.0001 7 C

Section C Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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 #	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.
																	Y/N	N	N	N	N		
1	WT	G			4/14/20	1124		2	1		1							X	X	X	X		
2	WT	G			↓	1239		↓	↓		↓							↓	↓	↓	↓		
3	WT	G																					
4	WT	G																					
5	WT	G																					
6	WT	G																					
7	WT	G																					
8	WT	G																					
9	WT	G																					
10	WT	G																					
11	WT	G																					
12	WT	G																					

~~L-LMW-MS-1~~ L-BMW-15 ~~L-LMW-MSD-1~~ ~~L-BMW-25~~ L-BMW-25

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	Golder	4/14/20	1700	Rec'pt Pace	4.15.20	0825	0.6	Y	Y	Y
							16.2	N	↓	↓

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Golder

SIGNATURE of SAMPLER: Eric Schnieder DATE Signed (MM/DD/YY): 04/14/20

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

Pace Analytical

Sample Condition Upon Receipt

WO# : 60334358

60334358

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 ☒ Zip C

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

Cooler Temperature (°C): As-read 1.4 Corr. Factor +0.1 Corrected 1.5

Date and initials of person examining contents: 4.22.20 AB

Temperature should be above freezing to 6°C 0.4, 0.1 0.5, 0.2

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? (HNO3, H2SO4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) Lot # 603173	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution _____

Project Manager Review: Jami Church Date 4/22/20

Pace Analytical
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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:

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

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder, Ryan Feldman
Purchase Order No.:	COC #4
Project Name:	Ameren Labadie Energy Center LCL1
Project Number:	153140602.0001C

Section C Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

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-MW-26	WT	G			4/20/20	1405		2	1		1						N	X	X	X	X		
2	L-TMW-1	WT	G			4/21/20	0838											N						
3	L-TMW-2	WT	G			"	0943											N						
4	L-TMW-3	WT	G			"	1032											N						
5	~~L-BMW-1S~~	WT	G															N						
6	~~L-BMW-2S~~	WT	G															N						
7	L-UWL-DUP-1	WT	G			4/21/20	—		2	1		1						N	X	X	X	X		
8	L-UWL-FB-1	WT	G			"	1037											N						
9	L-UWL-MS-1	WT	G			"	0943											N						
10	L-UWL-MSD-1	WT	G			"	0943											N						
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	Golder	4/21/20	1334	PACE	4/21/20	1234	
	PACE	4/21/20	1700		4-22-20	0738	15 Y Y Y
							0.5
							0.2

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Katherine Bartels

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 04/21/20

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 1, 2020 **Project No.** 153140602

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

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

DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCL1 – DETECTION MONITORING - DATA PACKAGE 60334358

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).
- When matrix spike/matrix spike duplicate (MS/MSD) criterion was not met, the associated sample result was qualified as an estimate (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates Inc.
Project Manager: J. Ingram
Project Name: Ameren - LEC - LCL1
Project Number: 153140602
Reviewer: A. Muehlfarth
Validation Date: 06/01/2020

Laboratory: Pace Analytical Services
SDG #: 60334358
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-TMW-1, L-TMW-2, L-TMW-3, L-UWL-DUP-1, L-UWL-FB-1, L-BMW-1S, L-BMW-2S, L-MW-26

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			4/14 - 4/21/2020
b) Sampling team indicated?	x			
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		Pace did not received samples for COC dated 04/14/2020
b) Was the COC signed by both field and laboratory personnel?	x			
c) Were samples received in good condition?	x			

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

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

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

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

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

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

Comments/Notes:

Sulfate was diluted in several samples, no qualification necessary.

MB: 2644803: Boron (12.8 J), associated sample -56030

2638926: Chloride (0.44 J), associated samples -56003 and -56004, detections in samples > RL, no qualification necessary

2646385: Chloride (0.44 J), associated samples -58003 through -58007, detections in samples > RL or non detect (-58007), no qualification necessary

2653008: Chloride (0.44 J), associated sample -56030, detection in sample > RL, no qualification necessary

FB: L-UWL-FB-1 @ L-TMW-3: TDS (18.0), detection in sample > 10x blank result, no qualification necessary

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

L-UWL-DUP-1: RPD exceeds limit (20%) for Boron, Iron, Manganese, Potassium, Sodium, and Chloride

Lab Duplicates: SAMPLE DUPLICATE 2638191: RPD exceeds limit (10%) for TDS, associated sample -55006 (unrelated sample)

MS/MSD: 2641579, 2641580, 2641579: MS % Rec low for Boron, associated with sample -56007 (unrelated sample)

2643999, 2644000: MS % Rec high for Calcium, associated with sample -58004

2644805, 2644806: MS/MSD % Rec low for Boron, Calcium, and Sodium, associated with sample -56027 (unrelated sample)

2638398, 2638399: MS/MSD % Rec low for Chloride associated with sample -34003 (unrelated sample)

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-MW-26	Boron	100	U	Detected in MB, RL>Result>MDL
L-TMW-2	Boron	86.8	J	DUP RPD exceeded limits
L-TMW-2	Iron	206	J	"
L-TMW-2	Manganese	5360	J	"
L-TMW-2	Potassium	5100	J	"
L-TMW-2	Sodium	12600	J	"
L-TMW-2	Chloride	3.8	J	"
L-UWL-DUP-1	Boron	107	J	"
L-UWL-DUP-1	Iron	482	J	"
L-UWL-DUP-1	Manganese	2600	J	"
L-UWL-DUP-1	Potassium	6560	J	"
L-UWL-DUP-1	Sodium	17900	J	"
L-UWL-DUP-1	Chloride	5.7	J	"
L-TMW-2	Calcium	169000	J	MS % rec high

Signature: _____ Ann Muhlfarth _____ Date: 06/01/2020

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

June 03, 2020

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

RE: Project: AMEREN LCLI
Pace Project No.: 60338352

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on May 28, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: AMEREN LCLI
Pace Project No.: 60338352

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

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

SAMPLE SUMMARY

Project: AMEREN LCLI
Pace Project No.: 60338352

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60338352001	**L-TMW-3**	Water	05/27/20 09:58	05/28/20 03:05
60338352002	**L-UWL-DUP-1**	Water	05/27/20 08:00	05/28/20 03:05
60338352003	**L-UWL-FB-1**	Water	05/27/20 10:25	05/28/20 03:05

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

SAMPLE ANALYTE COUNT

Project: AMEREN LCLI
Pace Project No.: 60338352

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60338352001	**L-TMW-3**	EPA 300.0	JWR	1	PASI-K
60338352002	**L-UWL-DUP-1**	EPA 300.0	JWR	1	PASI-K
60338352003	**L-UWL-FB-1**	EPA 300.0	JWR	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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

ANALYTICAL RESULTS

Project: AMEREN LCLI
Pace Project No.: 60338352

Sample: L-TMW-3 **Lab ID: 60338352001** Collected: 05/27/20 09:58 Received: 05/28/20 03:05 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	**0.16J**	mg/L	0.20	0.075	1		06/02/20 13:53	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCLI
Pace Project No.: 60338352

Sample: L-UWL-DUP-1 **Lab ID: 60338352002** Collected: 05/27/20 08:00 Received: 05/28/20 03:05 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	**0.24**	mg/L	0.20	0.075	1		05/29/20 21:56	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCLI
Pace Project No.: 60338352

Sample: L-UWL-FB-1 **Lab ID: 60338352003** Collected: 05/27/20 10:25 Received: 05/28/20 03:05 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	**0.082J**	mg/L	0.20	0.075	1		05/29/20 22:12	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LCLI
Pace Project No.: 60338352

QC Batch: 657410 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60338352001, 60338352002, 60338352003

METHOD BLANK: 2666088 — Matrix: Water
Associated Lab Samples: 60338352001, 60338352002, 60338352003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.075	0.20	0.075	05/29/20 08:05	

METHOD BLANK: 2667783 — Matrix: Water
Associated Lab Samples: 60338352001, 60338352002, 60338352003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.075	0.20	0.075	06/01/20 09:31	

METHOD BLANK: 2668608 — Matrix: Water
Associated Lab Samples: 60338352001, 60338352002, 60338352003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.075	0.20	0.075	06/02/20 09:28	

LABORATORY CONTROL SAMPLE: 2666089

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

LABORATORY CONTROL SAMPLE: 2667784

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	106	90-110	

LABORATORY CONTROL SAMPLE: 2668609

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	97	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 LCLI
Pace Project No.: 60338352

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2666090 2666091

Parameter	Units	60338348001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.45	2.5	2.5	3.1	3.1	105	107	80-120	2	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2666092 2666093

Parameter	Units	60338349001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.47	2.5	2.5	3.1	3.2	106	108	80-120	2	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2666094 2666095

Parameter	Units	60338352001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.16J	2.5	2.5	2.7	2.7	101	101	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
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Lenexa, KS 66219
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QUALIFIERS

Project: AMEREN LCLI
Pace Project No.: 60338352

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

Pace Analytical Services, LLC
9608 Loiret Blvd.
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LCLI
Pace Project No.: 60338352

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60338352001	**L-TMW-3**	EPA 300.0	657410		
60338352002	**L-UWL-DUP-1**	EPA 300.0	657410		
60338352003	**L-UWL-FB-1**	EPA 300.0	657410		

Pace Analytical

Sample Condition Upon Receipt

WO#: 60338352

60338352

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 ☒ Zip C

Thermometer Used: T219 Type of Ice: (Wet) Blue None

Cooler Temperature (°C): As-read 0.1 Corr. Factor +0.1 Corrected 0.2

Date and initials of person examining contents: 5.28.2020 KK

Temperature should be above freezing to 6°C 1.8 1.9

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 # 60173	☒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: Jami Church 5/29/20 Date _____

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Ryan Feldmann/Eric Schneider
Purchase Order No.:	
Project Name:	Ameren LCL1
Project Number:	153140602.0001C

Section C Invoice Information:

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

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER _____

Site Location STATE: MO

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

Section D Required Client Information

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	200.7 Calcium	Fluoride	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N		60238352
1	1-TMW-3	WT	G			5/27/20	0958		1	1									1				
2	1-UWL-DUP-1	WT	G				—		1	1									1				
3	1-UWL-MS-1	WT	G				0958		1	1									1				
4	1-UWL-MSD-1	WT	G				0958		1	1									1				
5	1-UWL-FB KB	WT	G				—																
6	1-UWL-FB-1	WT	G				1025		1	1									1				
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)
	Katherine Bartels/Golder	5/27/20	1820	[illegible]	5.28.20	0730	0.4	Y	Y	Y
							1.9	1	1	1

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Katherine Bartels

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 5/27/20

MEMORANDUM

DATE June 9, 2020 **Project No.** 153140602

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

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

DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCL1 – VERIFICATION SAMPLING - DATA PACKAGE 60338352

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 duplicate criterion was not met, the associated sample result was qualified as an estimate (J).
- 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).

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates Inc.
Project Manager: J. Ingram
Project Name: Ameren - LEC - LCL1
Project Number: 153140602
Reviewer: A. Muehlfarth
Validation Date: 06/09/2020

Laboratory: Pace Analytical
SDG #: 60338352
Analytical Method (type and no.): EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐ _____
Sample Names L-TMW-3, L-UWL-DUP-1, L-UWL-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			05/27/2020
b) Sampling team indicated?	x			
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		

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

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

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

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

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

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☒	☐	☐	
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:

FB: L-UWL-FB-1 @ L-TMW-3: Fluoride (0.082 J)

DUP: L-UWL-DUP-1: RPD exceeds limit (>20%) for fluoride

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-TMW-3	Fluoride	0.20	UJ	Detected in FB, DUP RPD exceeds limit

Signature: _____ Ann Muhlfeith _____ Date: 06/09/2020

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

December 11, 2020

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

RE: Project: AMEREN LCL1
Pace Project No.: 60353404

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on November 04, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: AMEREN LCL1
Pace Project No.: 60353404

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

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

SAMPLE SUMMARY

Project: AMEREN LCL1
Pace Project No.: 60353404

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60353404001	**L-TMW-1**	Water	11/03/20 10:15	11/04/20 03:50
60353404002	**L-TMW-2**	Water	11/03/20 11:20	11/04/20 03:50
60353404003	**L-TMW-3**	Water	11/03/20 12:25	11/04/20 03:50
60353404004	**L-UWL-DUP-1**	Water	11/03/20 08:00	11/04/20 03:50
60353404005	**L-UWL-FB-1**	Water	11/03/20 12:45	11/04/20 03:50
60353399002	**L-BMW-1S**	Water	11/02/20 10:20	11/04/20 03:50
60353399003	**L-BMW-2S**	Water	11/02/20 11:53	11/04/20 03:50
60353399005	**L-MW-26**	Water	11/02/20 11:50	11/04/20 03:50

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

SAMPLE ANALYTE COUNT

Project: AMEREN LCL1
Pace Project No.: 60353404

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60353404001	**L-TMW-1**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	VRP	3	PASI-K
60353404002	**L-TMW-2**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	VRP	3	PASI-K
60353404003	**L-TMW-3**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	VRP	3	PASI-K
60353404004	**L-UWL-DUP-1**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	VRP	3	PASI-K
60353404005	**L-UWL-FB-1**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	VRP	3	PASI-K
60353399002	**L-BMW-1S**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60353399003	**L-BMW-2S**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60353399005	**L-MW-26**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	LDB	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 LCL1
Pace Project No.: 60353404

Sample: L-TMW-1 **Lab ID: 60353404001** Collected: 11/03/20 10:15 Received: 11/04/20 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**103**	ug/L	100	11.7	1	11/06/20 09:10	11/09/20 13:36	7440-42-8	
Calcium	**142000**	ug/L	200	32.4	1	11/06/20 09:10	11/09/20 13:36	7440-70-2	M1
Iron	**30.6J**	ug/L	50.0	26.8	1	11/06/20 09:10	11/09/20 13:36	7439-89-6	
Magnesium	**39800**	ug/L	50.0	19.7	1	11/06/20 09:10	11/09/20 13:36	7439-95-4	
Manganese	**3360**	ug/L	5.0	0.97	1	11/06/20 09:10	11/09/20 13:36	7439-96-5	
Potassium	**4970**	ug/L	500	189	1	11/06/20 09:10	11/09/20 13:36	7440-09-7	
Sodium	**8570**	ug/L	500	107	1	11/06/20 09:10	11/09/20 13:36	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**499**	mg/L	20.0	8.4	1		11/06/20 10:05		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**579**	mg/L	10.0	10.0	1		11/06/20 08:50		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**1.8**	mg/L	1.0	0.36	1		11/10/20 20:32	16887-00-6	
Fluoride	**0.33**	mg/L	0.20	0.085	1		11/10/20 20:32	16984-48-8	
Sulfate	**30.9**	mg/L	5.0	2.1	5		11/10/20 19:11	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60353404

Sample: L-TMW-2 **Lab ID: 60353404002** Collected: 11/03/20 11:20 Received: 11/04/20 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**132**	ug/L	100	11.7	1	11/06/20 09:10	11/09/20 13:51	7440-42-8	
Calcium	**197000**	ug/L	200	32.4	1	11/06/20 09:10	11/09/20 13:51	7440-70-2	
Iron	**1170**	ug/L	50.0	26.8	1	11/06/20 09:10	11/09/20 13:51	7439-89-6	
Magnesium	**55900**	ug/L	50.0	19.7	1	11/06/20 09:10	11/09/20 13:51	7439-95-4	
Manganese	**2050**	ug/L	5.0	0.97	1	11/06/20 09:10	11/09/20 13:51	7439-96-5	
Potassium	**6800**	ug/L	500	189	1	11/06/20 09:10	11/09/20 13:51	7440-09-7	
Sodium	**15500**	ug/L	500	107	1	11/06/20 09:10	11/09/20 13:51	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**634**	mg/L	20.0	8.4	1		11/06/20 10:17		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**801**	mg/L	13.3	13.3	1		11/09/20 13:55		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**8.2**	mg/L	1.0	0.36	1		11/10/20 21:20	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	0.085	1		11/10/20 21:20	16984-48-8	
Sulfate	**116**	mg/L	10.0	4.2	10		11/10/20 21:37	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60353404

Sample: L-TMW-3 **Lab ID: 60353404003** Collected: 11/03/20 12:25 Received: 11/04/20 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**128**	ug/L	100	11.7	1	11/06/20 09:10	11/09/20 13:53	7440-42-8	
Calcium	**172000**	ug/L	200	32.4	1	11/06/20 09:10	11/09/20 13:53	7440-70-2	
Iron	**7510**	ug/L	50.0	26.8	1	11/06/20 09:10	11/09/20 13:53	7439-89-6	
Magnesium	**37400**	ug/L	50.0	19.7	1	11/06/20 09:10	11/09/20 13:53	7439-95-4	
Manganese	**926**	ug/L	5.0	0.97	1	11/06/20 09:10	11/09/20 13:53	7439-96-5	
Potassium	**6570**	ug/L	500	189	1	11/06/20 09:10	11/09/20 13:53	7440-09-7	
Sodium	**9100**	ug/L	500	107	1	11/06/20 09:10	11/09/20 13:53	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**544**	mg/L	20.0	8.4	1		11/06/20 10:24		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**651**	mg/L	10.0	10.0	1		11/09/20 13:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**5.3**	mg/L	1.0	0.36	1		11/10/20 21:53	16887-00-6	
Fluoride	**0.27**	mg/L	0.20	0.085	1		11/10/20 21:53	16984-48-8	
Sulfate	**56.1**	mg/L	5.0	2.1	5		11/10/20 22:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60353404

Sample: L-UWL-DUP-1 **Lab ID: 60353404004** Collected: 11/03/20 08:00 Received: 11/04/20 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**126**	ug/L	100	11.7	1	11/06/20 09:10	11/09/20 13:56	7440-42-8	
Calcium	**194000**	ug/L	200	32.4	1	11/06/20 09:10	11/09/20 13:56	7440-70-2	
Iron	**3600**	ug/L	50.0	26.8	1	11/06/20 09:10	11/09/20 13:56	7439-89-6	
Magnesium	**54800**	ug/L	50.0	19.7	1	11/06/20 09:10	11/09/20 13:56	7439-95-4	
Manganese	**2090**	ug/L	5.0	0.97	1	11/06/20 09:10	11/09/20 13:56	7439-96-5	
Potassium	**6480**	ug/L	500	189	1	11/06/20 09:10	11/09/20 13:56	7440-09-7	
Sodium	**15100**	ug/L	500	107	1	11/06/20 09:10	11/09/20 13:56	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**636**	mg/L	20.0	8.4	1		11/06/20 10:31		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**805**	mg/L	13.3	13.3	1		11/09/20 13:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**8.1**	mg/L	1.0	0.36	1		11/10/20 22:25	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	0.085	1		11/10/20 22:25	16984-48-8	
Sulfate	**119**	mg/L	10.0	2.8	10		11/11/20 11:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60353404

Sample: L-UWL-FB-1 **Lab ID: 60353404005** Collected: 11/03/20 12:45 Received: 11/04/20 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**<11.7**	ug/L	100	11.7	1	11/06/20 09:10	11/09/20 13:58	7440-42-8	
Calcium	**45.9J**	ug/L	200	32.4	1	11/06/20 09:10	11/09/20 13:58	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	11/06/20 09:10	11/09/20 13:58	7439-89-6	
Magnesium	**22.4J**	ug/L	50.0	19.7	1	11/06/20 09:10	11/09/20 13:58	7439-95-4	
Manganese	**<0.97**	ug/L	5.0	0.97	1	11/06/20 09:10	11/09/20 13:58	7439-96-5	
Potassium	**<189**	ug/L	500	189	1	11/06/20 09:10	11/09/20 13:58	7440-09-7	
Sodium	**<107**	ug/L	500	107	1	11/06/20 09:10	11/09/20 13:58	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**<8.4**	mg/L	20.0	8.4	1		11/06/20 10:35		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**5.5**	mg/L	5.0	5.0	1		11/09/20 13:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**<0.36**	mg/L	1.0	0.36	1		11/10/20 23:30	16887-00-6	
Fluoride	**<0.085**	mg/L	0.20	0.085	1		11/10/20 23:30	16984-48-8	
Sulfate	**<0.42**	mg/L	1.0	0.42	1		11/10/20 23:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60353404

Sample: L-BMW-1S **Lab ID: 60353399002** Collected: 11/02/20 10:20 Received: 11/04/20 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**99.0J**	ug/L	100	11.7	1	12/01/20 15:10	12/02/20 20:11	7440-42-8	
Calcium	**216000**	ug/L	200	32.4	1	12/01/20 15:10	12/02/20 20:11	7440-70-2	
Iron	**26000**	ug/L	50.0	26.8	1	12/01/20 15:10	12/02/20 20:11	7439-89-6	
Magnesium	**44600**	ug/L	50.0	19.7	1	12/01/20 15:10	12/02/20 20:11	7439-95-4	
Manganese	**2600**	ug/L	5.0	0.97	1	12/01/20 15:10	12/02/20 20:11	7439-96-5	
Potassium	**5350**	ug/L	500	189	1	12/01/20 15:10	12/02/20 20:11	7440-09-7	
Sodium	**15600**	ug/L	500	107	1	12/01/20 15:10	12/02/20 20:11	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**742**	mg/L	20.0	8.4	1		11/06/20 14:47		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**780**	mg/L	13.3	13.3	1		11/05/20 13:57		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**6.4**	mg/L	1.0	0.39	1		11/25/20 19:37	16887-00-6	
Fluoride	**0.17J**	mg/L	0.20	0.075	1		11/25/20 19:37	16984-48-8	
Sulfate	**66.5**	mg/L	5.0	1.4	5		11/25/20 19:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60353404

Sample: L-BMW-2S **Lab ID: 60353399003** Collected: 11/02/20 11:53 Received: 11/04/20 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**45.2J**	ug/L	100	11.7	1	12/01/20 15:10	12/02/20 20:13	7440-42-8	
Calcium	**142000**	ug/L	200	32.4	1	12/01/20 15:10	12/02/20 20:13	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	12/01/20 15:10	12/02/20 20:13	7439-89-6	
Magnesium	**20900**	ug/L	50.0	19.7	1	12/01/20 15:10	12/02/20 20:13	7439-95-4	
Manganese	**2.1J**	ug/L	5.0	0.97	1	12/01/20 15:10	12/02/20 20:13	7439-96-5	
Potassium	**5040**	ug/L	500	189	1	12/01/20 15:10	12/02/20 20:13	7440-09-7	
Sodium	**3570**	ug/L	500	107	1	12/01/20 15:10	12/02/20 20:13	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**359**	mg/L	20.0	8.4	1		11/06/20 14:52		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**524**	mg/L	10.0	10.0	1		11/05/20 13:57		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.4**	mg/L	1.0	0.39	1		11/25/20 20:06	16887-00-6	
Fluoride	**0.22**	mg/L	0.20	0.075	1		11/25/20 20:06	16984-48-8	
Sulfate	**73.4**	mg/L	5.0	1.4	5		11/25/20 20:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN LCL1
Pace Project No.: 60353404

Sample: L-MW-26 **Lab ID: 60353399005** Collected: 11/02/20 11:50 Received: 11/04/20 03:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**63.6J**	ug/L	100	11.7	1	12/01/20 15:10	12/02/20 20:18	7440-42-8	
Calcium	**119000**	ug/L	200	32.4	1	12/01/20 15:10	12/02/20 20:18	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	12/01/20 15:10	12/02/20 20:18	7439-89-6	
Magnesium	**21700**	ug/L	50.0	19.7	1	12/01/20 15:10	12/02/20 20:18	7439-95-4	
Manganese	**127**	ug/L	5.0	0.97	1	12/01/20 15:10	12/02/20 20:18	7439-96-5	
Potassium	**3900**	ug/L	500	189	1	12/01/20 15:10	12/02/20 20:18	7440-09-7	
Sodium	**5210**	ug/L	500	107	1	12/01/20 15:10	12/02/20 20:18	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**374**	mg/L	20.0	8.4	1		11/06/20 15:04		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**420**	mg/L	10.0	10.0	1		11/05/20 13:58		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**5.9**	mg/L	1.0	0.39	1		11/25/20 21:33	16887-00-6	
Fluoride	**0.22**	mg/L	0.20	0.075	1		11/25/20 21:33	16984-48-8	
Sulfate	**29.8**	mg/L	2.0	0.56	2		11/25/20 22:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

QC Batch: 687553
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: 60353404001, 60353404002, 60353404003, 60353404004, 60353404005

METHOD BLANK: 2778593 Matrix: Water
Associated Lab Samples: 60353404001, 60353404002, 60353404003, 60353404004, 60353404005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<11.7	100	11.7	11/09/20 13:31	
Calcium	ug/L	<32.4	200	32.4	11/09/20 13:31	
Iron	ug/L	<26.8	50.0	26.8	11/09/20 13:31	
Magnesium	ug/L	<19.7	50.0	19.7	11/09/20 13:31	
Manganese	ug/L	<0.97	5.0	0.97	11/09/20 13:31	
Potassium	ug/L	<189	500	189	11/09/20 13:31	
Sodium	ug/L	<107	500	107	11/09/20 13:31	

LABORATORY CONTROL SAMPLE: 2778594

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	998	100	85-115	
Calcium	ug/L	10000	9970	100	85-115	
Iron	ug/L	10000	10000	100	85-115	
Magnesium	ug/L	10000	10400	104	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	9830	98	85-115	
Sodium	ug/L	10000	9790	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2778595 2778596

Parameter	Units	60353404001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	103	1000	1000	1100	1100	100	100	70-130	0	20	
Calcium	ug/L	142000	10000	10000	152000	148000	97	51	70-130	3	20	M1
Iron	ug/L	30.6J	10000	10000	9830	9700	98	97	70-130	1	20	
Magnesium	ug/L	39800	10000	10000	49000	48000	93	82	70-130	2	20	
Manganese	ug/L	3360	1000	1000	4300	4120	94	76	70-130	4	20	
Potassium	ug/L	4970	10000	10000	14800	14500	98	96	70-130	2	20	
Sodium	ug/L	8570	10000	10000	18400	18000	98	94	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

QC Batch: 692094
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: 60353399002, 60353399003, 60353399005

METHOD BLANK: 2795352 Matrix: Water
Associated Lab Samples: 60353399002, 60353399003, 60353399005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<11.7	100	11.7	12/02/20 20:03	
Calcium	ug/L	<32.4	200	32.4	12/02/20 20:03	
Iron	ug/L	<26.8	50.0	26.8	12/02/20 20:03	
Magnesium	ug/L	35.6J	50.0	19.7	12/02/20 20:03	
Manganese	ug/L	<0.97	5.0	0.97	12/02/20 20:03	
Potassium	ug/L	<189	500	189	12/02/20 20:03	
Sodium	ug/L	<107	500	107	12/02/20 20:03	

LABORATORY CONTROL SAMPLE: 2795353

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	978	98	85-115	
Calcium	ug/L	10000	10000	100	85-115	
Iron	ug/L	10000	9920	99	85-115	
Magnesium	ug/L	10000	9960	100	85-115	
Manganese	ug/L	1000	990	99	85-115	
Potassium	ug/L	10000	9850	99	85-115	
Sodium	ug/L	10000	9840	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2795354 2795355

Parameter	Units	60353399005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	63.6J	1000	1000	1080	1080	101	101	70-130	0	20	
Calcium	ug/L	119000	10000	10000	129000	130000	93	103	70-130	1	20	
Iron	ug/L	<26.8	10000	10000	10100	10000	101	100	70-130	0	20	
Magnesium	ug/L	21700	10000	10000	31600	31600	98	99	70-130	0	20	
Manganese	ug/L	127	1000	1000	1130	1120	100	100	70-130	0	20	
Potassium	ug/L	3900	10000	10000	14000	14100	102	102	70-130	0	20	
Sodium	ug/L	5210	10000	10000	15100	15200	99	100	70-130	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2795356 2795357

Parameter	Units	60353399008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	67.9J	1000	1000	1060	1070	100	100	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2795356 2795357

Parameter	Units	60353399008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	141000	10000	10000	150000	147000	87	65	70-130	1	20	M1
Iron	ug/L	8540	10000	10000	18400	18100	98	96	70-130	1	20	
Magnesium	ug/L	35200	10000	10000	44700	44500	95	94	70-130	0	20	
Manganese	ug/L	242	1000	1000	1220	1220	98	98	70-130	0	20	
Potassium	ug/L	4420	10000	10000	14500	14400	100	100	70-130	0	20	
Sodium	ug/L	12900	10000	10000	22700	22500	98	96	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

QC Batch: 687538 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60353404001, 60353404002, 60353404003, 60353404004, 60353404005

METHOD BLANK: 2778499 Matrix: Water
Associated Lab Samples: 60353404001, 60353404002, 60353404003, 60353404004, 60353404005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<8.4	20.0	8.4	11/06/20 09:43	

LABORATORY CONTROL SAMPLE: 2778500

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

SAMPLE DUPLICATE: 2778501

Parameter	Units	60353402001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	275	277	1	10	

SAMPLE DUPLICATE: 2778502

Parameter	Units	60353404001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	499	510	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

QC Batch: 687540
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60353399002, 60353399003, 60353399005

METHOD BLANK: 2778511 Matrix: Water
Associated Lab Samples: 60353399002, 60353399003, 60353399005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<8.4	20.0	8.4	11/06/20 13:23	

LABORATORY CONTROL SAMPLE: 2778512

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	510	102	90-110	

SAMPLE DUPLICATE: 2778513

Parameter	Units	60353399005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	374	371	1	10	

SAMPLE DUPLICATE: 2778514

Parameter	Units	60353399008 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	528	547	4	10	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

QC Batch: 687484
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60353399002, 60353399003, 60353399005

METHOD BLANK: 2778180 Matrix: Water
Associated Lab Samples: 60353399002, 60353399003, 60353399005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/05/20 13:56	

LABORATORY CONTROL SAMPLE: 2778181

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

SAMPLE DUPLICATE: 2778491

Parameter	Units	60353399005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	420	430	2	10	

SAMPLE DUPLICATE: 2778492

Parameter	Units	60353399008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	527	561	6	10	

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

QC Batch: 687684
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60353404001

METHOD BLANK: 2779174 Matrix: Water
Associated Lab Samples: 60353404001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/06/20 08:46	

LABORATORY CONTROL SAMPLE: 2779175

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1020	102	80-120	

SAMPLE DUPLICATE: 2779176

Parameter	Units	60353402001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	296	300	2	10	

SAMPLE DUPLICATE: 2779177

Parameter	Units	60353404001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	579	562	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

QC Batch: 688098
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60353404002, 60353404003, 60353404004, 60353404005

METHOD BLANK: 2781156 Matrix: Water
Associated Lab Samples: 60353404002, 60353404003, 60353404004, 60353404005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/09/20 13:54	

LABORATORY CONTROL SAMPLE: 2781157

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1020	102	80-120	

SAMPLE DUPLICATE: 2781158

Parameter	Units	60353404002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	801	808	1	10	

SAMPLE DUPLICATE: 2781159

Parameter	Units	60353603001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	648	642	1	10	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

QC Batch: 687877
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: 60353404001, 60353404002, 60353404003, 60353404004, 60353404005

METHOD BLANK: 2779939 Matrix: Water
Associated Lab Samples: 60353404001, 60353404002, 60353404003, 60353404004, 60353404005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.36	1.0	0.36	11/10/20 13:20	
Fluoride	mg/L	<0.085	0.20	0.085	11/10/20 13:20	
Sulfate	mg/L	<0.42	1.0	0.42	11/10/20 13:20	

METHOD BLANK: 2782514 Matrix: Water
Associated Lab Samples: 60353404001, 60353404002, 60353404003, 60353404004, 60353404005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.36	1.0	0.36	11/11/20 09:01	
Fluoride	mg/L	<0.085	0.20	0.085	11/11/20 09:01	
Sulfate	mg/L	<0.42	1.0	0.42	11/11/20 09:01	

METHOD BLANK: 2783729 Matrix: Water
Associated Lab Samples: 60353404001, 60353404002, 60353404003, 60353404004, 60353404005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.36	1.0	0.36	11/12/20 09:08	
Fluoride	mg/L	<0.085	0.20	0.085	11/12/20 09:08	
Sulfate	mg/L	<0.42	1.0	0.42	11/12/20 09:08	

LABORATORY CONTROL SAMPLE: 2779940

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	90-110	
Fluoride	mg/L	2.5	2.5	102	90-110	
Sulfate	mg/L	5	5.4	108	90-110	

LABORATORY CONTROL SAMPLE: 2782515

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	103	90-110	
Fluoride	mg/L	2.5	2.7	108	90-110	
Sulfate	mg/L	5	5.2	105	90-110	

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REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

LABORATORY CONTROL SAMPLE: 2783730

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	103	90-110	
Fluoride	mg/L	2.5	2.7	109	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2779941 2779942

Parameter	Units	60353402001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.2	5	5	7.0	7.0	96	96	80-120	0	15	
Fluoride	mg/L	0.37	2.5	2.5	2.8	2.8	96	96	80-120	0	15	
Sulfate	mg/L	7.6	5	5	12.8	12.8	103	103	80-120	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2779943 2779944

Parameter	Units	60353404001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.8	5	5	6.5	6.5	93	94	80-120	0	15	
Fluoride	mg/L	0.33	2.5	2.5	2.6	2.6	92	92	80-120	0	15	
Sulfate	mg/L	30.9	25	25	56.6	56.7	103	103	80-120	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2779945 2779946

Parameter	Units	60352861002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.5	5	5	6.7	6.7	100	100	80-120	0	15	
Fluoride	mg/L	0.57	2.5	2.5	3.1	3.1	102	103	80-120	1	15	
Sulfate	mg/L	3.8	5	5	7.5	7.5	108	108	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

QC Batch: 691503
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: 60353399002, 60353399003, 60353399005

METHOD BLANK: 2793442 Matrix: Water
Associated Lab Samples: 60353399002, 60353399003, 60353399005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/25/20 16:29	
Fluoride	mg/L	<0.075	0.20	0.075	11/25/20 16:29	
Sulfate	mg/L	<0.28	1.0	0.28	11/25/20 16:29	

METHOD BLANK: 2794765 Matrix: Water
Associated Lab Samples: 60353399002, 60353399003, 60353399005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/30/20 09:10	
Fluoride	mg/L	<0.075	0.20	0.075	11/30/20 09:10	
Sulfate	mg/L	<0.28	1.0	0.28	11/30/20 09:10	

METHOD BLANK: 2794769 Matrix: Water
Associated Lab Samples: 60353399002, 60353399003, 60353399005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/30/20 09:07	
Fluoride	mg/L	<0.075	0.20	0.075	11/30/20 09:07	
Sulfate	mg/L	<0.28	1.0	0.28	11/30/20 09:07	

METHOD BLANK: 2796664 Matrix: Water
Associated Lab Samples: 60353399002, 60353399003, 60353399005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	11/18/20 16:09	
Fluoride	mg/L	<0.075	0.20	0.075	11/18/20 16:09	
Sulfate	mg/L	<0.28	1.0	0.28	11/18/20 16:09	

LABORATORY CONTROL SAMPLE: 2793443

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	98	90-110	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

LABORATORY CONTROL SAMPLE: 2793443

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

LABORATORY CONTROL SAMPLE: 2794766

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	90-110	
Fluoride	mg/L	2.5	2.5	102	90-110	
Sulfate	mg/L	5	5.3	106	90-110	

LABORATORY CONTROL SAMPLE: 2794770

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

LABORATORY CONTROL SAMPLE: 2796665

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	99	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2793444 2793445

Parameter	Units	60353386001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	12.1	5	5	17.0	16.8	98	94	80-120	1	15	
Fluoride	mg/L	0.34	2.5	2.5	2.5	2.5	88	86	80-120	2	15	
Sulfate	mg/L	121	50	50	176	174	110	107	80-120	1	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2793456 2793457

Parameter	Units	60353399005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	5.9	5	5	10.5	10	90	81	80-120	5	15	
Fluoride	mg/L	0.22	2.5	2.5	2.5	2.3	89	81	80-120	8	15	
Sulfate	mg/L	29.8	10	10	41.3	41.5	115	117	80-120	0	15	E

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN LCL1
Pace Project No.: 60353404

SAMPLE DUPLICATE: 2793458

Parameter	Units	60353399005 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	5.9	5.9	0	15	
Fluoride	mg/L	0.22	0.23	1	15	
Sulfate	mg/L	29.8	29.5	1	15	

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QUALIFIERS

Project: AMEREN LCL1
Pace Project No.: 60353404

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
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 LCL1
Pace Project No.: 60353404

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60353399002	**L-BMW-1S**	EPA 200.7	692094	EPA 200.7	692180
60353399003	**L-BMW-2S**	EPA 200.7	692094	EPA 200.7	692180
60353399005	**L-MW-26**	EPA 200.7	692094	EPA 200.7	692180
60353404001	**L-TMW-1**	EPA 200.7	687553	EPA 200.7	687760
60353404002	**L-TMW-2**	EPA 200.7	687553	EPA 200.7	687760
60353404003	**L-TMW-3**	EPA 200.7	687553	EPA 200.7	687760
60353404004	**L-UWL-DUP-1**	EPA 200.7	687553	EPA 200.7	687760
60353404005	**L-UWL-FB-1**	EPA 200.7	687553	EPA 200.7	687760
60353399002	**L-BMW-1S**	SM 2320B	687540		
60353399003	**L-BMW-2S**	SM 2320B	687540		
60353399005	**L-MW-26**	SM 2320B	687540		
60353404001	**L-TMW-1**	SM 2320B	687538		
60353404002	**L-TMW-2**	SM 2320B	687538		
60353404003	**L-TMW-3**	SM 2320B	687538		
60353404004	**L-UWL-DUP-1**	SM 2320B	687538		
60353404005	**L-UWL-FB-1**	SM 2320B	687538		
60353399002	**L-BMW-1S**	SM 2540C	687484		
60353399003	**L-BMW-2S**	SM 2540C	687484		
60353399005	**L-MW-26**	SM 2540C	687484		
60353404001	**L-TMW-1**	SM 2540C	687684		
60353404002	**L-TMW-2**	SM 2540C	688098		
60353404003	**L-TMW-3**	SM 2540C	688098		
60353404004	**L-UWL-DUP-1**	SM 2540C	688098		
60353404005	**L-UWL-FB-1**	SM 2540C	688098		
60353399002	**L-BMW-1S**	EPA 300.0	691503		
60353399003	**L-BMW-2S**	EPA 300.0	691503		
60353399005	**L-MW-26**	EPA 300.0	691503		
60353404001	**L-TMW-1**	EPA 300.0	687877		
60353404002	**L-TMW-2**	EPA 300.0	687877		
60353404003	**L-TMW-3**	EPA 300.0	687877		
60353404004	**L-UWL-DUP-1**	EPA 300.0	687877		
60353404005	**L-UWL-FB-1**	EPA 300.0	687877		

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Sample Condition Upon Receipt

WO# : 60353404

60353404

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 IC

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

Cooler Temperature (°C): **As-read** 1.4 **Corr. Factor** +0.2 **Corrected** 1.6

Date and initials of person examining contents: 11-4-2020 kb

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? (HNO3, H2SO4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT# 603273	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution:

REVIEWED
By jchurch at 10:10 am, 11/5/20

Project Manager Review: _____ Date: _____

Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Ryan Feldmann/Eric Schneider
Purchase Order No.:	
Project Name:	Ameren LCL1 Labadie Energy Center
Project Number:	153-140602.0001C (COC #4)

Section C Invoice Information:

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

REGULATORY AGENCY: NPDES | GROUND WATER | DRINKING WATER | UST | RCRA | OTHER

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride/Fluoride/Sulfate	App III and Cat/An Metals*	Alkalinity	TDS	Appendix IV Metals **	Mercury	Radium 226	Radium 228				Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N	N	N	N	N	N				60353404
1	L-TMW-1	WT	G			11/3/20	1015		3	1		2						/	/	/	/								
2	L-TMW-2	WT	G			"	1120																						
3	L-TMW-3	WT	G			"	1225																						
4	L-MW-26	WT	G			11/2/20	1150																						
5	L-BMW-1S	WT	G			"	1020																						
6	L-BMW-2S	WT	G			"	1153																						
7	L-UWL-DUP-1	WT	G			11/3/20	—																						
8	L-UWL-FB-1	WT	G			"	1245																						
9	L-UWL-MS-1	WT	G			"	1015																						
10	L-UWL-MSD-1	WT	G			"	1015																						
11		WT	G																										
12		WT	G																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B	[signature] / Golder	11/3/20	1650	[signature] / Pace	11.4.20	0350	1.6	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schneider

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 11/03/20

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

MEMORANDUM

DATE December 14, 2020 **Project No.** 153140602

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

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

DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCL1 – DETECTION MONITORING - DATA PACKAGE 60353404

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

- When a compound was detected in a sample result between the MDL and the PQL the results were recorded at the detection value and qualified as estimates (J).
- When matrix spike/matrix spike duplicate (MS/MSD) criterion was not met, the associated sample result was qualified as an estimate (J).
- When duplicate criterion was not met, the associated sample result was qualified as an estimate (J).

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates Inc.
Project Manager: J. Ingram
Project Name: Ameren - LEC - LCL1
Project Number: 153140602
Reviewer: A. Muehlfarth
Validation Date: 12/14/2020

Laboratory: Pace Analytical Services, LLC
SDG #: 60353404
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-TMW-1, L-TMW-2, L-TMW-3, L-UWL-DUP-1, L-UWL-FB-1, L-BMW-1S, L-BMW-2S, L-MW-26

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			11/02/2020- 11/03/2020
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			See Notes
g) Were any matrix problems noted?	x			See Notes

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

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

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			See Notes
b) Were field dup. precision criteria met (note RPD)?		x		See Notes
c) Were lab duplicates analyzed (note original and duplicate samples)?	x			
d) Were lab dup. precision criteria met (note RPD)?	x			Max RPD: 6% (<10%)

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

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?		x		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:

Sulfate was diluted in several samples, no qualification necessary.

Method blank:

2795352: Magnesium (35.6J), associated with samples 60353399002, -003, and -005. Sample results >10x the blank result, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

Field Blanks:

L-UWL-FB-1 @ L-TMW-3: Calcium (45.9J), Magnesium (22.4J), TDS (5.5). Sample results >10x blank results, no qualification necessary.

DUP:

L-UWL-DUP-1@ L-TMW-2: RPD for Iron (101.9%) exceeds limit (20%).

MS/MSD:

2778595/2778596: MSD % recovery low for Calcium, associated with sample L-TMW-1.

2795356/2795357: MSD % recovery low for Calcium. MS/MSD performed on unrelated sample, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-TMW-2	Iron	1170	J	DUP RPD exceeds limit
L-UWL-DUP-1	"	3600	J	"
L-TMW-1	Calcium	142000	J	MSD% recovery low

Signature: Ann Muhlfarth Date: 12/14/2020

APPENDIX B

Alternative Source Demonstration – November 2019 Sampling Event

LCL1 - Alternative Source Demonstration

Labadie Energy Center, Franklin County, Missouri, USA

Submitted to:

Ameren Missouri

1901 Chouteau Ave, St. Louis, MO 63103

Submitted by:

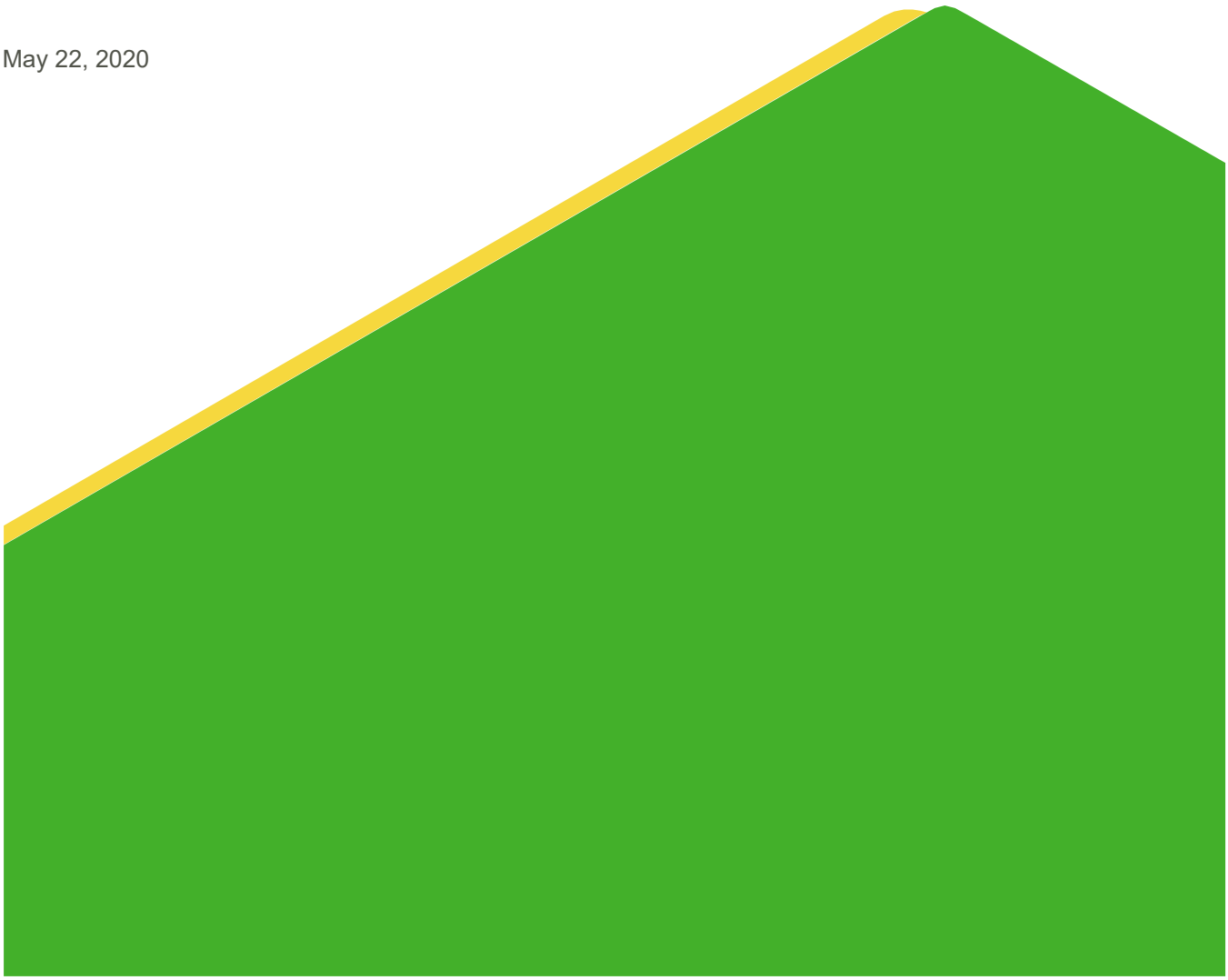
Golder Associates Inc.

13515 Barrett Parkway Drive, Suite 260

Ballwin, MO 63021, USA

+1 314 984 8800

May 22, 2020



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Tables

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1.0 CERTIFICATION STATEMENT

This *LCL1 – Alternative Source Demonstration, Labadie Energy Center, Franklin County, Missouri, USA* has been prepared to comply with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule under the direction of a licensed professional engineer with Golder Associates Inc.

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

GOLDER ASSOCIATES INC.

_____

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

Principal, Practice Leader

2.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (CCR Rule or The Rule), this *LCL1 – Alternative Source Demonstration* has been prepared to document an Alternative Source Demonstration (ASD) for Statistically Significant Increases (SSIs) calculated at Ameren Missouri's (Ameren) Labadie Energy Center (LEC), Utility Waste Landfill (UWL) LCL1 or Cell 1. This document satisfies the requirements of §257.94(e)(2) which allows the owner or operator to demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

3.0 SITE DESCRIPTION AND BACKGROUND

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

3.1 Geological and Hydrogeological Setting

The site lies between the Missouri River (to the north) and bedrock bluffs (to the south). Flow and deposition from the Missouri River have resulted in thick alluvial deposits which lie on top of bedrock. These alluvial deposits, which can range from approximately 90 to 120 feet thick, comprise the uppermost aquifer. Overall, this alluvial aquifer is described as a fining-upwards sequence of stratified sands and gravels with varying amounts of silts and clays. Based on drilling records, the alluvial aquifer is divided into sub-units, including, floodplain deposits, natural levee deposits, and channel deposits along with volumetrically less important loess deposits. Grain sizes of these alluvial deposits are variable.

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

3.2 Utility Waste Landfill Cell 1 – LCL1

UWL Cell 1 is referred to by Ameren as the LCL1, or Cell 1. The LCL1 is approximately 31 acres in size and is located east of the generating plant (**Figure 1**). The CCR Unit manages CCR from the LEC and is permitted to accept fly ash waste, bottom ash waste, slag waste and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels. Currently the facility manages dry disposal of fly ash and bottom ash from the LEC.

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

A groundwater monitoring well network was installed in 2013 and 2014 in order to permit the UWL construction. This monitoring well network was approved by the Missouri Department of Natural Resources (MDNR) and consists of 36 monitoring wells ringing the current and proposed future extents of the UWL (**Figure 1**). Most of these monitoring wells are installed in the uppermost portions of the alluvial aquifer, just below the seasonally low elevation for groundwater. Three (3) monitoring wells (MW-33(D), MW-34(D), and MW-35(D)) are installed in the

intermediate/deeper zones of the alluvial aquifer. Groundwater samples have been collected in most of these monitoring wells since April 2013 and tested for the MDNR UWL parameters. In April 2017, four (4) monitoring wells were installed and added to this network along Labadie Bottoms Road (S-1, S-2, S-3, and S-4).

The permit for the LCL1 was issued October 27, 2016 (permit #0907101). Eleven (11) sampling events were performed prior to October 27, 2016 at most of the state required UWL monitoring wells and four (4) rounds of baseline CCR Rule sampling were completed at CCR Rule monitoring wells (discussed below). These results represent groundwater quality prior to CCR placement in the UWL. The results from these pre-disposal monitoring events are used in conjunction with other site information in the ASD presented below.

3.3 CCR Rule Groundwater Monitoring

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

The groundwater monitoring system for the LCL1 consists of six (6) monitoring wells screened in the uppermost aquifer (alluvial aquifer) as shown on **Figure 1**. Two (2) existing monitoring wells (MW-26 and TMW-1) were installed by Reitz & Jens, Inc. in 2013 as a part of the state UWL monitoring program. The remaining monitoring wells (TMW-2, BMW-1S, and BMW-3S) were installed by Golder in 2015 and 2016 for CCR Rule groundwater monitoring purposes. More information on the design and installation of the monitoring wells is provided in the LCL1 GMP and the LCL1 2017 Annual Report.

Between May 2016 and June 2017, eight (8) baseline sampling events were completed for the LCL1. After baseline sampling, Detection Monitoring events were completed in November 2017, May 2018, November 2018, May 2019 and November 2019. Laboratory testing was performed for the following Appendix III constituents during Detection Monitoring:

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

In January 2018, background results from the eight (8) baseline sampling events were used to calculate statistical upper prediction limits (UPL). These UPL were then compared to the Detection Monitoring results. If results from Detection Monitoring were higher than the calculated UPL, it is an initial exceedance, in which case a verification sample was collected and tested in accordance with the LCL1 statistical analysis plan. Per the statistical analysis plan after the May 2019 sampling event, the UPLs were updated to include four (4) additional sampling events that had been completed for Detection Monitoring.

In November 2017, there were no initial exceedances. In May 2018, three (3) initial exceedances were identified including boron, fluoride, and total dissolved solids (TDS) at TMW-1 and fluoride at TMW-2. Verification sampling results confirmed all four (4) SSIs. An ASD was prepared for the May 2018 results and is available in the 2018 LCL1 Annual Report. This ASD concluded that the SSIs observed in the May 2018 sampling event were not caused by the LCL1, but rather primarily caused by relatively low calculated UPLs that did not reflect the full, natural variability within the alluvial aquifer.

In November 2018, four (4) initial exceedances were identified for boron, chloride and fluoride at TMW-1 and fluoride at TMW-2. Verification sampling results confirmed only the fluoride at TMW-1 result. An ASD was prepared for the November 2018 results and is available in the 2019 LCL1 Annual Report. This ASD also concluded that the SSI observed in the November 2018 sampling event was not caused by the LCL1, but rather primarily caused by relatively low calculated UPLs that did not reflect the natural geochemical variability within the alluvial aquifer.

In May 2019, seven (7) initial exceedances were identified for pH, calcium, chloride, and fluoride. Verification sampling results confirmed only chloride at TMW-1. An ASD was prepared for the May 2019 results and is available in the 2019 LCL1 Annual Report. This ASD also concluded that the SSI observed in the May 2019 sampling event was not caused by the LCL1, but rather primarily caused by relatively low calculated UPLs that did not reflect the natural geochemical variability within the alluvial aquifer.

In November 2019, four (4) initial exceedances were identified for boron, chloride, and TDS at MW-26 and chloride at TMW-1. Verification sampling results only confirmed the three (3) SSIs at MW-26. Results from these sampling events are provided in **Table 1**.

4.0 REVIEW OF THE STATISTICALLY SIGNIFICANT INCREASES

The SSIs for boron, chloride, and TDS occurred at monitoring well MW-26 and the values are provided on **Table 1**. MW-26 is screened in the upper portion of the alluvial aquifer just below the average seasonal low for groundwater. As shown on **Figure 1**, MW-26 is located to the west of the LCL1, and east of the generating plant as well as the two surface impoundments (LCPA and LCPB). Closure activities were initiated for both LCPA and LCPB during 2019.

Based on Golder's review of the pre-disposal data discussed in Section 3.2 above, as well as our comparison of the pre-disposal data with the results from the eight (8) CCR-Rule baseline events, the groundwater at the LCL1 contains low-level, pre-existing CCR impacts from units/activities that pre-dated disposal activities in the LCL1. As a result of these pre-existing impacts, the LCL1 statistical analysis plan uses intrawell upper prediction limits (UPL) to determine SSIs. Intrawell UPLs are calculated from historical data within a particular well, and not by pooling data from the background wells, such that individual limits are calculated for each constituent in each well in the monitoring program.

5.0 EVIDENCE OF SSI FROM ALTERNATIVE SOURCE

Several different lines of evidence indicate that the SSIs at the MW-26 are not the result of a release from the LCL1, but are rather from an alternative source. The following section describes the different lines of evidence, that support this ASD.

- Documentation of pre-existing, low level concentrations of CCR indicators in groundwater that pre-date the LCL1 operation.
- Review of groundwater results prior to and after construction and CCR placement in the LCL1.

- Documentation of the construction of the LCL1 with a 60-mil geomembrane liner and a 2-foot thick clay barrier.
- Review of groundwater results in nearby monitoring wells and background monitoring wells.
- Groundwater flow direction within the uppermost alluvial aquifer.
- Constituent concentrations upgradient and downgradient of the LCL1.

5.1 CCR Indicators

Several types of CCR byproducts are generated by coal-fired power plants. The different types of CCR typically display distinct geochemical signatures and indicator parameters. **Table 2** below describes the different types of CCRs and their typical indicator parameters (USEPA 2018, EPRI 2011, EPRI 2012, and EPRI 2017).

Table 2: Types of CCR and Typical Indicator Parameters

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

Notes:

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

5.2 Analysis of Groundwater Flow

As required by the CCR Rule, groundwater level measurements are obtained at monitoring wells prior to the start of each groundwater purging and sampling event. These static groundwater elevation measurements are then used to generate potentiometric surface maps. Available potentiometric surface maps for the site from November 2017 (two years prior to this sampling event) through 2019 are provided in the 2017, 2018 and 2019 Annual Reports for the LCPA, LCPB and LCL1.

As discussed in the 2017, 2018 and 2019 annual reports, on a site-wide scale, groundwater flow directions in the uppermost aquifer are dynamic and are influenced by seasonal changes in water level of 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 (bluffs area) to the north (Missouri River) is observed under normal river conditions in the Labadie Bottoms area. 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.

An analysis of shallow alluvial aquifer groundwater flow in the immediate area near MW-26 in the past two years displays a more consistent groundwater flow direction. As shown on **Table 3**, groundwater flow in the shallow alluvial aquifer zone around MW-26 has been from the south or west toward the north or east for water levels measured during the past two years, with the overall net groundwater movement direction towards the northeast at approximately 17 feet per year.

Based on these potentiometric surface maps and the groundwater flow calculations, groundwater impacts from the LCL1 would be expected in the monitoring wells located to the north or east of the LCL1, in the direction of downgradient flow. MW-26 is located upgradient (west) of the LCL1; thus, elevated constituent concentrations in MW-26 are more likely attributable to an alternative source, such as the LCPA, which is hydraulically upgradient of MW-26.

5.3 SSIs at MW-26

5.3.1 Boron Concentrations

As indicated in **Table 2**, above, boron is a key indicator for fly ash and boiler slag/bottom ash impacts because it is typically present at relatively high concentrations in the leachate from these types of waste, is not a common anthropogenic contaminant, and is non-reactive and mobile in most hydrogeological environments (EPRI 2012). This non-reactive and mobile nature makes boron an early indicator of impacts from a CCR Unit. At MW-26, boron concentrations were 423 micrograms per liter (µg/L) in November 2019 and 162 µg/L in January 2020 verification sampling event. Concentrations prior to the November 2019 sampling event ranged from 54.0 – 120 µg/L. During the November 2019 event, boron concentrations in the three (3) downgradient wells for the LCL1 (TMW-1, TMW-2 and TMW-3) ranged between 97.3 – 122 µg/L and were all in compliance with their UPLs (**Table 1**). The UPL for boron based on the background wells BMW-1S and BMW-2S is 156.1 µg/L.

As discussed above in Section 5.2, groundwater flow in the area around MW-26 has consistently been toward the north and/or east, therefore, MW-26 has been consistently upgradient of the LCL1. As an upgradient well, elevated concentrations of boron in MW-26 are not from the LCL1, but rather, from an upgradient alternative source.

The LCPA is located southwest of the LCL1 and is currently in Corrective Action based on previous results in Detection and Assessment Monitoring. This location to the southwest makes the LCPA an upgradient source to MW-26 and the LCL1. A boron concentration map for the upper aquifer wells in the area of the LCPA and LCL1 from the November 2019 sampling event is provided in **Figure 2**. This figure displays increased boron concentrations in several of the monitoring wells intermediate to the LCPA and LCL1, and upgradient from the LCL1 (west/south), particularly S-1, S-2, L-LMW-6S, and L-LMW-7S. Concurrently, areas downgradient of the LCL1 (north/east) display lower concentrations, which are consistent with historical values and less than background levels. Based on this distribution pattern, and the known flow direction of groundwater in the area around MW-26, the SSI at MW-26 is a result of CCR impacts from the LCPA and not the LCL1.

5.3.2 Chloride Concentrations

Chloride is not listed in **Table 2** as an indicator of fly ash or boiler slag/bottom ash (EPRI 2012, EPRI 2017) because it typically has low concentrations in CCR leachate relative to typical background. It can be an indicator however, if concentrations in the source are higher than background levels. Chloride is typically a key indicator for FGD type wastes and is commonly found near salt and brine treated roadways where it can be a good indicator because it, like boron, has high mobility and low reactivity in most aquifer conditions. There is no FGD waste at the LEC, and fly ash or bottom ash/boiler slag are the typical wastes in the LCPA, LCPB, and LCL1.

Concentrations for the November 2019 sampling event and subsequent verification sampling event are 22.5 and 7.4 milligrams per liter (mg/L) respectively. The calculated UPL for MW-26 is 5.92 mg/L. Historically, based on State UWL and CCR Rule sampling, chloride concentrations have ranged from 2.7 – 18.0 mg/L. Background monitoring wells located 2-miles upgradient from the LCL1 have had chloride concentrations ranging from 1.3 to 7.4 mg/L with a UPL of 8.32 and a couple of high outliers at 8.2 and 21.2 mg/L. Additionally, during the November 2017 ASD investigation, chloride concentrations within the pore-water of the LCPA ranged from 15.2 – 25.5 mg/L.

MW-26 is located ~ 225 feet east of Labadie Bottoms Road and 75 feet south of new haul road built to transport CCR from the LEC to the LCL1 (**Figure 1**). Road salt (NaCl) is a typical alternative source for chloride, especially in monitoring wells near roadways. Road salt impacts typically consist of increases in chloride and sodium concentrations. As displayed on **Figure 3**, in well MW-26 chloride and sodium concentrations do not covary, and thus, the chloride increase does not appear to from the use of road salt.

As discussed above in Section 5.2 and 5.3.1, groundwater flow in in the area around MW-26 has consistently been toward the north or east in the past years, making MW-26 an upgradient well to the LCL1. Therefore, elevated concentrations from MW-26 are not from the LCL1 and come from an alternative source. Much like boron concentrations when chloride concentrations are compared spatially to the LCL1 (**Figure 4**), increased chloride concentrations are present in wells located between the LCPA and LCL1 in the upgradient direction (8.8 – 25.2 mg/L) and decreased chloride concentrations are present north and east of the LCL1 in the downgradient direction (1.0 – 8.0 mg/L). Based on these concentration patterns, and the predominate direction of groundwater flow in the area around MW-26, the LCPA obviously contains higher chloride concentrations than the surrounding groundwater. Thus, the SSI at MW-26 is from CCR impacts from the LCPA and not the LCL1.

5.3.3 Total Dissolved Solids Concentrations

TDS alone is not known to be a fly ash or boiler slag/bottom ash indicator (EPRI 2017, EPRI 2012). The concentration of TDS is largely based on the concentration of major ions in groundwater (calcium, magnesium, sodium, potassium, carbonates, chloride, sulfate, etc.). Although TDS alone is not a key indicator of CCR impacts, an increase in some of the major ions associated with CCR (calcium, sodium, chloride, sulfate) can represent CCR impacts.

During baseline sampling at MW-26, TDS results ranged from 486 – 510 mg/L with an outlier at 291 mg/L and a UPL of 520.2 mg/L. During the November 2019 sampling event, TDS was elevated with respect to historical CCR Rule sampling results at 540 mg/L and was 575 mg/L during the subsequent verification sampling event. Results for TDS from the State UWL wells ranged from 446 – 612 mg/L prior to the receipt of CCR with a calculated UPL of 613. Additionally, results from the background wells (BMW-1S and BMW-2S) have ranged from 366 – 784 mg/L, and the background UPL is 784 mg/L.

Figure 5 displays TDS concentrations over time at MW-26, BMW-1S, and BMW-2S and shows that the high values detected during the November 2019 sampling event in MW-26, while elevated with respect to historical intrawell values, are well within the bounds of historical concentrations prior to the placement of CCR in the LCL1

and lower than background concentrations at BMW-1S and BMW-2S, located ~2 miles upgradient of the LCL1. Additionally, samples for state UWL sampling collected on November 19, 2019 (~2 weeks after the CCR rule sampling event) are lower than the UPL for MW-26 with a value of 472 mg/L. Finally, the April 2020 result for TDS in MW-26 is within the range of historical intrawell values.

This information indicates that the higher concentration in MW-26 in November 2019 was not caused by a release from the LCL1, but instead can be attributed to natural variability and seasonality in the alluvial aquifer during the November 2019 sampling event, or possibly lab testing variability.

6.0 DEMONSTRATION THAT SSI WAS NOT CAUSED BY LCL1 IMPACT

Based on the information presented in Section 5 above, the SSIs at MW-26 were not caused by impacts from the LCL1. The SSI for TDS appears to be a result of numerous factors, but is primarily caused by relatively low calculated UPLs and a relatively small set of baseline data that do not reflect the full natural variability within the alluvial aquifer. This is because only twelve (12) samples were used to calculate the UPL for TDS and these sampling events have apparently not captured the full extent of the natural spatial and temporal variability in the alluvial aquifer especially for TDS. When results are compared to historical data from the state sampling program, as well as background data from monitoring wells located ~2-miles upgradient, it is apparent that there are no impacts from the LCL1. Based on this information, the SSI observed in MW-26 for TDS was not caused by impacts from the LCL1.

The SSIs for Boron and Chloride appear to be caused by the upgradient, unlined LCPA Surface Impoundment. The unlined LCPA is currently in corrective action (closure), whereas the construction of the LCL1, with 2-feet of compacted clay overlain by a 60-mil HDPE liner, limits the likelihood that the SSI is a result an impact from LCL1. Groundwater flow analysis from late 2017 through the November 2019 sampling event shows that groundwater flow has been consistently flowing towards the east or north. This demonstrates that MW-26 has been upgradient of the LCL1, and therefore, boron and chloride increases present in MW-26 are not from the LCL1, but are from an alternate source. Furthermore, boron and chloride concentrations upgradient of the LCL1 are and have been higher than those downgradient of the LCL1, which indicates that an alternative source is responsible for the elevated concentrations. Based on this information, the SSIs observed in MW-26 for boron and chloride were not caused by impacts from the LCL1, but, as discussed in detail in Section 5, are from the upgradient LCPA.

7.0 REFERENCES

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Tables

Table 1
November 2019 Detection Monitoring Results
LCL1 - Utility Waste Landfill Cell 1
Labadie Energy Center, Franklin County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-2S	Prediction Limit MW-26	MW-26	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
November 2019 Detection Monitoring Event											
DATE	NA	11/5/2019	11/5/2019	NA	11/6/2019	NA	11/5/2019	NA	11/5/2019	NA	11/5/2019
pH	SU	6.83	7.08	6.02-7.44	7.30	6.623-7.19	6.94	6.42-7.17	6.95	5.83-7.07	6.74
BORON, TOTAL	µg/L	122	61.2 J	DQR	423	139.7	101	136.3	97.3 J	139.7	122
CALCIUM, TOTAL	µg/L	194,000	125,000	182,000	146,000	177,907	174,000 J	195,768	177,000	208,416	176,000
CHLORIDE, TOTAL	mg/L	4.8	3.3	5.922	22.5	4.246	4.4	7.116	4.9	8.166	5.5
FLUORIDE, TOTAL	mg/L	ND	0.12 J	0.2237	ND	0.2916	0.15 J	0.2707	0.13 J	DQR	0.089 J
SULFATE, TOTAL	mg/L	29.9	28.5	33.4	18.1	122.2	109	109.9	82.6	109.6	44.5
TOTAL DISSOLVED SOLIDS	mg/L	700	425	520.2	540	733.7	673	767.8	687	756.6	604
January 2020 Verification Sampling Event											
DATE	NA				1/8/2020		1/7/2020				
pH	SU										
BORON, TOTAL	µg/L				162						
CALCIUM, TOTAL	µg/L										
CHLORIDE, TOTAL	mg/L				7.4		4.2				
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L										
TOTAL DISSOLVED SOLIDS	mg/L				575						

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. ND - Constituent was analyzed for 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.
4. NA - Not applicable.
5. Prediction Limits calculated using Sanitas Software.
6. Values highlighted in yellow indicate a Statistically Significant Increase (SSI).
7. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).
8. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
9. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantification Rule (DQR) is used.

Prepared By: EMS
Checked By: BTT
Reviewed By: SCP

Table 3
Groundwater Flow in the Shallow Alluvial Aquifer Near the LCL1
LCL1 - Utility Waste Landfill Cell 1
Labadie Enegy Center, Franklin County, Missouri

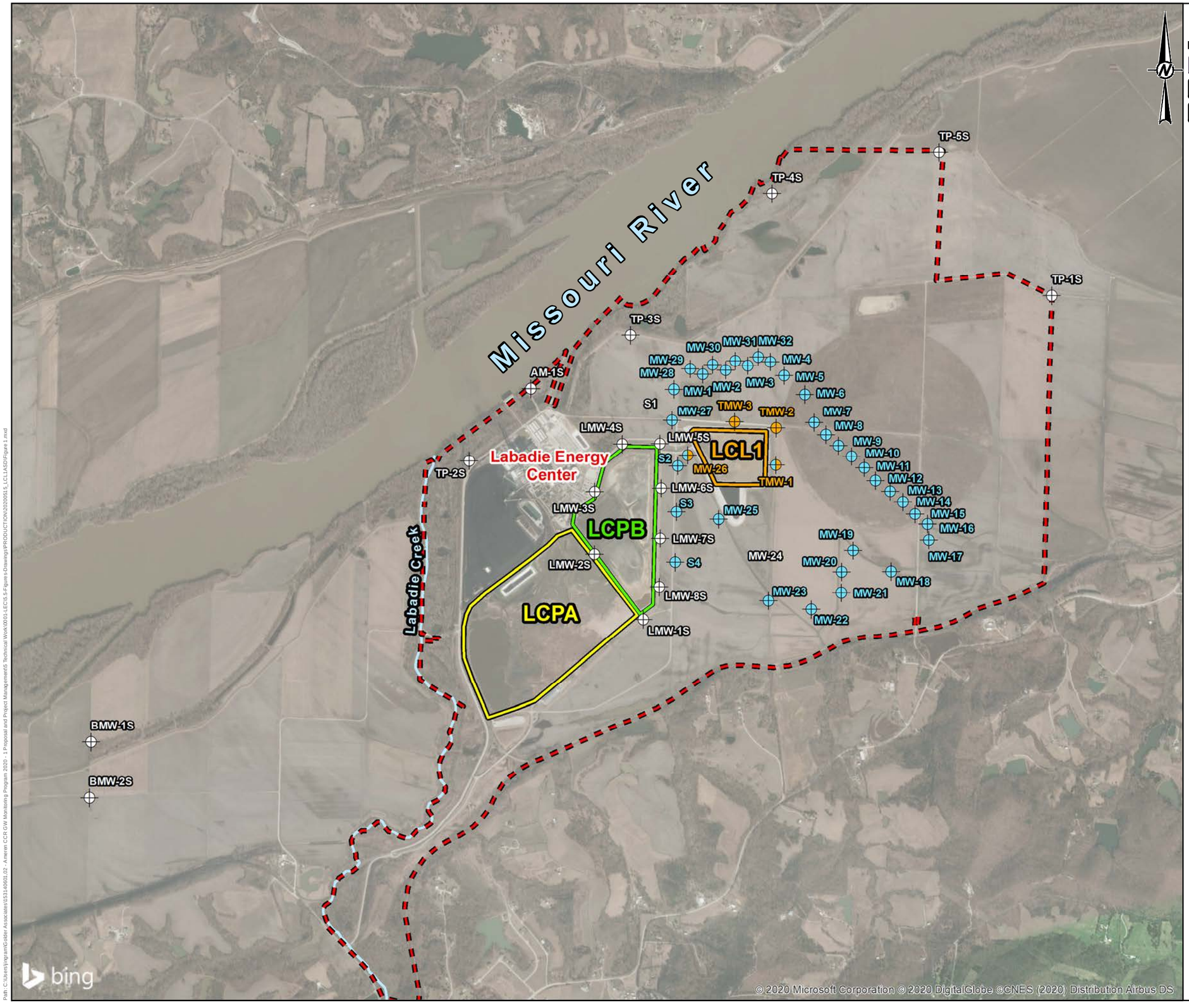
Baseline Sampling Event Date	Average Groundwater flow Direction (Azimuth)	Estimated Hydraulic Gradient (Feet/Foot)	Hydraulic Conductivity (Feet/Day)	Mean Hydraulic Conductivity (cm/sec)	Estimated Effective Porosity	Estimated Groundwater Velocity (Feet/Day)
11/7/2017	12	0.00027	58.33	2.1E-02	0.35	0.05
1/4/2018	340	0.00040	58.33	2.1E-02	0.35	0.07
3/5/2018	44	0.00048	58.33	2.1E-02	0.35	0.08
4/9/2018	40	0.00043	58.33	2.1E-02	0.35	0.07
5/21/2018	28	0.00038	58.33	2.1E-02	0.35	0.06
6/25/2018	19	0.00038	58.33	2.1E-02	0.35	0.06
7/24/2018	75	0.00037	58.33	2.1E-02	0.35	0.06
8/22/2018	85	0.00034	58.33	2.1E-02	0.35	0.06
9/27/2018	90	0.00047	58.33	2.1E-02	0.35	0.08
11/7/2018	51	0.00037	58.33	2.1E-02	0.35	0.06
1/2/2019	40	0.00056	58.33	2.1E-02	0.35	0.09
4/29/2019	97	0.00026	58.33	2.1E-02	0.35	0.04
10/4/2019	99	0.00080	58.33	2.1E-02	0.35	0.13
11/4/2019	92	0.00032	58.33	2.1E-02	0.35	0.05
1/6/2020	4	0.00009	58.33	2.1E-02	0.35	0.01
4/13/2020	19	0.00020	58.33	2.1E-02	0.35	0.03

Estimated Results	
Resultant Groundwater Flow Direction (Azimuth)	53
Estimated Annual Net Groundwater Movement (Feet/Year)	17

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

Notes:
1. Azimuth and Hydraulic Gradient calculated using the spreadsheet tool from the 2005 report entitled "A Spreadsheet Method For Estimating Hydraulic Gradient With Heads From Multiple Wells" submitted to Ground Water" by J.F. Devlin
2. Hydraulic conductivity value is the geometric mean of slug test results for the CCR compliance wells.
3. An effective porosity of 0.35 was used based on grain size distributions and published values (Fetter 2000, Cohen 1953, and Johnson 1967).
4. Azimuth is measured clockwise in degrees from north.
5. cm/sec - centimeters per second.
6. Monitoring Wells LMW-1S, LMW-2S. LMW-3S, LMW-4S, LMW-5S, LMW-6S, LMW-7S, LMW-8S, MW-26, TMW-1, TMW-2, TMW-3, MW-23, MW-24, MW-25, MW-27, MW-28, S-1, S-2, S-3, and S-4 were used for this analysis.

Figures



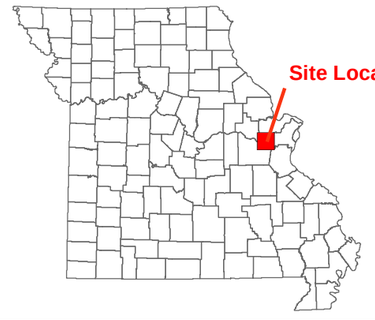
LEGEND

- Labadie Energy Center Property Boundary
- LCPB - Fly Ash Surface Impoundment
- LCPA - Bottom Ash Surface Impoundment
- LCL1 - UWL Cell 1

Shallow Alluvial Aquifer Monitoring Well Location

- LCL1 Monitoring Well
- LCL1 and State UWL Monitoring Well
- Additional CCR Rule Program Monitoring Well
- State UWL Monitoring Well

KEY MAP



NOTES

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. UWL - UTILITY WASTE LANDFILL.
3. CCR - COAL COMBUSTION RESIDUALS.

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.

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

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

PROJECT
GROUNDWATER MONITORING PROGRAM

TITLE
SITE AERIAL AND SHALLOW MONITORING WELL LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-05-05
PREPARED	JSI
DESIGN	JSI
REVIEW	EMS
APPROVED	MNH

PROJECT No. 153-140602 PHASE 0001 FIGURE 1

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

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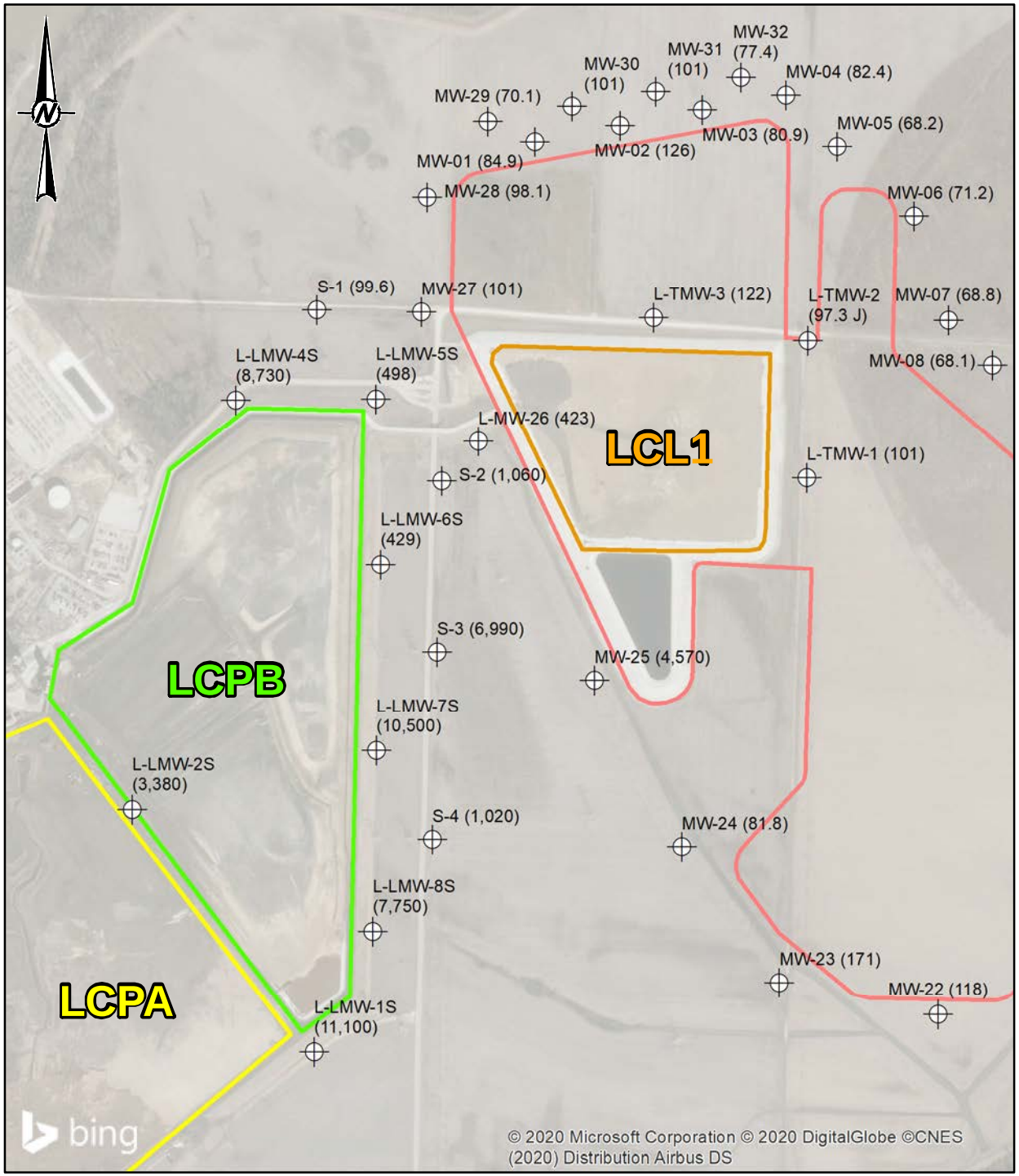

LEGEND

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

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

Feet

NOTE(S)

1. BORON CONCENTRATIONS IN MICROGRAMS PER LITER.
2. LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
3. SAMPLING RESULTS FROM CCR RULE WELLS FROM DETECTION MONITORING EVENT COMPLETED NOVEMBER 5-7, 2019.
4. SAMPLING RESULTS FROM STATE UWL MONITORING WELLS (NOT INCLUDING MONITORING WELLS IN BOTH PROGRAMS) ARE FROM SAMPLING EVENT COMPLETED NOVEMBER 19-20, 2019.

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
NOVEMBER 2019 BORON CONCENTRATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020/05/18
DESIGNED	JSI
PREPARED	JSI
REVIEWED	KAB
APPROVED	MNH

PROJECT NO.	REV.	FIGURE
153140602	0	2

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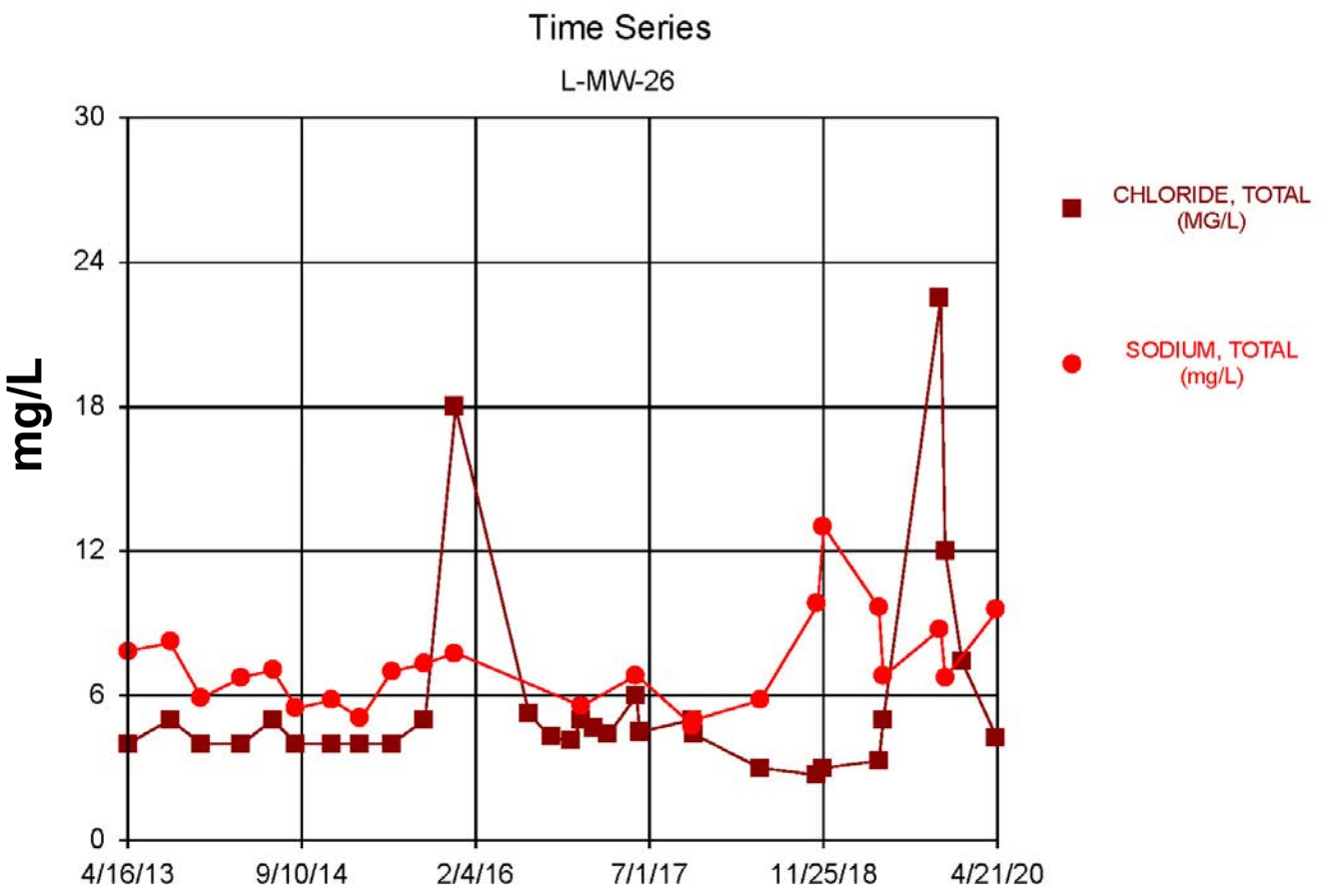

Notes

1) mg/L – Milligrams per liter.

CLIENT/PROJECT							TITLE	
AMEREN MISSOURI **LABADIE ENERGY CENTER**				GOLDER			**Time Series Plot for Sodium and Chloride Concentrations in MW-26**	
DRAWN JSI	CHECKED EMS	REVIEWED SCP	DATE 2020/05/19	SCALE N/A	FILE NO. N/A	JOB NO. 153140602.0001	DWG NO. N/A	SUBTITLE N/A	REV. NO. N/A	FIGURE **3**

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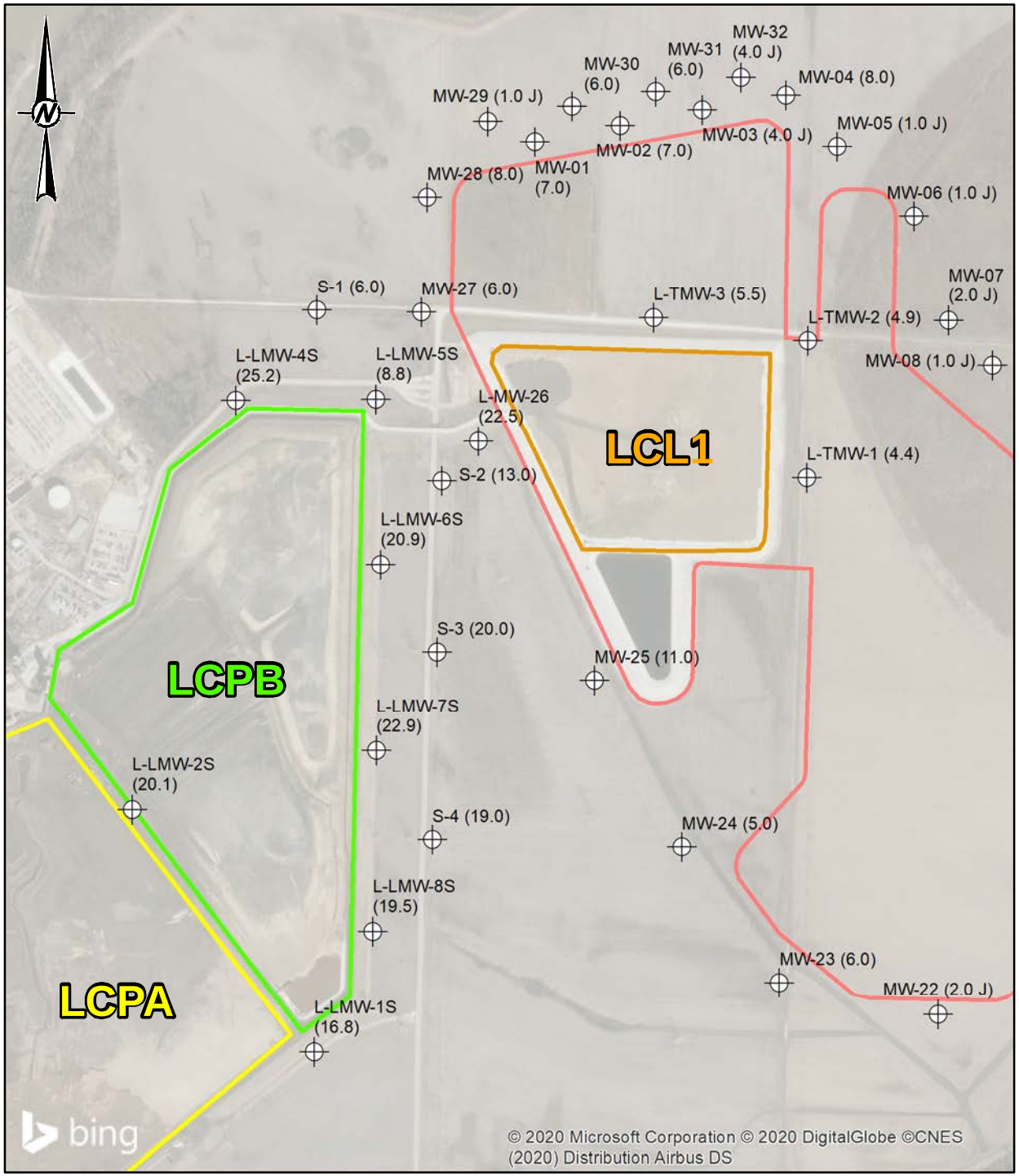

LEGEND

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

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

Feet

NOTE(S)

1. CHLORIDE CONCENTRATIONS IN MILLIGRAMS PER LITER.
2. LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
3. SAMPLING RESULTS FROM CCR RULE WELLS FROM DETECTION MONITORING EVENT COMPLETED NOVEMBER 5-7, 20219
4. SAMPLING RESULTS FROM STATE UWL MONITORING WELLS (NOT INCLUDING MONITORING WELLS IN BOTH PROGRAMS) ARE FROM SAMPLING EVENT COMPLETED NOVEMBER 19-20, 2019.

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.

CLIENT
AMEREN MISSOURI
LABADIE ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
NOVEMBER 2019 CHLORIDE CONCENTRATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020/05/18
DESIGNED	JSI
PREPARED	JSI
REVIEWED	KAB
APPROVED	MNH

PROJECT NO.	REV.	FIGURE
153140602	0	4

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1 in
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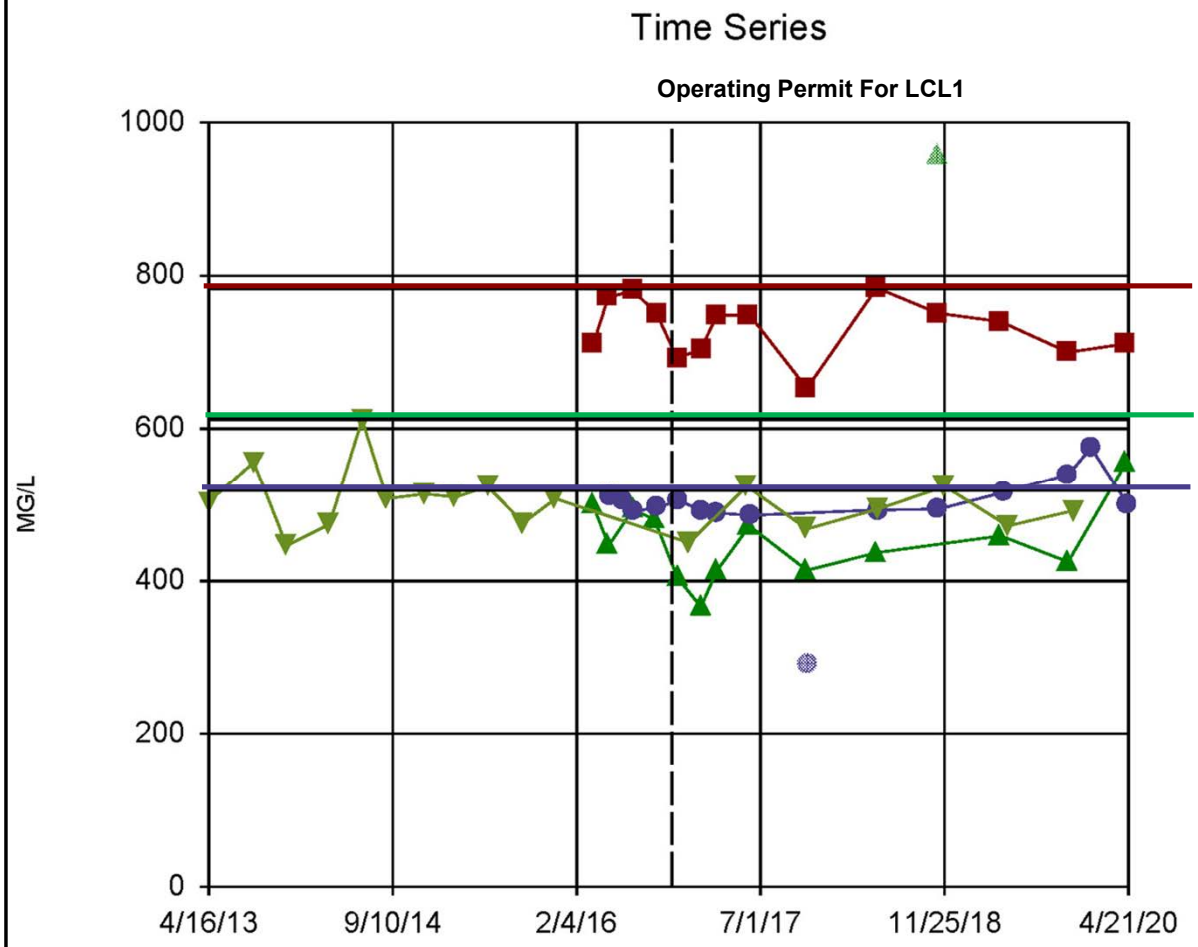

UPL Based on Background Monitoring Wells (784 mg/L)

UPL Based on Pre-CCR Historical Data (613 mg/L)

MW-26 UPL Based on CCR Rule Data (520.2 mg/L)

BMW-1S (CCR Rule Program)

BMW-2S (CCR Rule Program)

MW-26 (CCR Rule Program)

MW-26 (State UWL Program)

Notes

1) mg/L – Milligrams per liter.
2) Calculations completed using Sanitas Software.
3) UPL – Upper Prediction Limit.
4) CCR – Coal Combustion Residuals.
5) UWL – Utility Waste Landfill. Cell 1 of UWL is the LCL1.
6) Data points not connected to lines are considered outliers

CLIENT/PROJECT								TITLE	
AMEREN MISSOURI **LABADIE ENERGY CENTER**								**Time Series and Upper Prediction Limits Plot for Total Dissolved Solids at MW-26**	
DRAWN JSI	CHECKED EMS	REVIEWED SCP	DATE 2020/05/05	SCALE N/A	FILE NO. N/A	JOB NO. 153140602.0001	DWG NO. N/A	SUBTITLE N/A	REV. NO. N/A	FIGURE **5**

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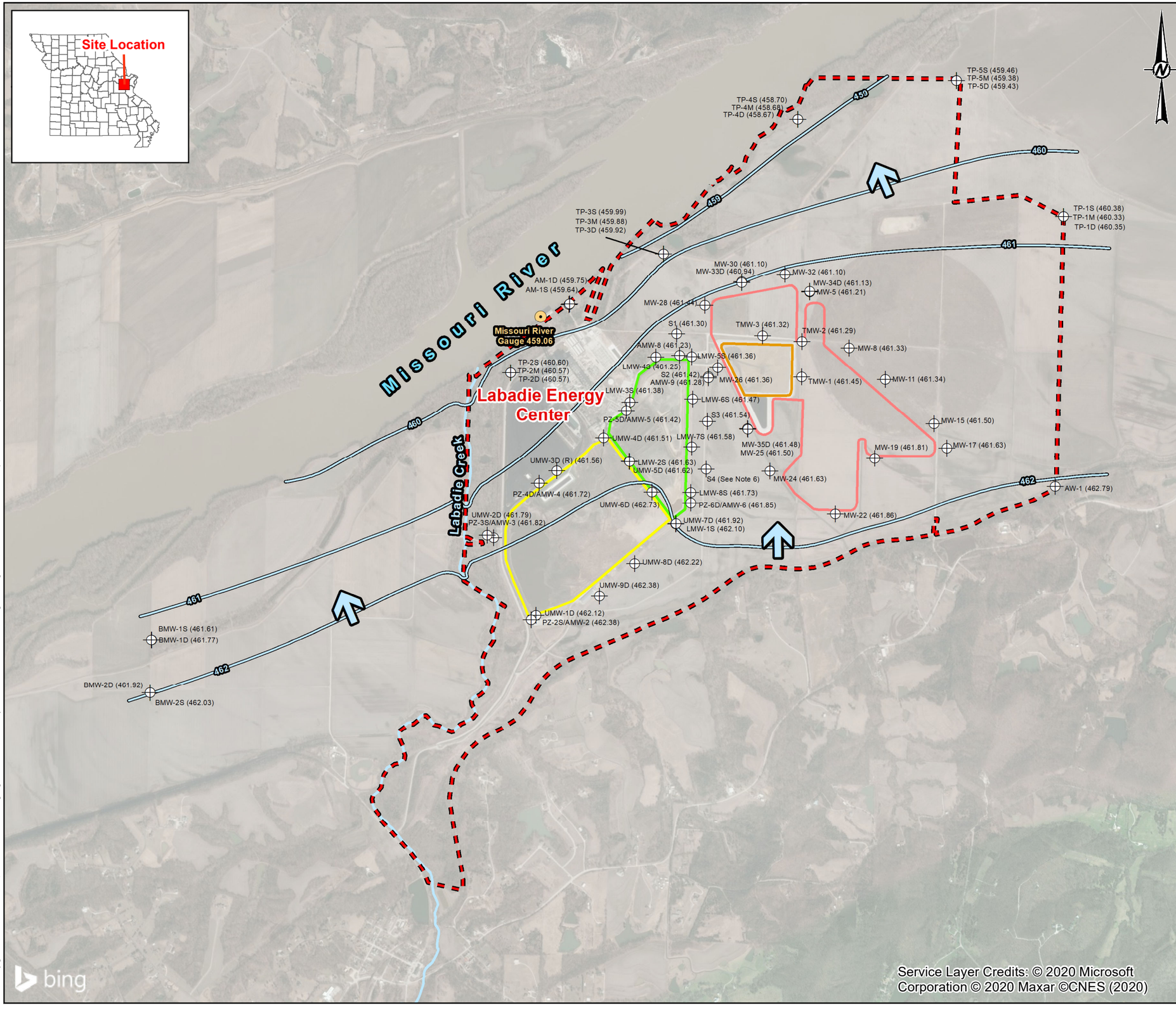
APPENDIX C

2020 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)

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. MONITORING WELL S4 WAS NOT USED FOR POTENTIOMETRIC SURFACE CONTOURING DUE TO MEASUREMENT ERROR.

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
JANUARY 6, 2020 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-02-06
PREPARED	EMS
DESIGN	JSI
REVIEW	BTT
APPROVED	MNH

PROJECT No. 153-140602
PHASE 0001
FIGURE **C1**

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

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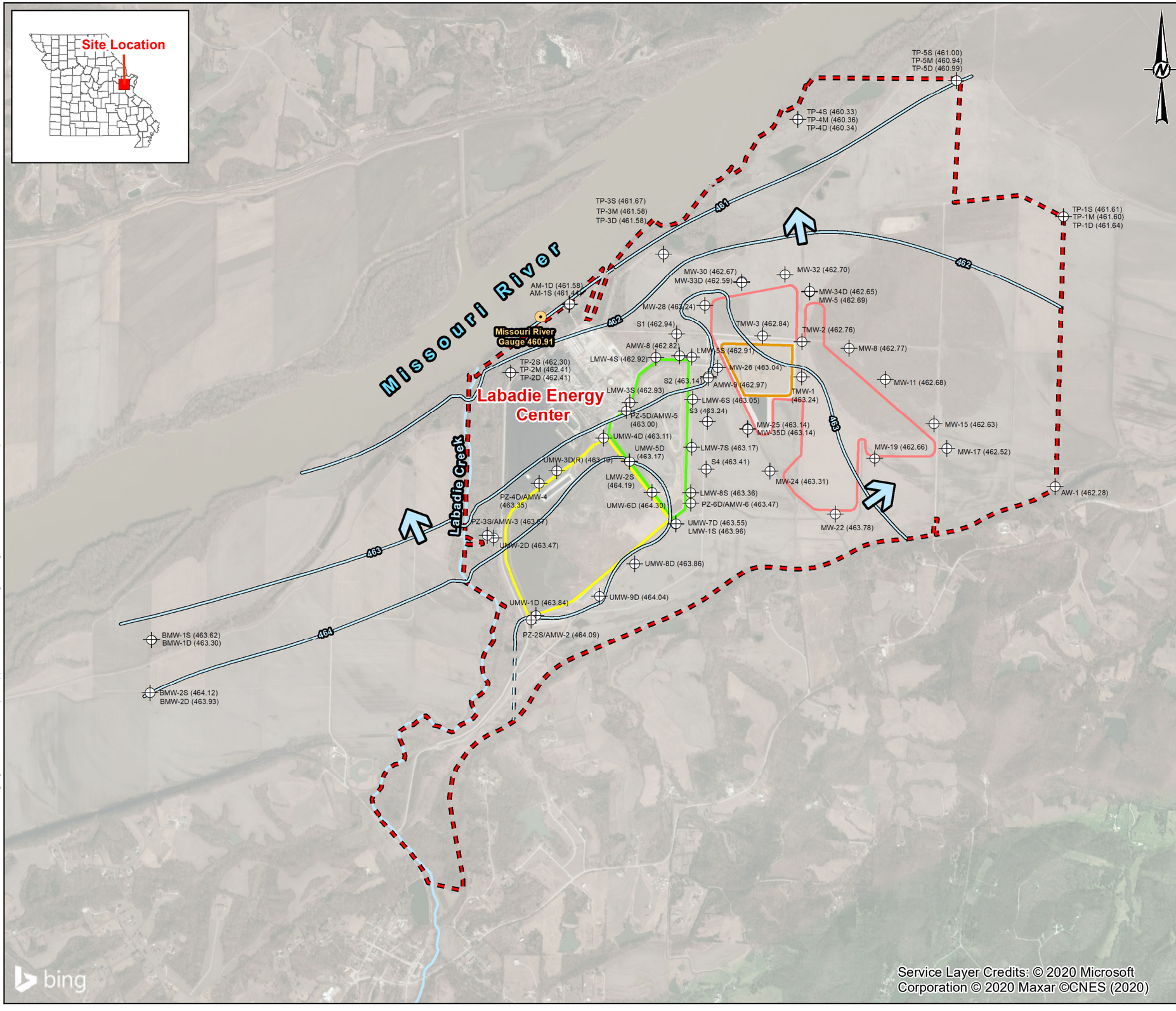

LEGEND

- 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
APRIL 13, 2020 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-04-13
PREPARED	BTT
DESIGN	JSI
REVIEW	KAB
APPROVED	MNH

PROJECT No. 153-140602
PHASE 0001
FIGURE **C2**

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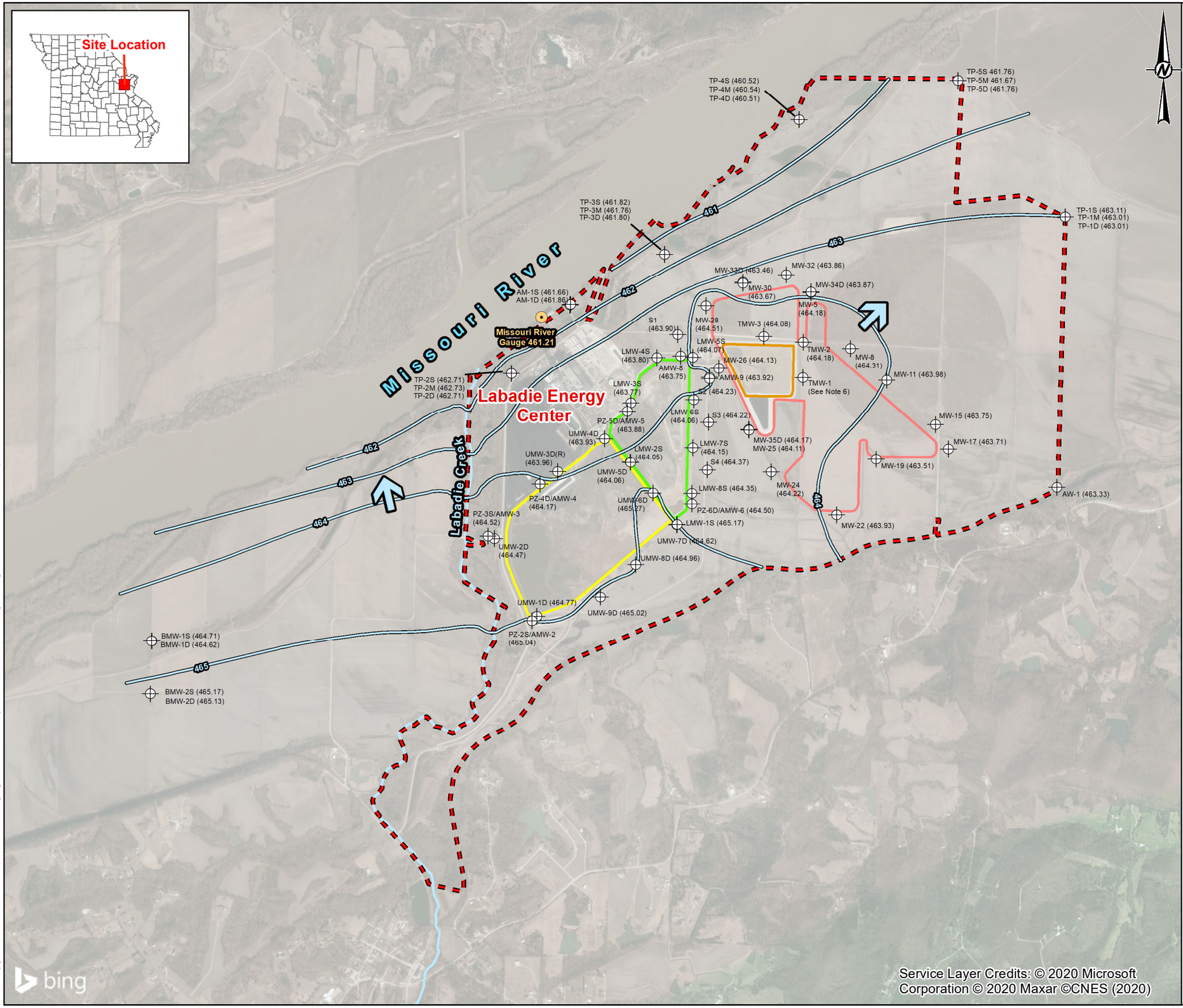

LEGEND

- 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. TMW-1 WAS NOT USED IN POTENTIOMETRIC SURFACE CONTOURING DUE TO MEASUREMENT ERROR.

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
MAY 26, 2020 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-03
PREPARED	BTT
DESIGN	JSI
REVIEW	KAB
APPROVED	MNH

PROJECT No. 153-140602
PHASE 0001
FIGURE **C3**

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

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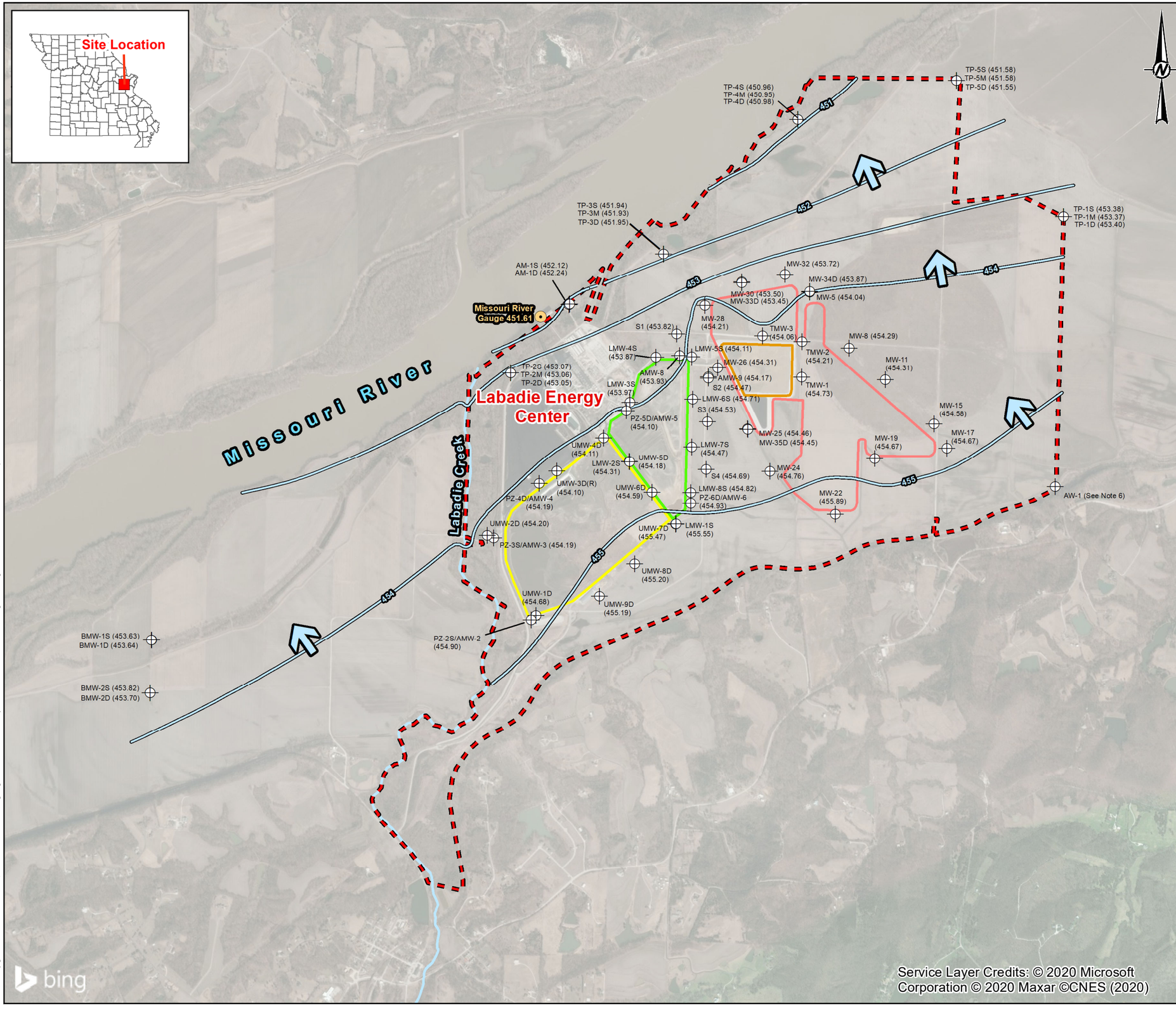

LEGEND

- 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 MEASUREMENT ERROR.

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 30, 2020 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-11-25
PREPARED	BTT
DESIGN	JSI
REVIEW	EMS
APPROVED	MNH

PROJECT No. 153-140602
PHASE 0001
FIGURE C4

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

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